

POLOLU 5V STEP-UP VOLTAGE REGULATOR

U3V50F5

/POLOLU 6V STEP-UP VOLTAGE REGULATOR

U3V50F6

/POLOLU 9V STEP-UP VOLTAGE REGULATOR

U3V50F9

/POLOLU 12V STEP-UP VOLTAGE REGULATOR

U3V50F12

/POLOLU 24V STEP-UP VOLTAGE REGULATOR

U3V50F24

USER'S GUIDE

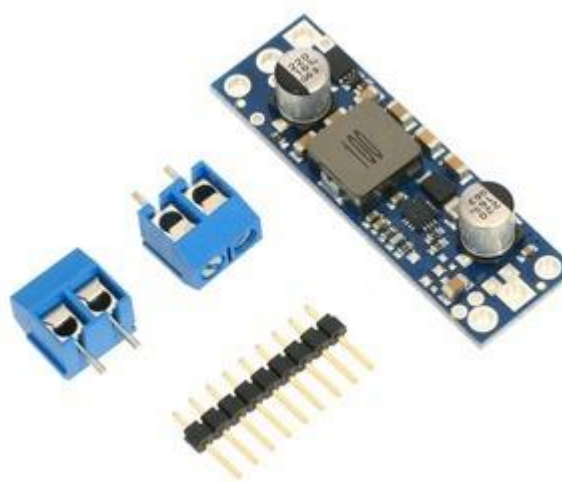
CONNECTIONS

This boost regulator has four connections: input voltage (VIN), ground (GND), and output voltage (VOUT), and ENABLE.



The input voltage, VIN, must be at least 2.9 V and should not exceed the output voltage, VOUT. (If VIN is higher than VOUT, the higher input voltage will show up on the output, which is potentially dangerous for your connected load and could also damage the regulator.)

The regulator is enabled by default: a 100 k $\Omega$  pull-up resistor on the board connects the ENABLE pin to reverse-protected VIN. The ENABLE pin can be driven low (under 0.7 V) to put the board into a low-power state. The quiescent current draw in this sleep mode is dominated by the current in the pull-up resistor from ENABLE to VIN and by the reverse-voltage protection circuit, which will draw between 10  $\mu$ A and 20  $\mu$ A per volt on VIN when ENABLE is held low. If you do not need this feature, you should leave the ENABLE pin disconnected. Note that like most boost regulators, the input power will pass through to the output when the board is disabled, so the ENABLE pin cannot be used to turn off power to the load.



Pololu fixed step-up voltage regulator  
U3V50Fx with included optional terminal  
blocks and header pins.



Pololu fixed step-up voltage  
regulator U3V50Fx, assembled with  
included terminal blocks.

The connections are labeled on the back side of the PCB, and the board offers several options for making electrical connections. The eight smaller through-holes on the ends of the board are arranged with a 0.1" spacing for compatibility with solderless breadboards, connectors, and other prototyping arrangements that use a 0.1" grid; you can solder pieces of the included 9x1 [straight male header strip](#) into these smaller holes. Alternatively, you can solder the included 2-pin 5mm-pitch terminal blocks to the two pairs of larger holes on the ends of the board. For the most compact installation, you can solder wires directly to the board.

Note that this regulator has a thick PCB (0.093"), so terminal block and header pins will not protrude as far through the holes as they would with typical 0.062"-thick PCBs.



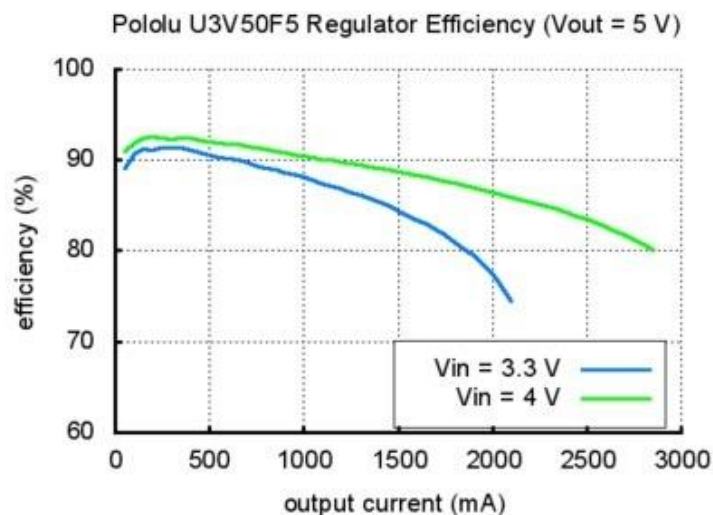
Pololu step-up voltage regulator U3V50x with included terminal blocks

