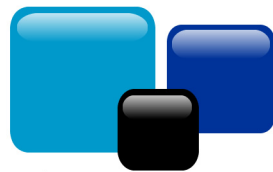


BM014 High Intensity RGB LED Module

Super Bright Red, Green, and Blue Ceramic LED with MOSFET drivers



hardware made easy

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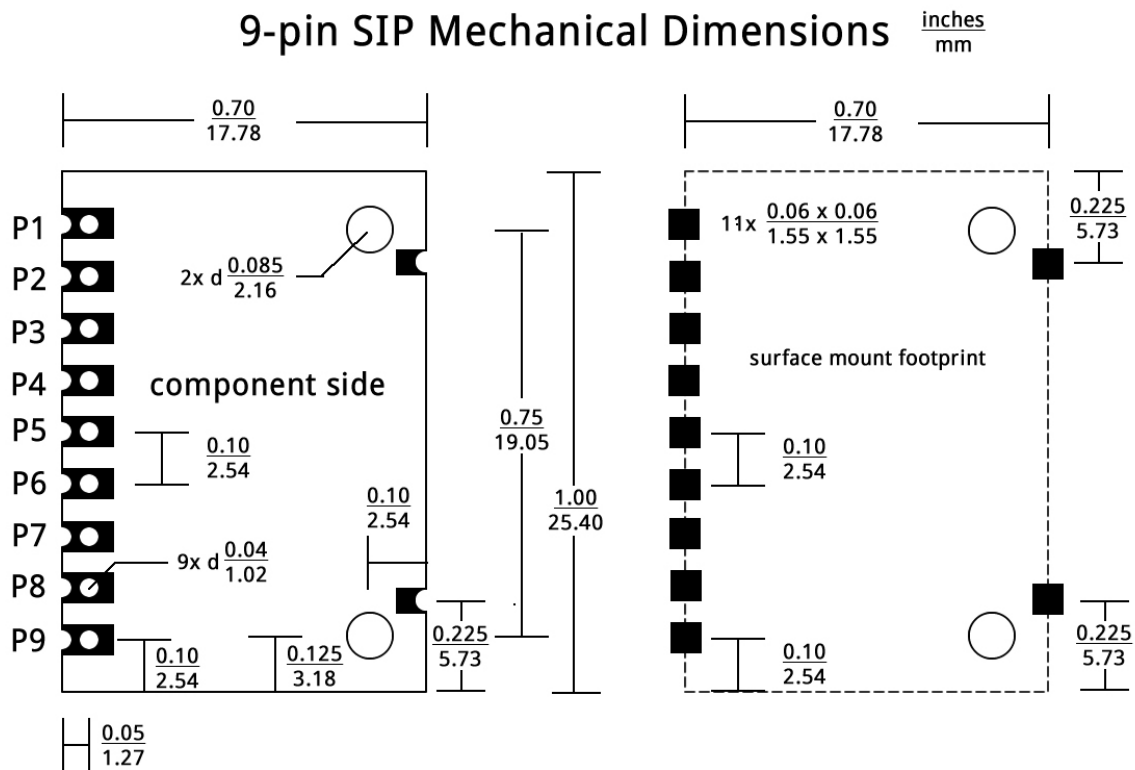
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Product Description:

This super bright red, green, and blue LED module can be used to generate hundreds of colors. The module comes with MOSFET switches used to turn on each LED. Pulse-width modulating the MOSFETs can allow you to mix color ratios.

- 140mA per LED drive current
- 120° viewing angle
- 625nm (red), 528nm (green), 470nm (blue)
- Bright like the sun!

