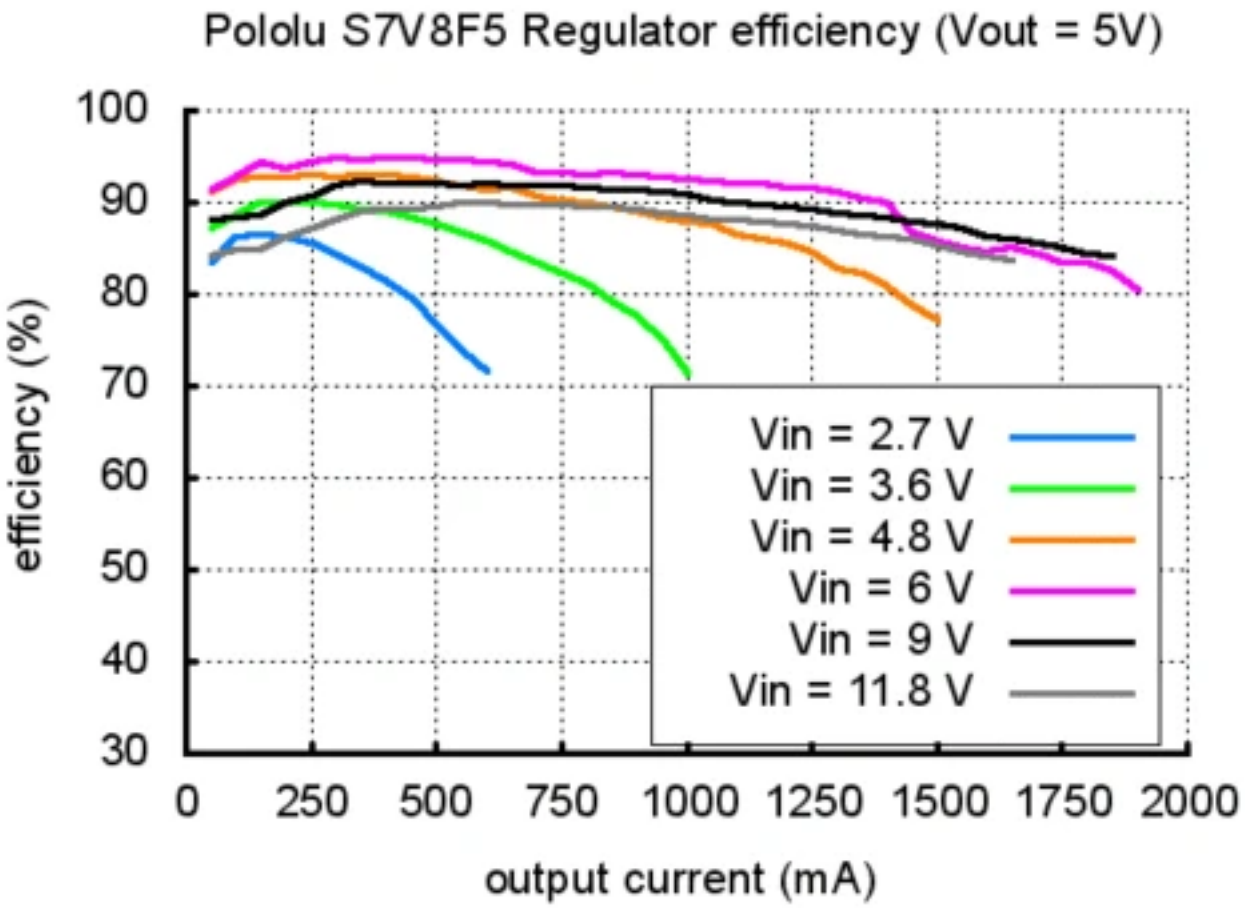
Pololu 5V Step-Up/Step-Down Voltage Regulator S7V8F5

