

General Description

The AnyVolt3 is a miniature step up / step down switching DC-DC converter. The output is adjustable from 3 to 24V.

The output voltage is set with a small screw potentiometer on the side of the AnyVolt3. Once the output voltage is set, it does not matter whether the input voltage is higher, lower, or the same as the desired output.

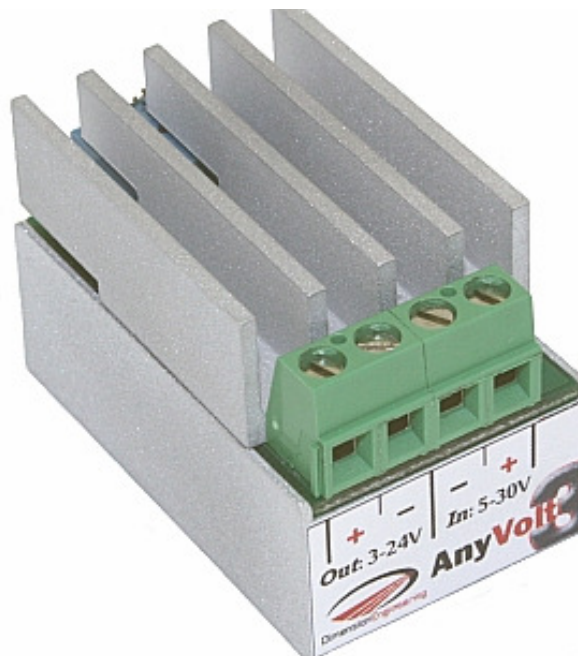
The AnyVolt3 uses four screw terminals and requires jumpers or stripped wires to operate.

Features

- 3V to 24V output voltage range
- 5V to 30V input voltage range
- 3A max input or output current
- <50mV typical ripple
- No external components needed
- 1.85" x 1.05" x 1.15" (46mm x 27mm x 29mm)
- Weights 46 grams
- Overcurrent protection
- Thermal protection

Applications

- Lab work and prototyping
- Powering audio amplifiers
- Driving multiple LEDs in series
- Backlit LCD drive
- Solar powered applications
- Remote video transmitters
- Battery powered applications
- Renewable energy source applications



Characteristic	Min	Typical	Max
Input Voltage	5V	5V to 30V	30V
Output Voltage	3V	3V to 24V	24V ¹
Continuous Input Current			3A
Continuous Output Current			3A
Output Ripple (Vp-p)		50mV	
Quiescent current draw		15mA	
Efficiency – Step-down	77%	87%	96%
Efficiency – Step-up	82%	85%	89%
Efficiency – Buffering	62%	84%	88%
Recommended ambient temperature range	-20°C	25°C	55°C ²

¹Max output varies with manufacturing processes.

²Ambient temperatures higher than room temperature will decrease the amount of current AnyVolt3 can handle. For optimal performance, mount AnyVolt3 in an open space with air flowing across it.

Adjusting the output voltage

With the adjustment screw facing you, turning it clockwise increases the voltage, similar to the volume control on a stereo system.

Current limits

Input and output current to/from the AnyVolt3 should be kept track of with a multimeter if you anticipate driving heavy loads.

Stepping up from a lower to a higher voltage means that there will be a higher current on the input than the output. For this reason, **ensure that both the input and output current limits of 3A aren't being exceeded.** If for some reason you cannot use a multimeter to monitor input current, you can implicitly derive the input current using the input voltage, output voltage, and output current.

Example:

The output of the AnyVolt3 in a certain project is 12V, and it is supplying a constant .99A. What will the input current be if I am powering the AnyVolt3 with a 5V supply?

“Power = Volts * Amps”

$$12V * .99A = 11.88W$$

So the power output is 11.88W.

“Output power / efficiency = Input power”

Looking at the efficiency curves of the AnyVolt3 datasheet, efficiency is 79.75% in this situation.

$$11.88W / 0.7975 = 14.90W$$

So the power going into the AnyVolt3 is 14.90W

“Power / Volts = Amps”

$$14.9W / 5V = 2.98A$$

So the current at the AnyVolt3's input is around 2.98A. This is within limits for now, but if the input voltage supply were to drop below 5V, the overcurrent condition would be reached.

Here is a table of max loads you can power with an AnyVolt3, depending on your input voltage.

