

Demo Board DC409 Quick Start Guide

The LTC3402 is a high efficiency, step-up DC/DC converter that starts up from an input voltage as low as 1V. Once it starts up, the LTC3402 is supplied from the output voltage and the input voltage can go well below 1V. The device includes a 0.16 Ω N-channel MOSFET and a 0.18 Ω P-channel synchronous rectifier, which give higher than 90% efficiency in many applications. Switching frequencies are programmed with an external resistor and can also be synchronized to an external clock.

Demonstration Circuit DC409 demonstrates a 600kHz converter that achieves a useful balance of efficiency and size. The output voltage of this circuit is jumper selectable between 3.3V and 5V. (This demo board ships with the output set to 5V. To change the output to 3.3V, remove jumper JP2.)

Performance Summary

Available power for this circuit depends on input and output voltages. The following table shows Maximum load current for several input-output conditions.

Parameter	Condition	Value
Maximum Load Current	$V_{OUT} = 3.3V, V_{IN} = 2.0V$	850mA
	$V_{OUT} = 5.0V, V_{IN} = 2.0V$	550mA
	$V_{OUT} = 5.0V, V_{IN} = 2.7V$	800mA

Quick start guide

Refer to Figure 1 for proper measurement equipment setup and Figure 2 for the proper ripple measurement technique. Then, follow this procedure:

1. Apply a voltage source to the input of the circuit between the V_{IN} and GND terminals. The circuit will start up with an input voltage higher than 1V. Do not apply more than 5V to the input. Note that the boost circuit will regulate the output only when the input voltage is less than the desired output voltage.
2. Attach a voltmeter or oscilloscope probe between the V_{OUT} and GND terminals of the circuit to monitor the output.
3. Attach a load to the output.

The available output power depends on the input and output voltages. Please refer to the performance summary above for maximum current at different inputs and outputs.

4. The MODE pin (jumper JP1) controls the operating modes of the LTC3402 circuit. When open, it runs in Burst Mode. The peak inductor current rises to one third of the 2A current limit and returns to zero before the end of each cycle. When connected to GND, it maintains low noise, constant frequency operation. This pin can also be used to synchronize to an external clock, which also disables Burst Mode.

To shutdown the LTC3402, short SHDN to GND on jumper JP1.

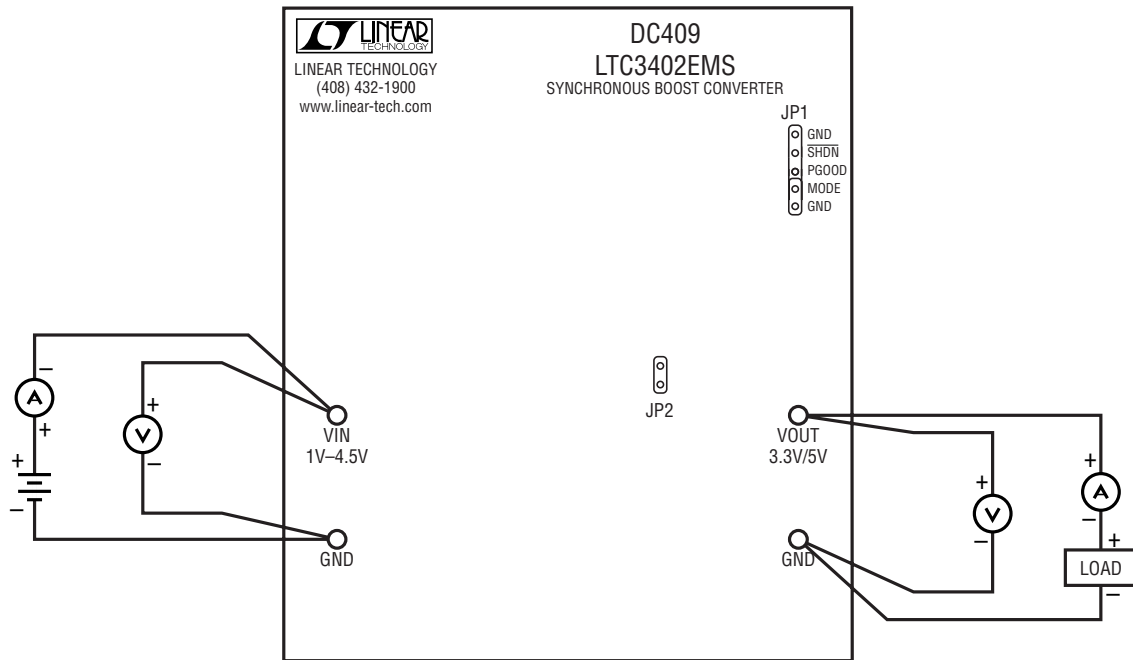


Figure 1. Proper Measurement Equipment Setup

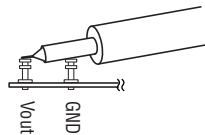


Figure 2. Scope Probe Placement for Measuring Output Ripple