NLED WS2801 MOSFET Driver Module

Based on the WS2801 chipset this 3 channel MOSFET driver allows high current and/or high voltages(5v to 60v) to be controlled just like a standard WS2801 pixel. Great for controlling 12 volt RGB LED strips or other types of high wattage LEDs in various configurations. Operates just like any other pixel, so they can be chained together or controlled by themselves. Easy to interface to from an Arduino, PIC or other logic devices with a SPI port. The control scheme is simple, send 3 bytes of data for every module in the chain using a standard SPI port, waiting at least 500uS between updates. Or they can be controlled with one of the many NLED Pixel Controllers.

Features:

- 3 Channels of High Current and High Voltage Outputs
- Supports Up To 24 Volts With Voltage Regulator Installed, or 60 Volts With VREG Removed.
- Onboard Voltage Regulator For Logic(+5v), Up to 25 Volt Input Capability.
- Supports 15 Amp Total, 5 Amps Per Channel. Outputs Support Up To 10A Individually.
- 8-Bit PWM Resolution(16 Million Colors) at 2.5Khz PWM Frequency. High Quality Light Output.
- Output Channels Are In Current Sink(Common Anode) Configuration
- Low MOSFET series resistance, 50mΩ (0.05Ω)
- Includes a Full 3 Year Warranty and Satisfaction Guarantee.

Specification:

Logic Current Draw	< 5mA
Output	3 Channels
Input Voltage With VREG	7v to 24v
Input Voltage Without VREG*	3.3v to 60v
Maximum Current Total	15 Amp
Maximum Current Per Channel	10 Amp
Communication Protocol	WS2801
Connectors	Screw Down Terminals
Connector Spacing	5.08mm
PCB Dimension	1.25" x 0.6" x 0.25"

*Special Usage, would require a separate 5 volt supply for the logic. See Pg. 3
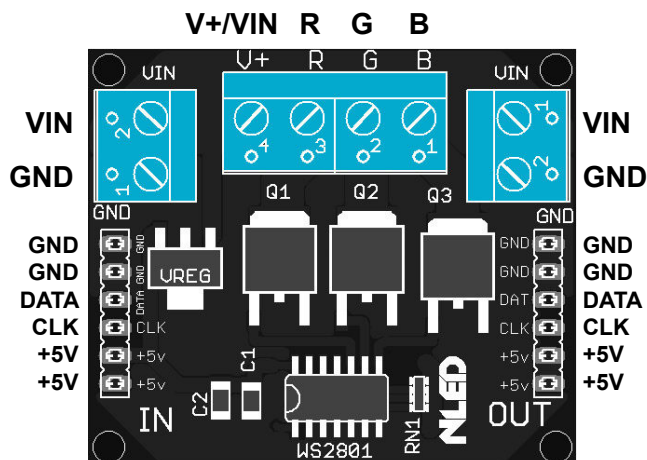

Pinout
Details on Pg. 2

Module Pinout Description

V+/VIN R G B

VIN
GND
GND
GND
DATA
CLK
+5V
+5V

IN

VIN
GND
GND
GND
DATA
CLK
+5V
+5V

OUT
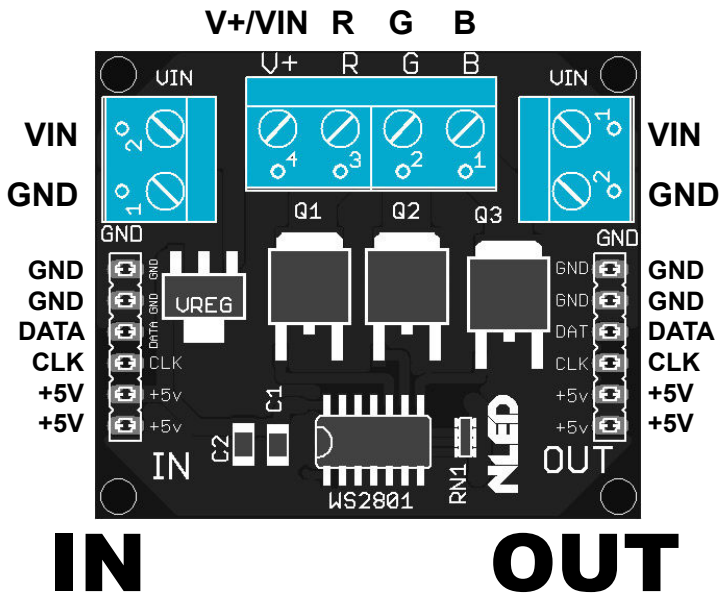
VIN: Connects the power supply positive, commonly 12 volts. Both VINs and V+ are tied together.
GND/V-: All GNDs are tied together. Connects to power supply GND/V- and to controller GND/V-
V+: Connects to LED(s)/strip anode.
R: Connects to LED(s)/strip red cathode.
G: Connects to LED(s)/strip green cathode.
B: Connects to LED(s)/strip blue cathode.
CLK(IN/Left Side): Connect to controllers Clock Out
DATA(IN/Left Side: Connects to controllers Data Out
CLK(OUT/Right Side): Connect to next module's or pixel's CLK IN
DATA(OUT/Right Side): Connect to next module's or pixel's DATA IN

Module Wiring

For long distances over 1 meter(approx.) between modules it is recommended to send the data and clock signals using twisted pairs. Two twisted pairs(4 wires): Clock & Ground, and Data & Ground. The signal between modules is subject to interference if operated in electrically noisy enviroments. If the modules experience interference/noise/glitches during use, try connecting a 1kohm resistor from CLKIN to GND.

