Menu

Addressable 7-Segment Displays

Easily connect several 7-Segment displays using a single wire to your microcontroller.


Sean Hodgins

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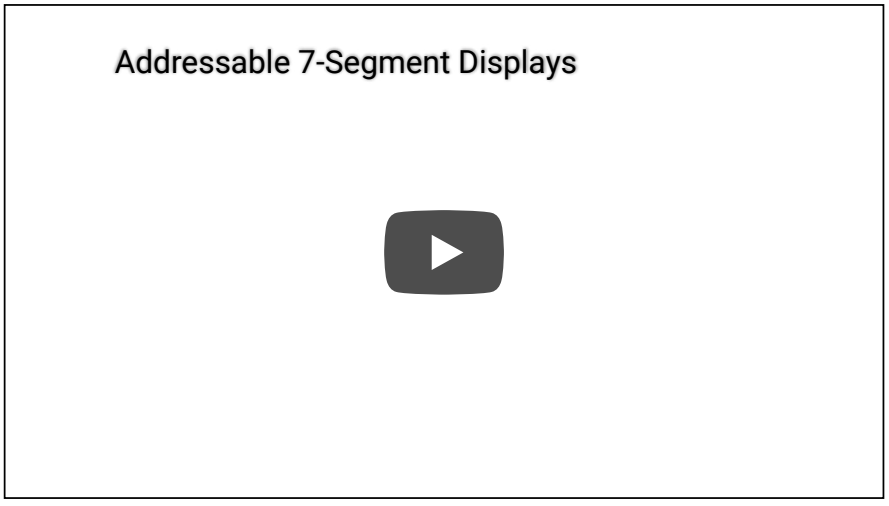
- Hackaday.com Tip Line

This project was created on 01/09/2019 and last updated a year ago.

DESCRIPTION

These boards were made to simplify the process of incorporating 7-segment displays into your microcontroller project. The idea is simple, the WS2811 is normally used to control an RGB LED, which means it can control 3 LEDs in general, so 3 of them can control 9 LEDs. A 7-segment display has 8 segments if you include the decimal place. Therefore, if you take 3 x WS2811s and you connect them to the pins of a 7-segment display, you can easily control and daisy chain several displays together and hook them up using only VCC, GND and DATA wires. Works incredibly well!

DETAILS



Watch the video for the details of this project.

You can pre-order these displays on my website if you don't want to make your own. I'm doing my own DIY crowdfunding campaign. Check it out here:

https://shop.idlehandsdev.com/products/addressable-7-segment-display

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DISCUSSIONS

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WestfW wrote 01/13/2019 at 11:06

What chip is used in the RGBW "neopixels"? That ought to cut the need down to two chips/digit?

hamblin.joe wrote 01/11/2019 at 16:20

Great project. I've been doing a 4H project with serial addressable LEDs and Arduino. This will be a great follow on project. Will you sell just the parts in PCB, kids like to do the soldering with help of course, SMD not a problem.

Steven wrote 01/10/2019 at 13:50

I'll give my first born child if this were for 16/17 segment displays.

Xasin wrote 01/11/2019 at 07:32

The WS2811 chips only have three PWM outputs per chip. At about 40ct per chip and six WS2811 per segment, that would be a little expensive after a short while. I personally would just go for 74HC595 Shift Registers, giving each segment two of those so that you don't need to multiplex. No PWM, but it'd be cheaper and easier on the MCU.

Keith Olson wrote 01/13/2019 at 05:41

Expensive? :cough: https://www.aliexpress.com/item/Free-shipping-100pcs-lot-WS2811S-WS2811-SOP-8-IC-best-quality/32810984795.html

Xasin wrote 01/13/2019 at 07:50

@Keith Olson Unless of course one is smart enough to check Aliexpress or LCSC. I'm just too used to Digikey, which only sell a ten-pack for the same price as the 100-pack there, so thanks for the recommendation! Makes me want to use an unjustified amount of these in personal projects :>

Keith Olson wrote 01/14/2019 at 04:21

Heh. Me, too! I suddenly find myself considering building 100cm-high, 16 segment displays using six of those each.

Xasin wrote 01/09/2019 at 16:28

Ahhh, this is awesome!
I actually had forgotten that you can get the WS2811 as a separate chip. I've been working with WS2812 in their "all-in-one" LED package a bit too much. This almost makes me wonder how small you could get one of those 7 Segment drive chips ...

