



### General Description

The DE-SW0XX family of switch mode voltage regulators are designed to be the easiest possible way to add the benefits of switch-mode power to a new or existing project. The DE-SW0XX family is Pin-compatible with the common 78XX family of linear voltage regulators. They have integrated decoupling capacitors, so external capacitors are not generally necessary. Available voltages are 3.3, and 5 volts.

The DE-SW0XX family operates over a wide input voltage range, from (Vout+1.3V) to 30v, at up to one amp of continuous output current. Efficiencies are up to 87% (Figure 2) Ripple is less than 2% of output.

The DE-SW0XX family works on a breadboard, making it an ideal solution for prototyping and one-off circuits.

### Features

- Drop-in replacement for LM78XX
- Up to 30V input voltage
- 1.3V dropout voltage
- 3.3, 4.2 and 5V output voltages available
- 1A continuous output current
- Efficiency up to 87%
- Integrated bypass capacitors
- Integrated heat spreader
- Weights only 3.8g
- Can drive inductive loads

### Applications

- Battery powered applications
- Robots
- Servo power
- Small DC motors
- Lithium battery charging and maintenance
- Point of load voltage regulation
- Any application where a 78XX regulator is dissipating too much heat or a large heatsink is undesirable



## Typical Performance Characteristics

The device can be expected to perform as characterized within these parameters

Characteristic	Min	Typical	Max
Input voltage	Vout+1.3V		30V
Output Current (RMS) <sup>1</sup>	0A		1A
Pulsed Output Current (5 sec)			1.5A
Output Ripple	30mV	70mV	100mV
Efficiency (See Figure 2 and Figure 3)	65%	83%	87%
Transient response in load regulation (0-1A pulses, 1ms, Vp-p)		4%	
Power dissipation	100mW	800mW	1.2W
Power output in still air	0W		5W
Quiescent current draw (Vin = 12V)		16mA	
Thermal Derating in still air	See Figure 4		

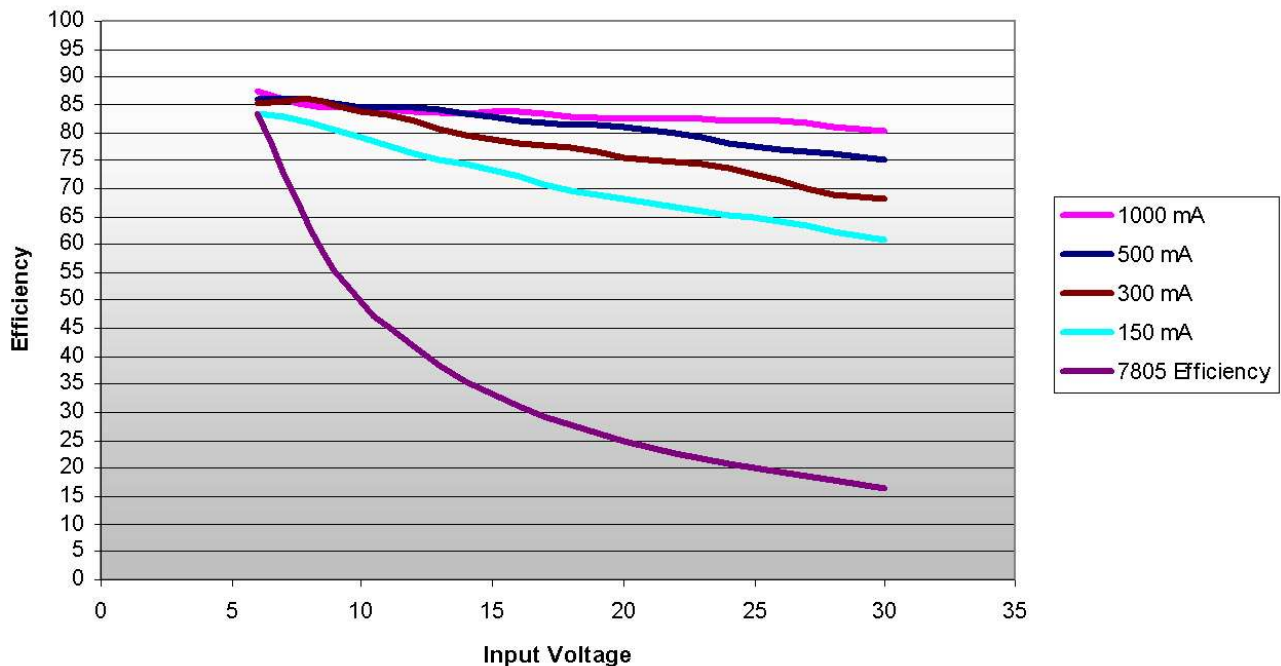
<sup>1</sup>For input voltages above 25V, an output current of at least 40mA is needed to maintain the regulated output voltage. This can be accomplished by adding a 1kΩ load resistor, or by simply connecting the load you wanted to use anyway.