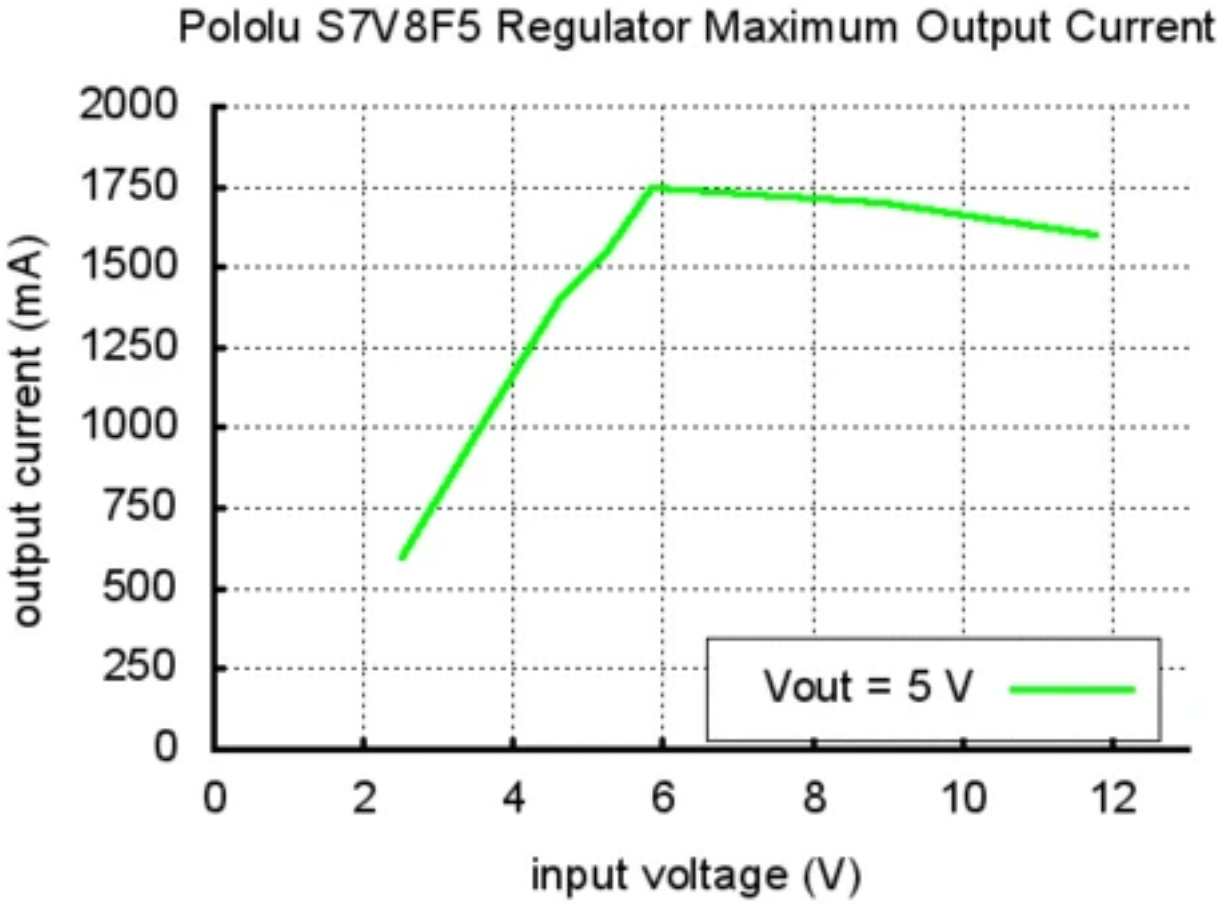
Typical Efficiency and Output Current

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 graph below, this switching regulator has an efficiency between 80% to 95% for most applications. A power-saving feature maintains these high efficiencies even when the regulator current is very low.



The maximum achievable output current of the board varies with the input voltage but also depends on other factors, including the ambient temperature, air flow, and heat sinking. The graph below shows output currents at which this voltage regulator's over-temperature protection typically kicks in after a few seconds. These

currents represent the limit of the regulator's capability and cannot be sustained for long periods, so the continuous currents that the regulator can provide are typically several hundred milliamps lower, and we recommend trying to draw no more than about 1 A from this regulator throughout its input voltage range.



LC Voltage Spikes

When connecting voltage to electronic circuits, the initial rush of current can cause voltage spikes that are much higher than the input voltage. If these spikes exceed the regulator's maximum voltage, the regulator can be destroyed. If you are connecting more than about 9 V, using power leads more than a few inches long, or using a power supply with high inductance, we recommend soldering a 33 µF or larger electrolytic capacitor close to the regulator between VIN and GND. The capacitor should be rated for at least 16 V.

More information about LC spikes can be found in our application note, **Understanding Destructive LC Voltage Spikes**.