In any case, I do know a little bit about writing Arduino libraries, as well as plenty of C++ code, and together with the Adafruit library for driving NeoPixels in general, it'd be pretty easy to write up a library for that stuff!

I also already worked on a few transition effects for my New Year's eve countdown clock, maybe those, in a simpler fashion, could be added to the library!

Dan Maloney wrote 01/09/2019 at 16:06

Hey Sean, great idea. Seems like this will be super useful. Thanks!

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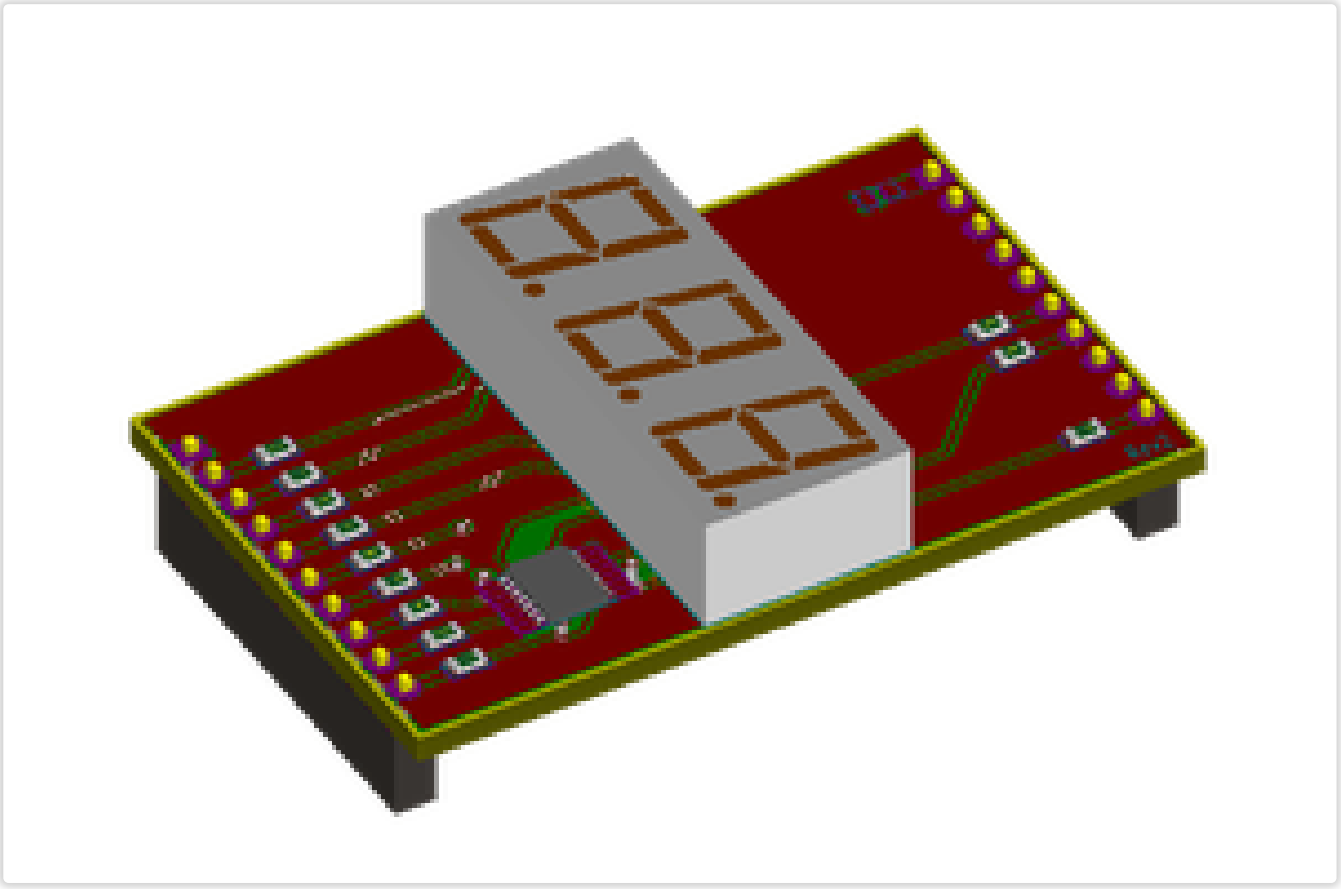

LaunchPad 3x7-Segment Display Booster Pack

Clint Stevenson
