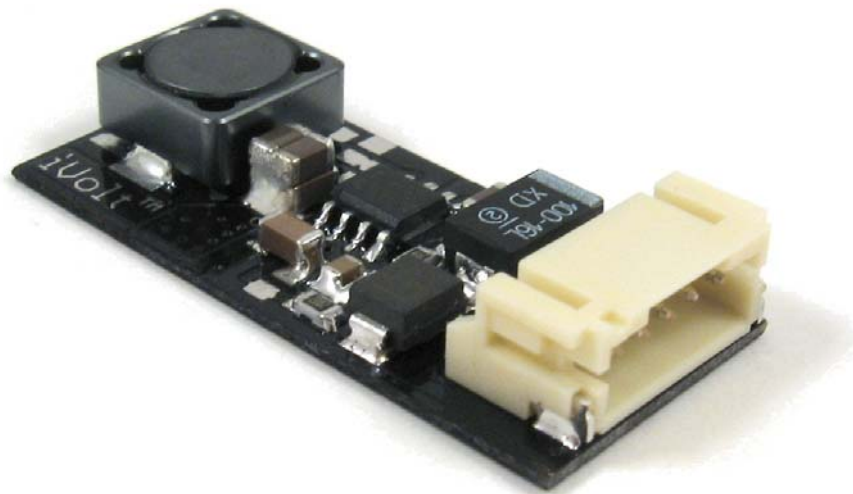


High Efficiency Voltage Converter

iVOLT-SD1
DC/DC Stepdown

Datasheet (preliminary)



Revision History

Revision	Change
V1.0	Initial version

Overview

The iVOLT modules provide scalable and small sized solutions for different mobile power supply requirements.

iVOLT-SD1 is an adjustable voltage converter module which provides the user with a high efficiency in a small size. It is a switch mode DC/DC stepdown converter and fits into applications where size and/or performance are high priority.

The characteristics of a step-down switch mode converter are:

- output voltage is lower than input voltage
- high energy efficiency, very low power dissipation in converter
- some remaining noise on output voltage (compared to linear regulator)

Features

In addition to the previous mentioned characteristics, iVOLT-SD1 provides the following features:

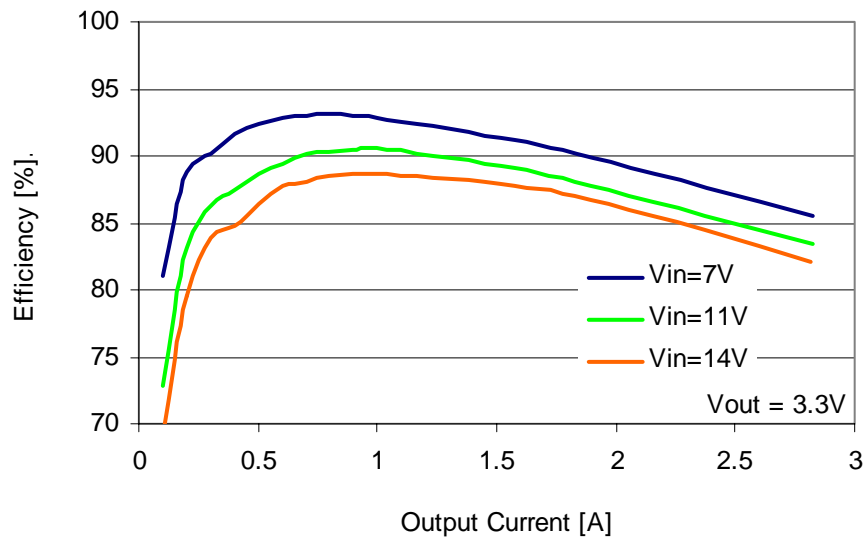
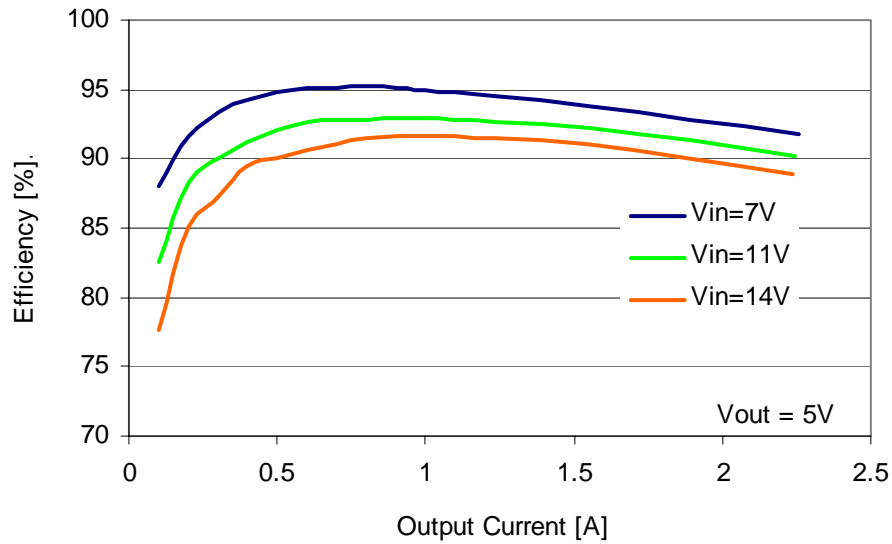
- small size
- low weight
- adjustable output voltage
- external enable/disable input
- low EMC radiation

