

DC289 Introduction

Description

Demonstration Circuit DC289 is a step-down (buck) regulator using the LTC[®]1701. The combination of the LTC1701's tiny SOT-23 package and high switching frequency results in a highly efficient application in a small board space. It is ideal for cell phones and other portable electronics operating from one Li-Ion cell or three to four NiCd or NiMH cells. DC289 operates from a 2.5 to 5.5V input voltage range and is capable of providing 0.5A with a jumper-selectable output voltage of 1.5/2.5/3.3V-ADJ.

This board highlights the capabilities of the LTC1701, which uses a current mode, constant off-time architecture to control an internal P-channel power MOSFET at about 1MHz. This high performance power supply occupies less than 0.3 square inches and has low output voltage ripple and fast transient response.

At low output currents, the LTC1701 automatically switches to Burst Mode[™] operation to maintain high operating efficiencies by minimizing supply current. The part can be shut down by pulling the I_{TH}/RUN pin low, further reducing the supply current to less than 1μA.

In dropout, the P-channel MOSFET is turned on continuously (100% duty cycle), providing low dropout operation with $V_{OUT} \cong V_{IN}$, thereby maximizing battery life.

Quick Start Guide

Demonstration Board DC289 is easy to set up for evaluation of the LTC1701. Please follow the procedure below for proper operation:

1. Move jumper JP1 to the appropriate position for the required output voltage. For voltages other than the preset value, make sure you install the calculated resistor at the pad provided for R7.
2. To shut down the circuit, connect the I_{TH}/RUN terminal to ground. When the part is not shut down, be careful not to add excessive capacitance to the I_{TH}/RUN pin, since it affects the transient response.
3. Connect the input power supply to the V_{IN} and GND terminals.
4. Connect the load between the V_{OUT} and GND terminals. Refer to the connection diagram (Figure 1) for proper measurement equipment setup.

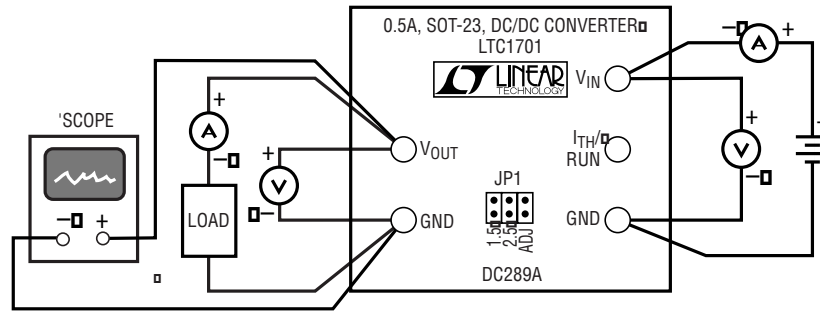


Figure 1. DC289A Connection Diagram