Dimensions:**9-pin SIP Mechanical Dimensions**

Specifications:

| Characteristic | Min | Typ | Max | Unit | Notes |
|-----------------------|-----|-----|------|--------------|--|
| VIN Operating voltage | | 5 | | V | VIN pins |
| Operating current | 30 | | 250 | mA | No motors/servos attached |
| Vforward red LED | 1.9 | 2.1 | 2.65 | V | 20 Ω 1/2W resistor in series with LED |
| Vforward green LED | 2.9 | 3.4 | 4.1 | V | 12 Ω 1/2W resistor in series with LED |
| Vforward blue LED | 2.9 | 3.3 | 4.1 | V | 12 Ω 1/2W resistor in series with LED |
| Vreverse red LED | | 12 | | | |
| Vreverse green LED | | 5 | | | |
| Vreverse blue LED | | 5 | | | |
| Operating temperature | -40 | | +110 | $^{\circ}$ C | |

Pin Functions and Notes

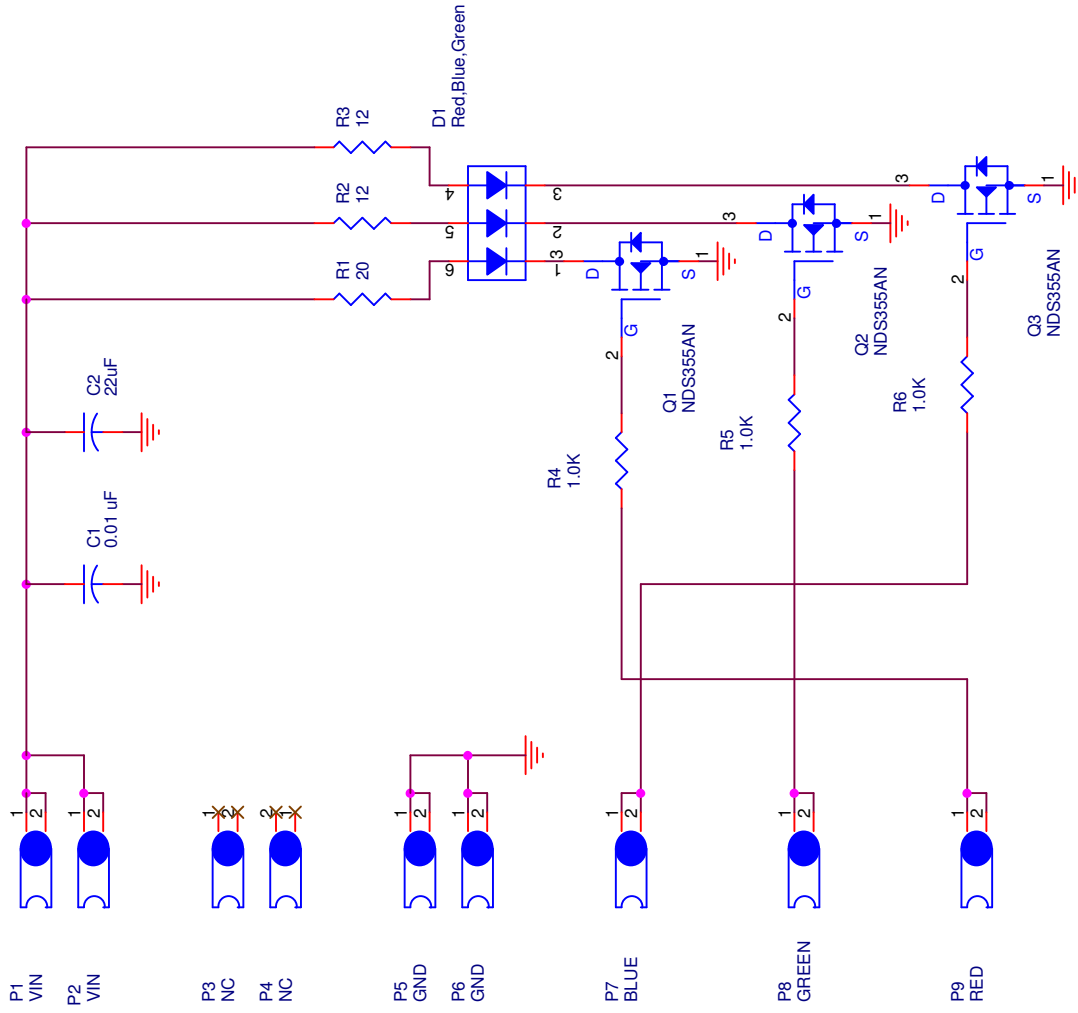
| # | Name | Maximum Voltage | Notes |
|---|--------------|-----------------|---|
| 1 | VIN | 5V | Tied to anode of all LEDs |
| 2 | VIN | 5V | Tied to anode of all LEDs |
| 3 | NC | - | Not connected |
| 4 | NC | - | Not connected |
| 5 | GND | 0V | Common ground |
| 6 | GND | 0V | Common ground |
| 7 | BLUE ENABLE | 5V | Connected to gate of N-channel MOSFET through 1K Ω resistor (note: on rev 1 PCB this pin is labeled as "RED" on silk-screen. 5V turns on LED. |
| 8 | GREEN ENABLE | 5V | Connected to gate of N-channel MOSFET through 1K Ω resistor. 5V turns on LED. |
| 9 | RED ENABLE | 5V | Connected to gate of N-channel MOSFET through 1K Ω resistor (note: on rev 1 PCB this pin is labeled as "BLUE" on silk-screen. 5V turns on LED. |