Specifications

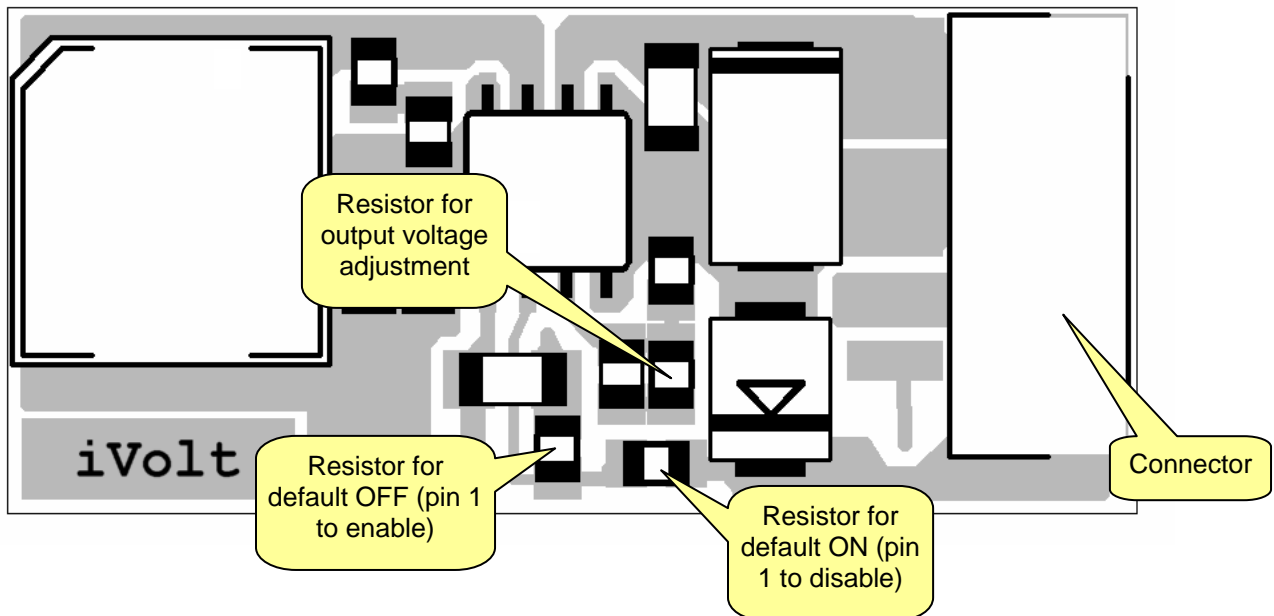
Input voltage range	2.5 to 14V
Output voltage	Adjustable from 0.8V to 85% input voltage
Output voltage accuracy	+/- 2%
Max. load current	3A
Standby current	Tbd
Enable threshold	Disable: <0.2V, enable: > 1.2V
Conversion efficiency	Up to 95% (see below)
Switch mode frequency	0.9 MHz
Temperature range	-40 to 85degC
Size	16 x 36 x 6mm (0.63 x 1.41 x 0.23 inch)
Weight	4g (0.14oz)

Efficiency

The conversion efficiency was measured with typical mobile application input voltages (2x LiPo cells = 7V; 3x LiPo cell = 11V) as well as the maximum input voltage (14V). No special tuned module was used. The results should be considered as nominal values.

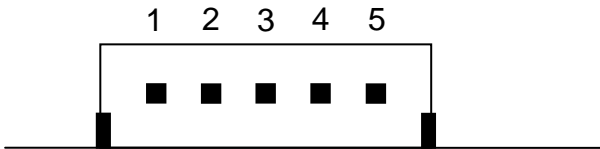


Board Layout



Interface Connector Pin-Out

Connector front view:



Pin	Signal
1	Enable/disable input (default setting is enabled)
2	Output voltage
3	Ground
4	Ground
5	Input voltage



Please keep in mind that a reverse polarity connection will damage the converter immediately.

Output Voltage Adjustment

The output voltage is adjusted using resistor R1 on the board. Replacing this resistor with an other value will adjust the output voltage. Please keep in mind that the step-down converter can only supply output voltages lower than the input voltage.

The value of the resistor is determined with the following formula:

$$R1 = 20k \cdot \left(\frac{V_{\text{output}} - 0.8}{0.8} \right)$$

This look-up table will give you a quick result for typical output voltages:

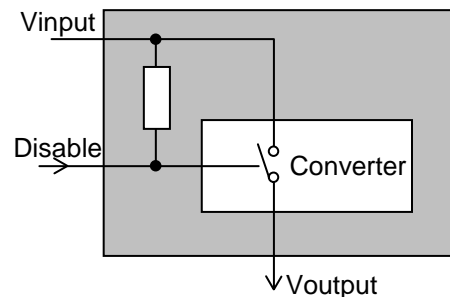
Output voltage	Resistor value
3.3V	62.5k
5V	105k

Enable/Disable Input

The module can be set to a default mode where the regulator is enabled or disabled. This is essentially a 10k-40k resistor as shown in the board layout. With the external input pin 1 the module can then be controlled into the opposite state.

a) Default Enabled

Without an external control, the Enable signal will be pulled high internally allowing the converter to work. If the Enable signal is pulled low externally, the converter stops working and goes into standby mode.



b) Default Disabled

The Enable signal is pulled to ground internally. This keeps the converter in standby mode. If the Enable signal is externally switched high the converter starts working.

