

# QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 1014

## LOW INPUT VOLTAGE SYNCHRONOUS STEP-DOWN CONVERTER


### LTC3822EMSE

## DESCRIPTION

Demonstration circuit 1014A is a high efficiency synchronous step-down DC/DC converter featuring the LTC3822EMSE controller. The demo board is capable of providing 1.8V/10A from 2.75V to 4.5V input. The constant frequency current mode architecture with MOSFET  $V_{DS}$  sensing eliminates the need for a sense resistor and improves efficiency. The maximum peak current sense threshold can be easily selected with IPRG pin.

Switching frequency can be selected with JP1 to 300KHz, 550KHz or 750KHz.

**Design files for this circuit board are available. Call the LTC factory.**

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**Table 1. Performance Summary ( $T_A = 25^\circ\text{C}$ )**

PARAMETER	CONDITION	VALUE
Input Voltage Range		2.75V to 4.5V
$V_{OUT}$	$V_{IN} = 2.75\text{-}4.5\text{V}$ , $I_{OUT} = 0\text{A to } 10\text{A}$	1.8V $\pm 2\%$
Maximum load current $I_{OUT}$	$V_{IN} = 2.75\text{-}4.5\text{V}$ , $V_{OUT} = 1.8\text{V}$	10A
Typical Output Ripple Voltage	$V_{IN} = 3.3\text{V}$ , $I_{OUT} = 5\text{A}$ , $F_s = 550\text{KHz}$ (20MHz BW)	10mV <sub>P-P</sub>

## QUICK START PROCEDURE

Demonstration circuit 1014A is easy to set up to evaluate the performance of LTC3822. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below: (Initial jumper position JP1: 550KHz)

**NOTE:** When measuring the input or output voltage ripple, care must be taken to avoid a long ground lead on the oscilloscope probe. Measure the input or output voltage ripple by touching the probe tip directly across the  $V_{in}$  or  $V_{out}$  and GND terminals. See Figure 2 for proper scope probe technique.

1. With power off, connect the input power supply to  $V_{in}$  (2.75V-4.5V) and GND (input return).
2. Connect the 1.8V load between  $V_{out}$  and GND (Initial load: 0 A).

3. Connect the DVMs to the input and output.
4. Turn on the input power supply and check for the proper output voltage.  $V_{out}$  should be 1.8V $\pm 2\%$ .
5. Once the proper output voltage is established, adjust the load within the operating range and observe the output voltage regulation, ripple voltage and other parameters.

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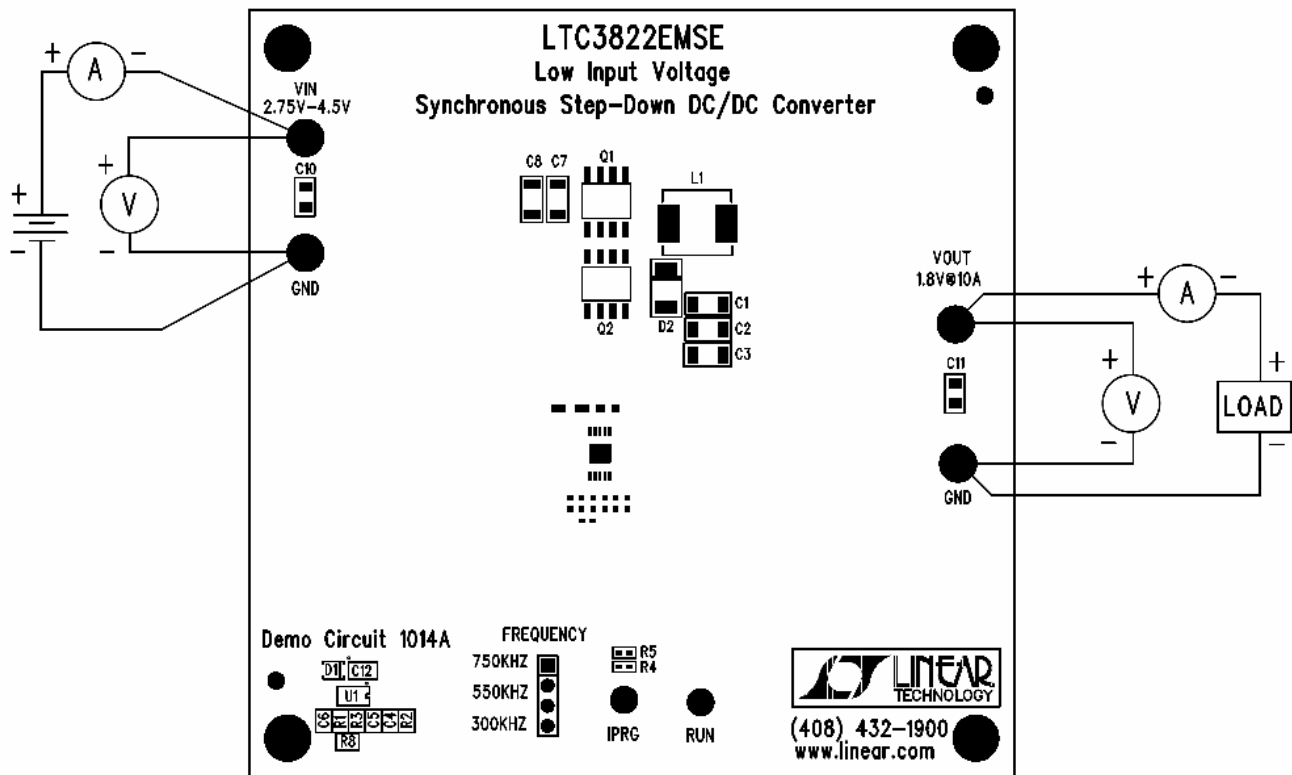


Figure 1. Proper Measurement Equipment Setup

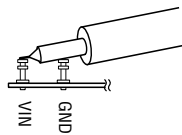


Figure 2. Measuring Input or Output Ripple

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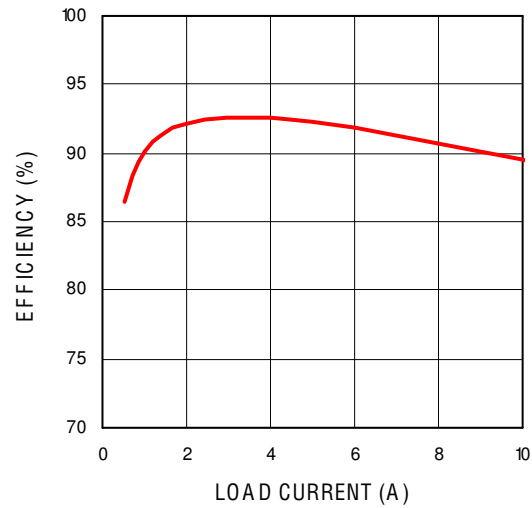


Figure 3. Efficiency vs load current ( $V_{in}=3.3V$ , 550KHz)

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