User Notes/Tips:

1. The red LED enable pin is labeled "blue" on the bottom silk-screen of the REV1 PCB. Follow pin-out in this document. Likewise, the blue LED is labeled "red" on the rev1 PCB.
2. This high intensity LED is very bright. You should not look directly at it. When viewing the LED it is worthwhile to cover it with frosted glass or a similar material. This will reduce the pin-point brightness by diffusing the colors making them more pleasing to the eye.
3. You can mix and create colors by driving the LED enable pins with PWM signals. In a similar fashion you can reduce and increase brightness by reducing the PWM duty-cycle but maintaining the ratio.

| Color | Red | Green | Blue |
|--------------|------------|--------------|-------------|
| White | 100% | 100% | 100% |
| Red | 100% | 0% | 0% |
| Green | 0% | 100% | 0% |
| Blue | 0% | 0% | 100% |
| Light Blue | 0% | 100% | 100% |
| Magenta | 100% | 0% | 100% |
| Yellow | 100% | 100% | 0% |
| Orange | 100% | 40% | 0% |
| Purple | 40% | 20% | 80% |
| Tan | 60% | 20% | 0% |

Schematics:



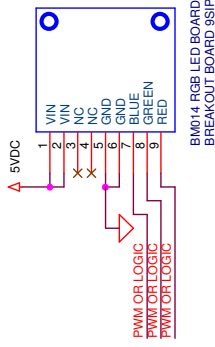
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User Datasheet

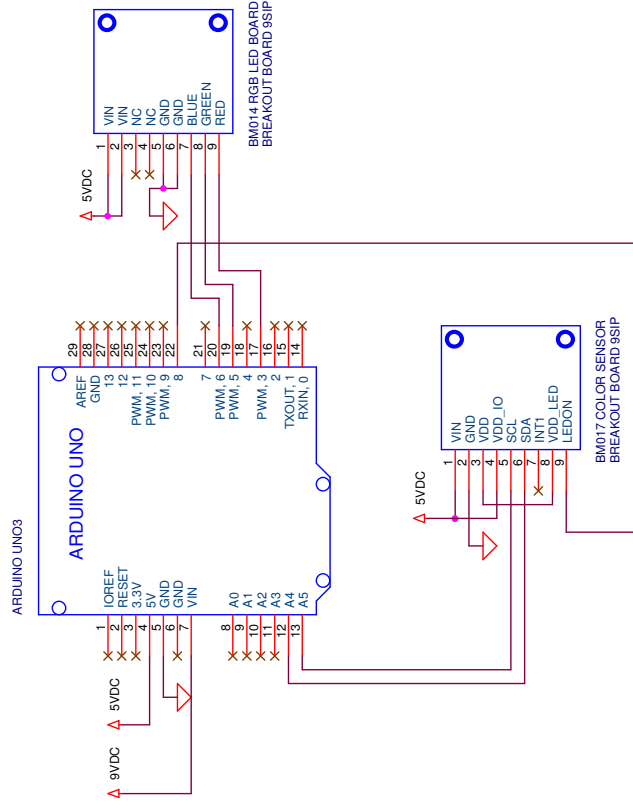
August 2013

Application Schematics:

BASIC CONNECTIONS



COLOR SENSOR TO RGB LED



RGB LED PWM CONTROL