5V in

Output Voltage (V)	3	6	9	12	15	18	21	24
Max current out (A)	3	1.75	1.27	.99	.81	.68	.59	.52

7V in

Output Voltage (V)	3	6	9	12	15	18	21	24
Max current out (A)	3	2.78	1.81	1.41	1.16	.98	.85	.75

9V in

Output Voltage (V)	3	6	9	12	15	18	21	24
Max current out (A)	3	3	2.11	1.83	1.52	1.28	1.11	.99

12V in

Output Voltage (V)	3	6	9	12	15	18	21	24
Max current out (A)	3	3	3	2.22	1.85	1.68	1.5	1.32

15V in

Output Voltage (V)	3	6	9	12	15	18	21	24
Max current out (A)	3	3	3	3	2.16	1.93	1.74	1.6

18V in

Output Voltage (V)	3	6	9	12	15	18	21	24
Max current out (A)	3	3	3	3	3	2.03	1.84	1.7

21V in

Output Voltage (V)	3	6	9	12	15	18	21	24
Max current out (A)	3	3	3	3	3	2.5	1.95	1.79

24V in

Output Voltage (V)	3	6	9	12	15	18	21	24
Max current out (A)	3	3	3	3	3	3	2.4	1.9

27V in

Output Voltage (V)	3	6	9	12	15	18	21	24
Max current out (A)	3	3	3	3	3	3	3	2.18

30V in

Output Voltage (V)	3	6	9	12	15	18	21	24
Max current out (A)	3	3	3	3	3	3	3	3

Overcurrent/overtemperature behavior

If the current limit has been considerably exceeded, or if the device is overheated to beyond 120°C the AnyVolt3 will cut output current entirely. We strongly recommend practicing good engineering techniques and not overloading the device beyond operating parameters.

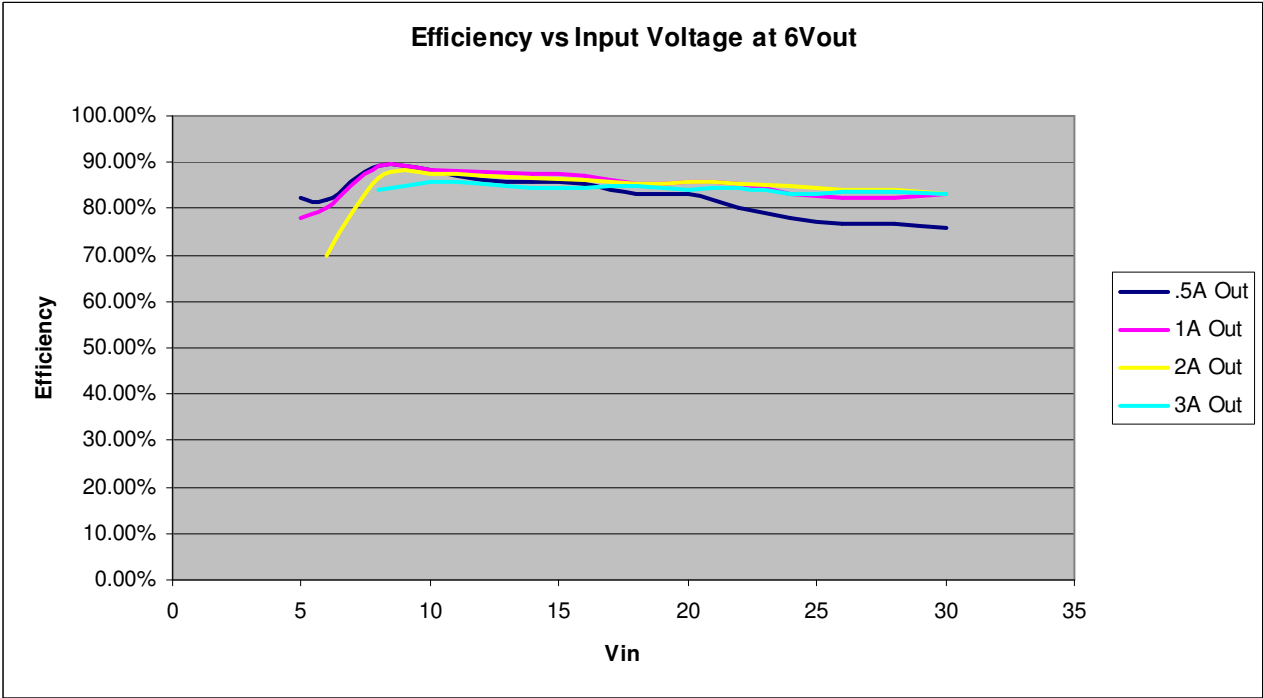
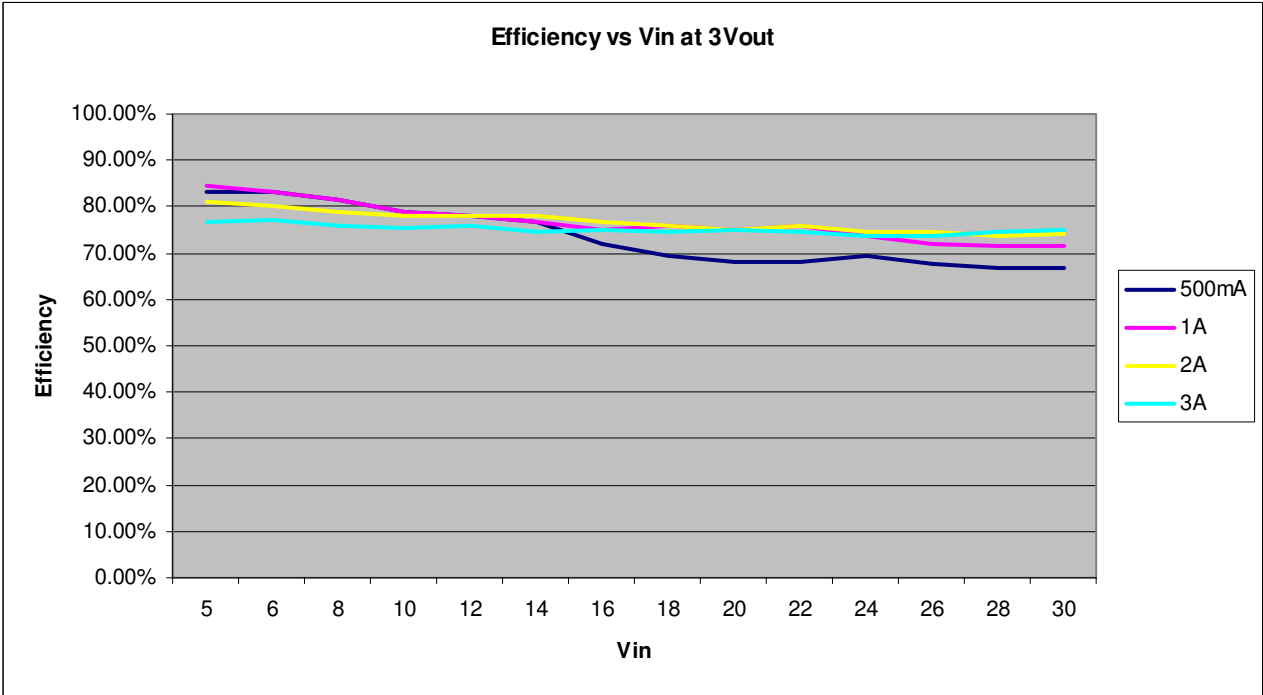
Additional notes

