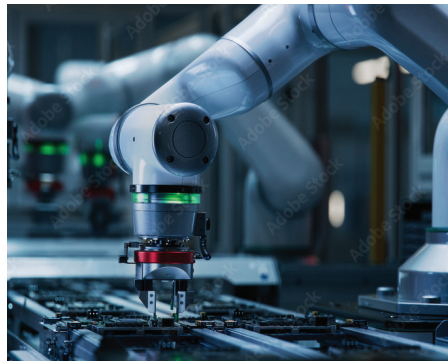


# **ADDRESSABLE RGB LED**

SELECTOR GUIDE



## Advantages of Addressable RGB LEDs with built-in integrated circuits (ICs)

Addressable RGB LEDs or Digital LEDs provide the user with controllability. Each one of the individual LED chips can be programmed independently to create distinct colors, different patterns, adjust brightness, and customized lighting effects. Addressable RGB LEDs can produce a wide range of colors and uniform color from more concentrated CIE distribution.

Easier to use with pulse-width modulation (PWM) full color mixing, all colors are controlled by code, not resistors. LEDs with embedded ICs help reduce costs in engineering design of the hardware and software. Simplify the circuit design layout because fewer electronic components are required. Shrink down module size due to less space requirements.

Addressable RGB LEDs can be easily programmed and controlled using microcontrollers and controller boards.

Addressable RGB LEDs are energy efficient and can be powered by batteries or low-voltage power supplies, making them suitable for portable and low-power applications.

Addressable RGB LEDs have a wide range of applications:

- Wearable Devices
- EV Charging Equipment
- Electronic Appliances
- Backlighting And Edge Lighting
- Automation Equipment
- Robot Indicator Light
- Entertainment, Casino, Gaming Applications
- Audio And Video Equipment
- LED Light Strips



# Single-Wire vs Dual-Wire Addressable RGB LED

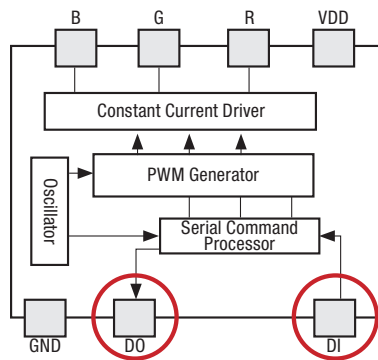
Single wire and dual wire addressable RGB LEDs are two different types of LED technology used for controlling the color and lighting effects of individual LEDs.

Single wire addressable RGB LEDs use a single data wire to control the color and brightness of each LED. These LEDs have an integrated microcontroller that interprets the data sent through the data wire and adjusts the LED's color accordingly. Single wire addressable LEDs are commonly used in applications where simplicity and ease of use are important.

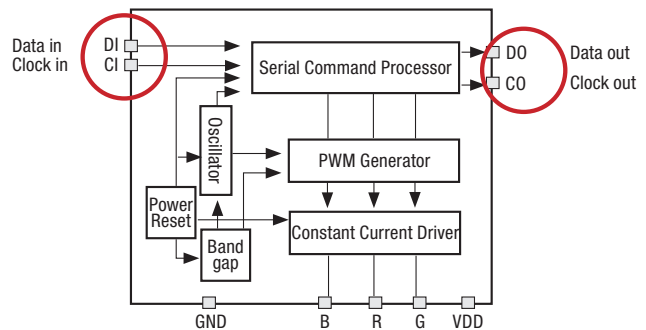
Dual wire addressable RGB LEDs use two separate wires for data and clock signals to control the color and brightness of each LED. These LEDs have a built-in shift register that allows for more precise control and synchronization of the LED colors. Dual wire addressable LEDs are often used in applications where higher data transfer rates and more advanced control capabilities are required.

Dual Wire has faster data transmission and longer serial connection compared to single wire. Each LED with single wire takes 30µs to transfer from one LED to another, while it takes 1.9µs to transfer from one to another with dual wire.