## Absolute Maximum ratings

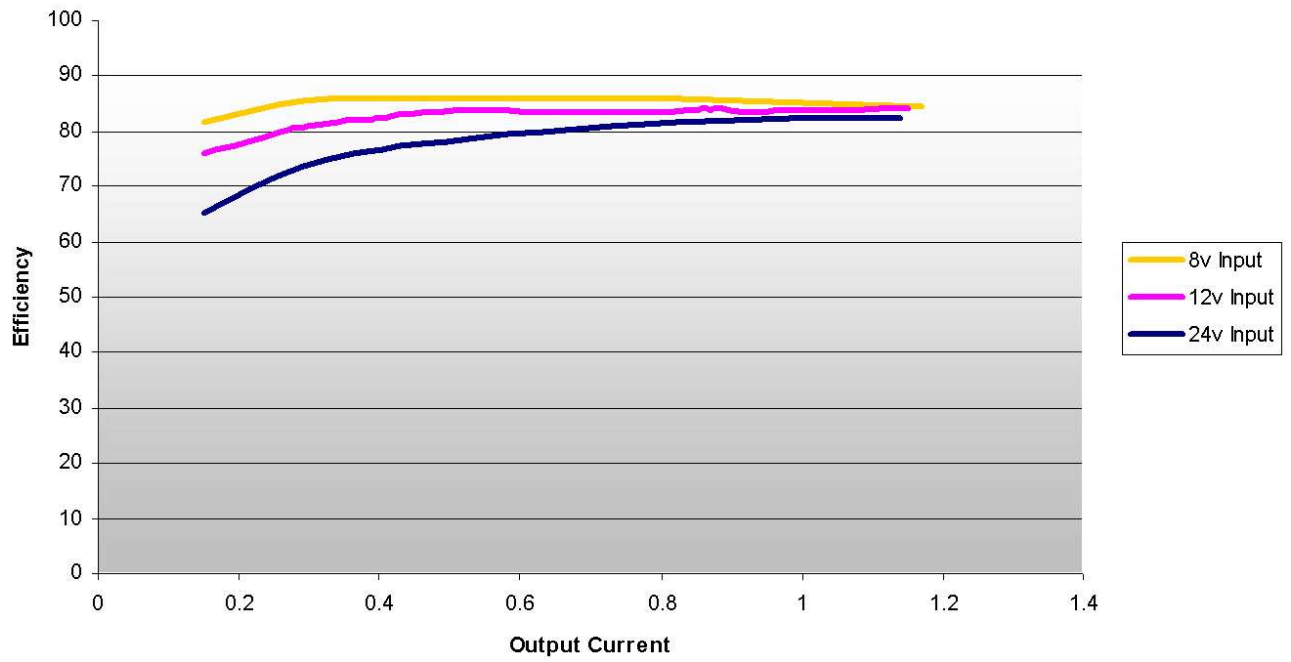
Operation beyond these parameters may permanently damage the device

Characteristic	Min	Max
Input voltage	0V	35v
Output Current	0A	1.5A
Power dissipation		1.5W
Ambient Temperature	-20C	70C