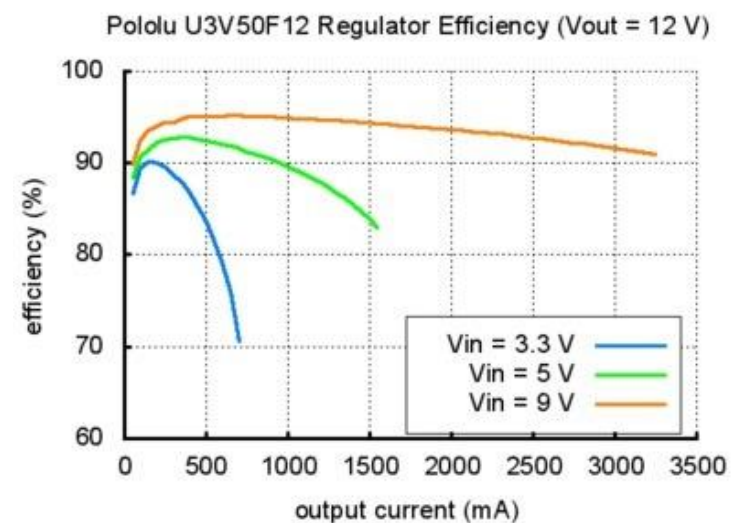
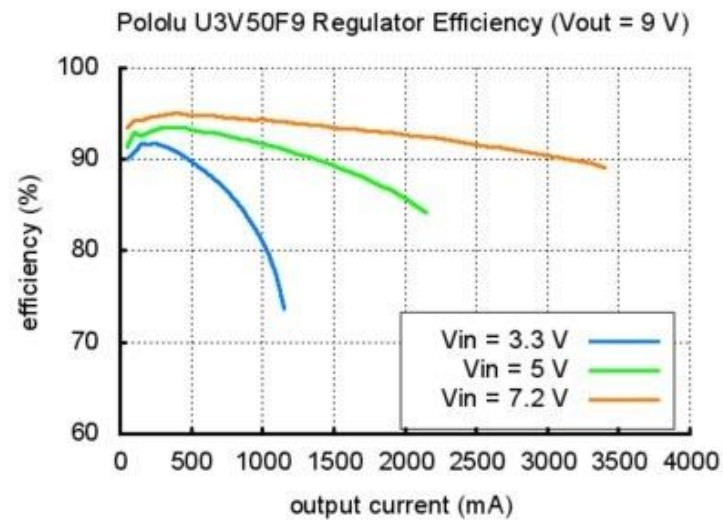
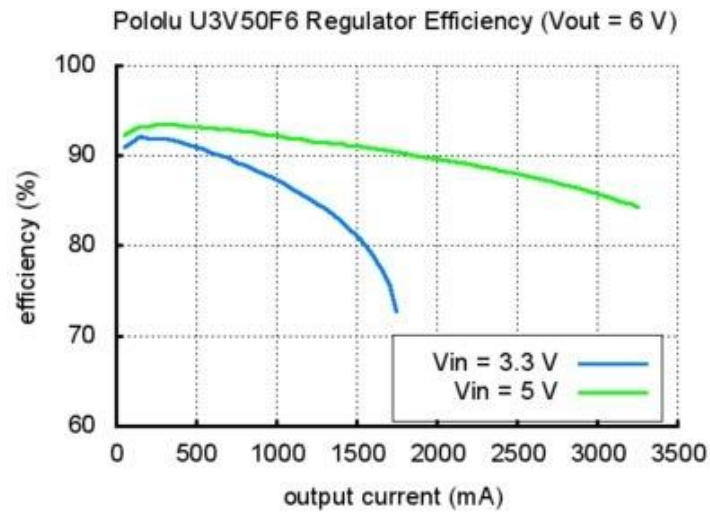
installed, side view.

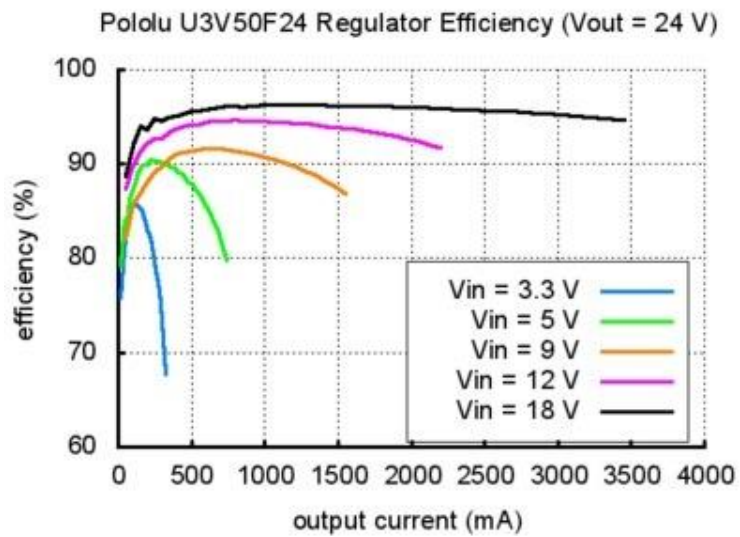
The board has two mounting holes intended for #2 or M2 screws. The mounting holes are at opposite corners of the board, separated by 1.7" horizontally and 0.4" vertically.

## TYPICAL EFFICIENCY AND OUTPUT CURRENT

The efficiency of a voltage regulator, defined as (Power out)/(Power in), is an important measure of its performance, especially when battery life or heat are concerns. As shown in the graphs below, these switching regulators have an efficiency of 80% to 95% for most combinations of input voltage, output voltage, and load.







The maximum achievable output current is approximately proportional to the ratio of the input voltage to the output voltage. If the *input* current exceeds the 5 A switch current limit, the output voltage will begin to drop. Additionally, the maximum output current can depend on other factors, including the ambient temperature, air flow, and heat sinking.

*During normal operation, this product can get hot enough to burn you. Take care when handling this product or other components connected to it.*