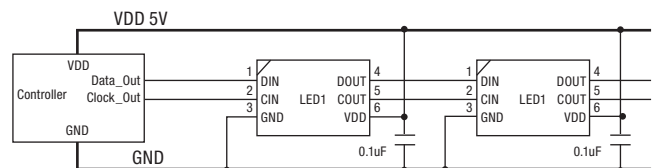
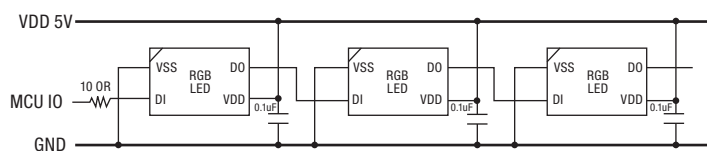
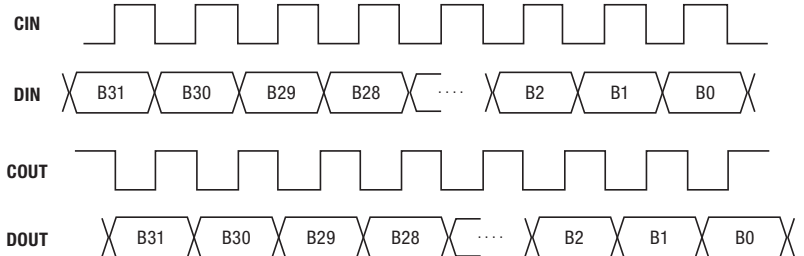
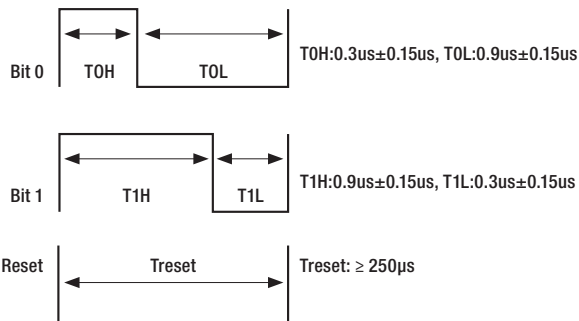
Generally, human vision can spot a delay time over 30ms. Dual wire transmits data faster and preferable for longer serial connection due to its much shorter delay time compared to single wire.



Waveform: Data with Clock



Separate Data and Clock



## Dual-Wire Options



**587 SERIES**  
**5050 ADDRESSABLE RGB LED**  
**SMD LED + IC**

PART NUMBER: 587-2056-247F

PACKAGE SIZE:

5050 PLCC LED RGB + IC

LENS TYPE: Silicone

LENS COLOR: Clear

NUMBER OF PINS: 6

WIRE: Dual

RGB DRIVING CURRENT:

5mA, 12mA, 20mA

IC PWM LEVEL: 8 bits

PEAK CURRENT ADJUSTMENT:

32 step dimming control

PWM FREQUENCY: 20K Hz



**587 SERIES**  
**1616 ADDRESSABLE RGB LED**  
**SMD LED + IC**

PART NUMBER: 587-1016-247F

PACKAGE SIZE:

1616 LED RGB + IC

LENS TYPE: Epoxy

LENS COLOR: Clear

NUMBER OF PINS: 6

WIRE: Dual

RGB DRIVING CURRENT:

5mA, 12mA, 20mA

IC PWM LEVEL: 8 bits

PEAK CURRENT ADJUSTMENT:

32 step dimming control

PWM FREQUENCY: 20K Hz

## Single-Wire Options



**587 SERIES**  
**5050 ADDRESSABLE RGB LED**  
**SMD LED + IC**

PART NUMBER: 587-2056-147F

PACKAGE SIZE:

5050 LED RGB + IC

LENS TYPE: Silicone

LENS COLOR: Clear

NUMBER OF PINS: 6

WIRE: Single

RGB DRIVING CURRENT:

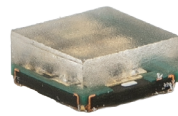
5mA, 12mA, 20mA

IC PWM LEVEL: 8 bits

PEAK CURRENT ADJUSTMENT:

32 step dimming control

PWM FREQUENCY: 5K Hz



**587 SERIES**  
**2020 ADDRESSABLE RGB LED**  
**SMD LED + IC**

PART NUMBER: 587-1024-147F

PACKAGE SIZE:

2020 LED RGB + IC

LENS TYPE: Epoxy

LENS COLOR: Clear

NUMBER OF PINS: 4

WIRE: Single

RGB DRIVING CURRENT:

5mA, 12mA, 20mA

IC PWM LEVEL: 8 bits

PEAK CURRENT ADJUSTMENT:

32 step dimming control

PWM FREQUENCY: 5K Hz



**587 SERIES**  
**RIGHT ANGLE / SIDE VIEW**  
**ADDRESSABLE RGB LED**  
**SMD LED + IC**

PART NUMBER: 587-1034-147F

PACKAGE SIZE:

Right Angle Chip LED RGB + IC  
(3.20 x 1.0 x 1.5mm)

LENS TYPE: Epoxy

LENS COLOR: Clear

NUMBER OF PINS: 4

WIRE: Single

RGB DRIVING CURRENT: 5mA, 12mA

IC PWM LEVEL: 8 bits

PEAK CURRENT ADJUSTMENT:

32 step dimming control

PWM FREQUENCY: 20K Hz

**OE** is **O**ur **E**xpertise.