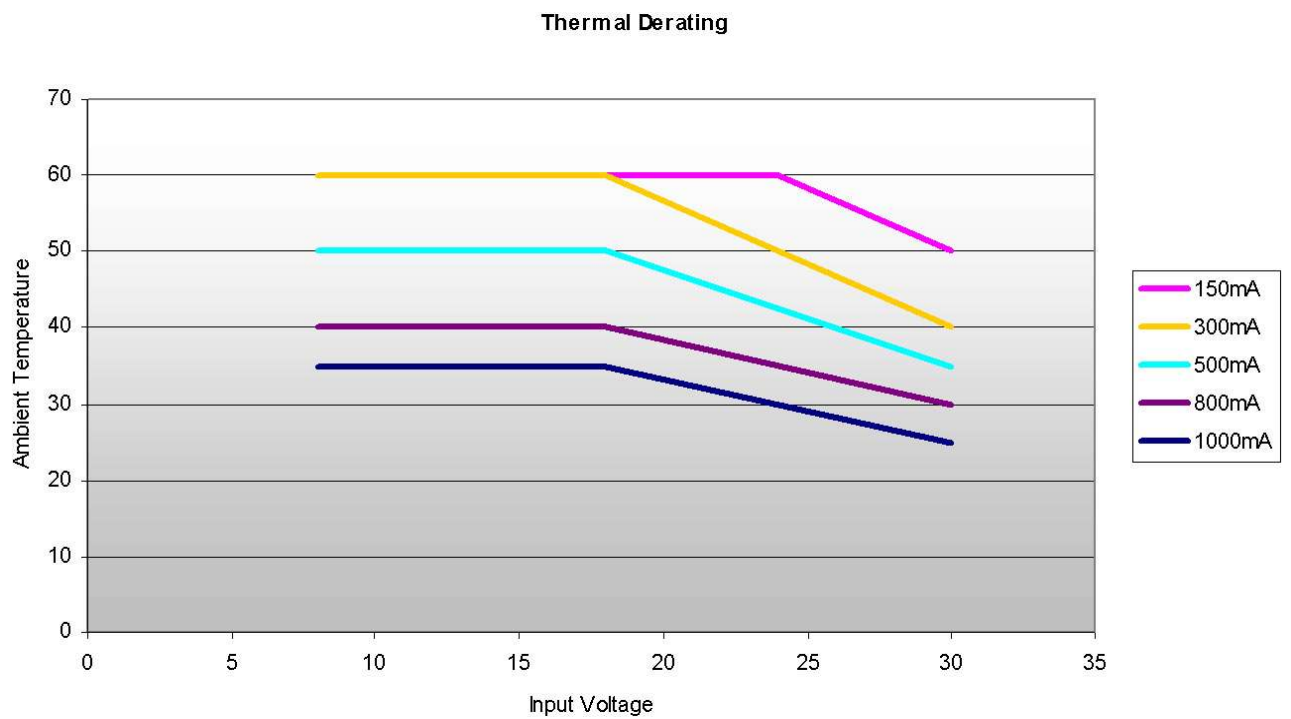
Figure 2: Efficiency vs. Input Voltage



**Figure 3: Efficiency vs. Output Current**

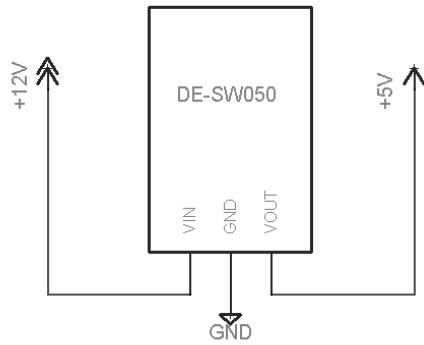


**Figure 4: Thermal Derating in Still Air**

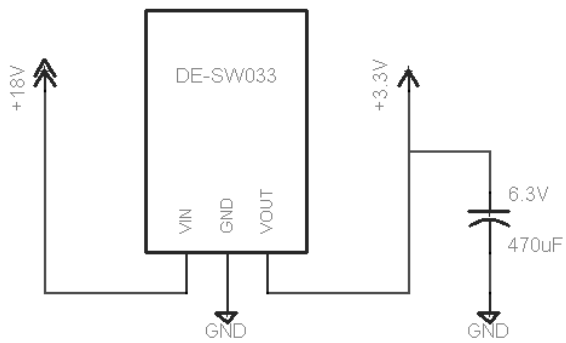


## Typical Applications

### General-purpose regulator



### Regulator for ripple sensitive devices



### Lithium battery maintenance charger

