

DC419A – LTC1779 Constant Frequency Step-Down Converter

Description

Demonstration Circuit DC419A is a 550kHz 250mA step-down DC/DC switching converter using the LTC1779. With its internal power switch and ThinSOT package, the LTC1779 makes a very compact and low-parts-count DC/DC converter. The 550kHz switching frequency allows all of the components to be small, surface mount devices. The current-mode control topology creates fast transient response and good loop stability with a minimum number of external compensation components. The 100% duty cycle feature provides very low dropout voltages and high efficiency. The 8uA shutdown current extends battery life. The wide V_{in} range of the LTC1779 allows step-down configurations from 2.5V_{in} up to 9.8V_{in}.

Demonstration Circuit DC419A is a step-down converter using the LTC1779. The circuit is designed for a single or dual Lithium-Ion battery input to 1.8V output at 250mA for portable electronics. This board was designed for low power, hand-held applications where small circuit size and low component count are important. The external sense resistor is set to reduce the short circuit current limit between 260mA and 300mA over the input voltage ranges of 2.7V to 4.2V for single Li-Ion batteries and 5.4V to 8.4V for dual. The components built on the board are optimized for single Li-Ion battery applications, but can be simply adjusted for dual or higher input voltages up to 9.8V_{in} and down to 2.5V_{in}.

Typical Performance Summary ($T_A = 25^\circ\text{C}$)

Step-Down Converter

V_{in}	2.7 to 4.2V
V_{out}	1.8V
I_{out}	250mA(max)
Eff.	up to 85% at 250mA and up to 91% at 100mA output
Short Circuit	up to 270mA output current

Quick Start Guide

Refer to Figure 1 for proper measurement equipment setup and follow the procedure outlined below:

1. Connect the 2.7 to 4.2V input power supply to the V_{in} and Gnd terminals on the board.
2. Connect an ammeter in series with the input supply to measure input current.
3. Connect either power resistors or an electronic load to the V_{out} and Gnd terminals on the board.
4. Connect an ammeter in series with output load to measure output current.

5. Connect a voltmeter across the Vin and Gnd terminals to measure input voltage.
6. Connect a voltmeter across the Vout and Gnd terminal to measure output voltage.
7. After all connections are made, turn on input power and verify that the output voltage is 1.8V.

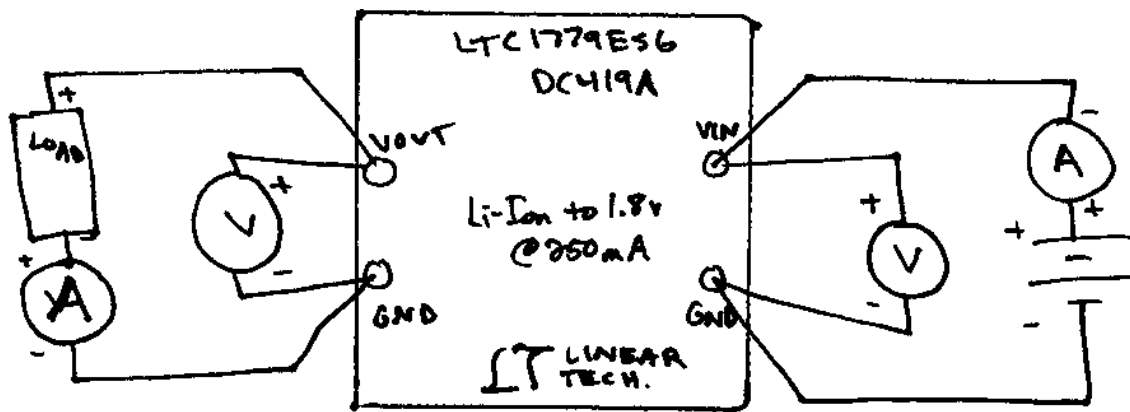


Figure 1... Quick Start connections for DC419A.