Fig. 2a

(12 Volt Common Anode RGB Strip)

Fig. 2b

All Modules and Controller Must Share Same GND/V-
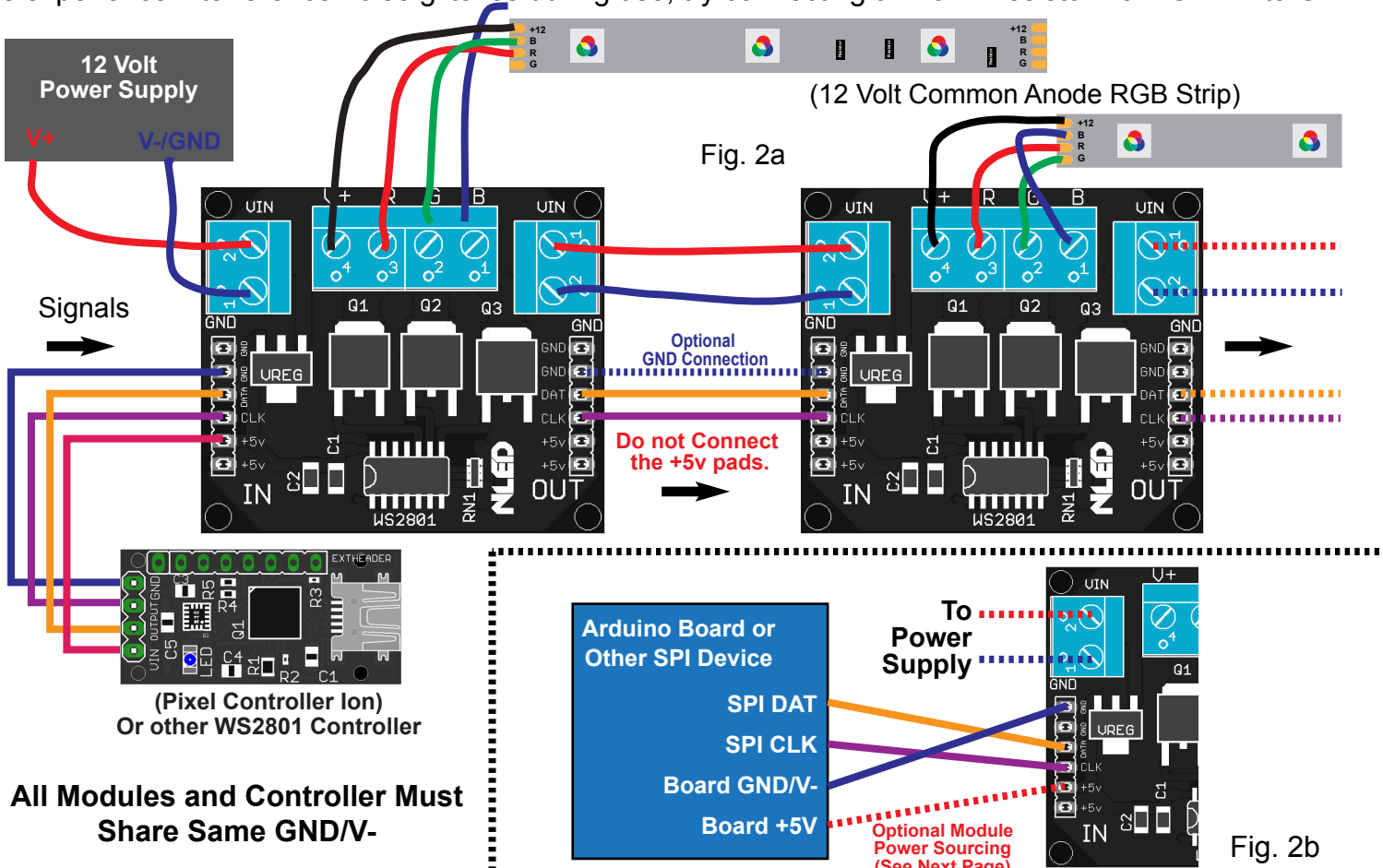
Voltage Regulator Usage/Removal

Each module comes with a voltage regulator(VREG) installed. This converts the input voltage(VIN, 7v - 24v) to the +5 volts the logic requires. Multiple modules should not have their +5v positions connected, each module should only share VIN/V+, GND/V-, CLK, and DAT. But the regulated +5 volts can be used to power the controller and/or other hardware. Each module has about 200mA of regulated +5 volts to spare.

If an input voltage greater than 24 volts is required, the output channels support up to 60 volts, but the voltage regulator(VREG) would have to be removed, as it is specified for a maximum of 25 volts. The part can be difficult to remove without a hot air rework station, when ordering you can request to have your modules ship with no VREG installed. With the VREG removed each module will be require a separate +5 volt supply, either from a similar regulator or separate power supply.

VREG is a SOT-223 part on the left side of the PCB.

Physical Dimensions

1.75"(44.5mm)

1.5" (38.1mm)

1.35" (34.29mm)

1.6"(40.64mm)

0.125" Holes On Each Corner