AnyVolt3 uses a 25 turn worm gear driven potentiometer and cannot wiggle loose. Do not apply glue to the voltage adjustment pot.

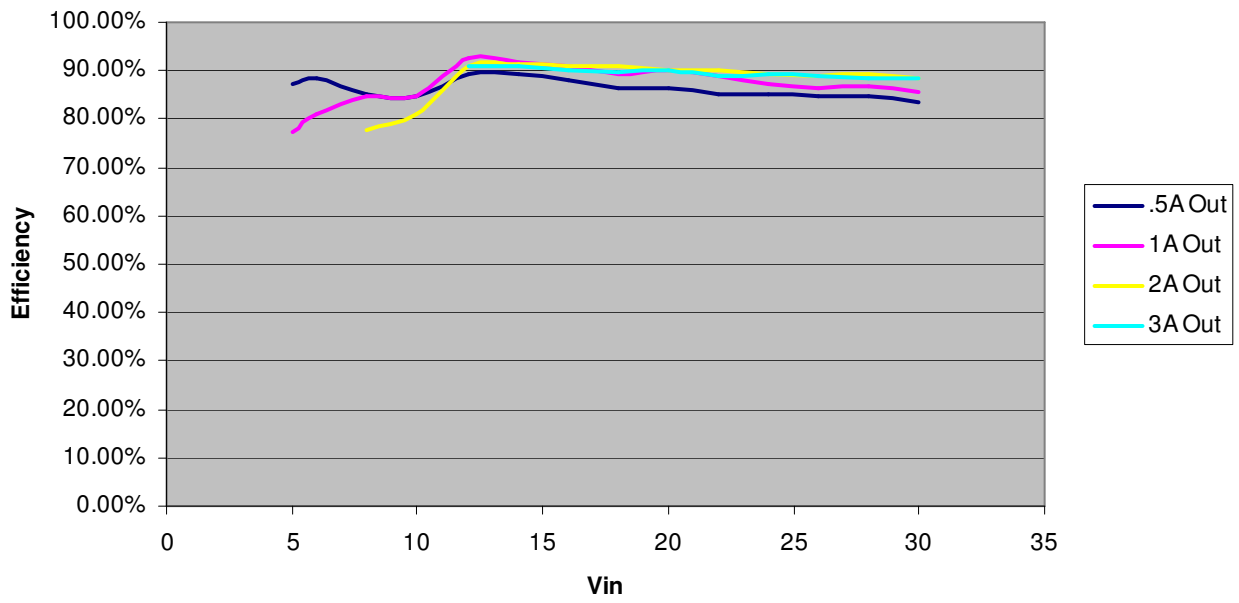
AnyVolt3 should be mounted at least 2 inches away from any circuitry that is sensitive to RF.

For best performance, mount AnyVolt3 in an open space with some air flowing across it to keep it cool.

Efficiency Curves



Input Voltage vs Efficiency at 9Vout



Efficiency vs Vin at 12Vout

