

## DotStar Addressable 5050 Warm White LED w/Integrated Driver Chip – 10 Pack ~3000K

PRODUCT ID: 2350

For those of us who are maybe a little tired of rainbows, we now have 'smart LEDs' in monochrome! Make your own smart Warm White LED arrangement with the same integrated LED driver that is used in [our new fancy DotStar strips](#). Unlit, the color resembles an egg yolk. Lit up these are insanely bright (like ow my eye hurts) and can be controlled with 24 bit high-frequency PWM. The phosphor helps diffuse the 3 white dies inside together for a very bright but consistent light, compared to what you get by trying to mix RGB to make white (which never quite looks right)

This tiny 5050 (5mm x 5mm) SMD LED is fairly easy to solder and is the most compact way possible to integrate multiple bright LEDs to a design. [If you want to prototype with these, we recommend our 5050-size LED breakout PCBs, solder them on for a breadboard-friendly package](#)

They're also a great upgrade for people who have loved and used NeoPixels for a few years but want to use the same kind of technology for monochromatic lighting. DotStar LEDs use generic 2-wire SPI, so you can push data much faster than with the NeoPixel 800 KHz protocol and there's no specific timing required. They also have much higher PWM refresh rates, so you can do Persistence-of-Vision (POV) and have less flickering, particularly at low brightness levels.

Like NeoPixels, DotStar LEDs are 5050-sized LEDs with an embedded microcontroller inside the LED. You can set the brightness of each of 3 individual cool white dies epoxied into the case. Each LED acts like a shift register, reading incoming data on the input pins, and then shifting the previous data out on the output pin. By sending a long string of data, you can control an infinite number of LEDs, just tack on more or disconnect unwanted LEDs at the end. The PWM is built into each LED-chip so once you set the brightness you can stop talking to the strip and it will continue to PWM all the LEDs for you.

Another nice thing about DotStars is their high PWM rate. You only have to set the brightness data for each pixel LED once, and then the LED+built-in-chip will handle the PWMing. On NeoPixels, this PWM rate happens 400 Hz, which works well but is noticeably at lower brightnesses and if the strip is moving in any way. DotStars have a 20 KHz PWM rate, so even when moving the LED around, you won't see the pixelation, the blending is very smooth.

Comes in a package with 10 individual LEDs.

[We have a tutorial showing wiring, power usage calculations, example code for usage, etc. for DotStars Please check it out!](#) Please note that the tutorial and code talk about RGB, but of course, this LED is just WWW, three individual white LEDs instead.

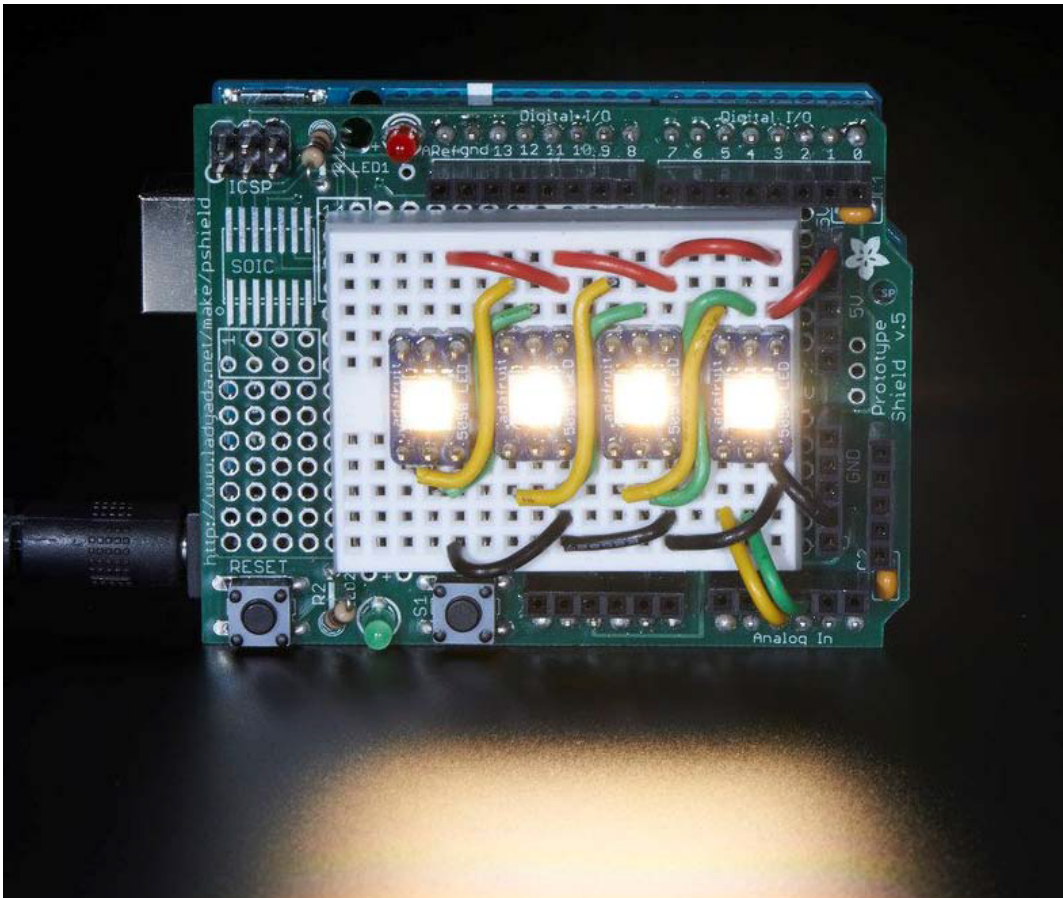
# TECHNICAL DETAILS

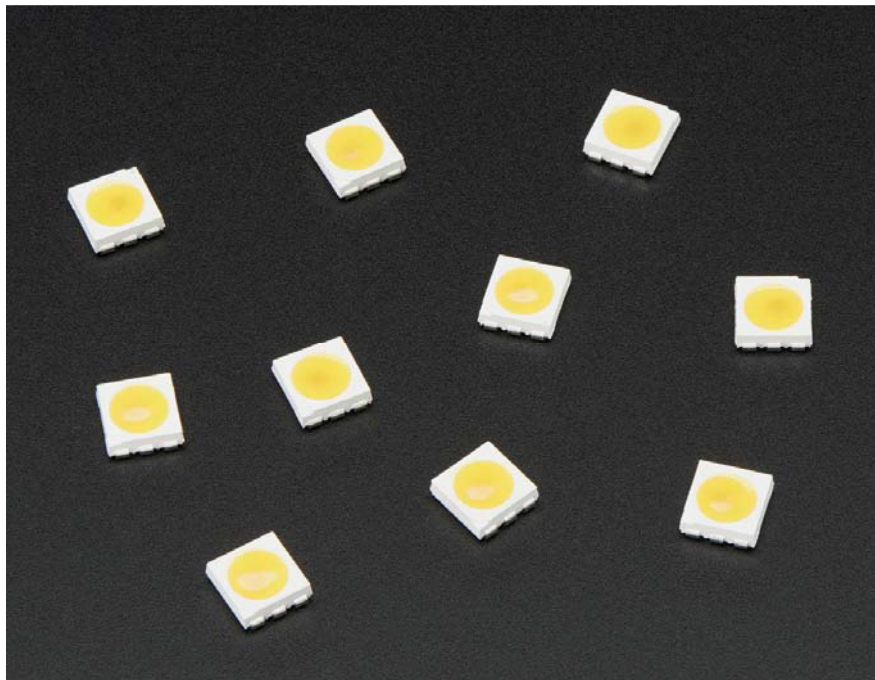
- Single LED: 5mm x 5mm / 0.2" x 0.2"
- We don't have any more specifics about this particular LED other than it is ~3000K color temp and seems to have 3 white LEDs in place of the normal Red/Green/Blue



[SK9822 Datasheet](#)

<https://cdn-shop.adafruit.com/productfiles/2350/SK9822SHIJ1.pdf>





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