

## DESCRIPTION


Demonstration circuit 967B is a single output high frequency step-down DC/DC converter featuring the low quiescent current LTC3835 in a 20-pin FE package. The DC967B is designed to generate a regulated 3.3V@5A output from 4.5V to 36V input voltage.

The demo board allows low dropout operation when input voltage is close to the output voltage to maximize battery usage. The selectable burst mode operation reduces the IC supply current at light loads to extend the battery life. The phase-lockable frequency and clock-out signals allow interleaving operation of multiple supplies in parallel for high output current applications. The output voltage of the LTC3835 can track an external

ramp voltage during power-up and power-down. Also, the built-in current foldback prevents MOSFET overheating during short-circuit and the ExtVcc option reduces the IC power loss with an external bias voltage.

All these features make the circuit an ideal solution for applications in automotive and battery-operated systems, telecom and distributed DC power systems.

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

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**Table 1. Performance Summary (T<sub>A</sub> = 25°C)**

PARAMETER	CONDITION	MINIMUM	TYPICAL	MAXIMUM
Input Voltage Range		4.5V		36V
Maximum Output Current	4.5V < V <sub>IN</sub> < 36V		5A	
Output Voltage V <sub>OUT</sub>	0A < I <sub>OUT</sub> < 5A	3.234V	3.3V	3.366V
Output Ripple V <sub>OUT</sub>	I <sub>OUT</sub> = 5A (20MHz BW) V <sub>IN</sub> = 36V, F <sub>SW</sub> = 400kHz			36mV <sub>p-p</sub>
Nominal Switching Frequency			400kHz	
Efficiency	V <sub>IN</sub> = 14V, I <sub>OUT</sub> = 3.5A, 400kHz Switching Frequency		91.5%	

## QUICK START PROCEDURE

Demonstration circuit 967B is easy to set up to evaluate the performance of the LTC3835EFE. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below:

**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 Vin or Vout and GND terminals. See Figure 2 for proper scope probe technique.

**NOTE:**

1. Place VOUT in OFF position, the FREQUENCY jumper at the selected frequency and the MODE jumper JP2 in desired Mode (Burst, CCM or DCM) position. Table 2 shows the default setting for DC967B.

# QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 967B

## SINGLE 5A HIGH FREQUENCY STEP-DOWN DC/DC CONVERTER

JP1 FREQUENCY	JP2 MODE	JP3 CLKOUT	JP4 VOUT	JP5 TRACK/SS
400kHz	BURST	90°	ON	SS

Table 2. Default Jumper Settings

2. With power off, connect a 4.5V-36V, 6A power supply to VIN and GND.
3. Connect a load to VOUT and GND (maximum load is 5A).
4. Move the VOUT jumper to ON position.
5. Turn on the power at the input.

**NOTE:** Make sure that the input voltage is above 4.5V, but does not exceed 36V.

6. Check for the proper output voltage. Vout should measure 3.3V (could vary from 3.234V to 3.366V).

**NOTE:** If there is no output, temporarily disconnect the load to make sure that the load is not set too high.

7. Once the proper output voltage is established, adjust the load within the operating range and observe the output voltage regulation, ripple voltage, efficiency and other parameters.

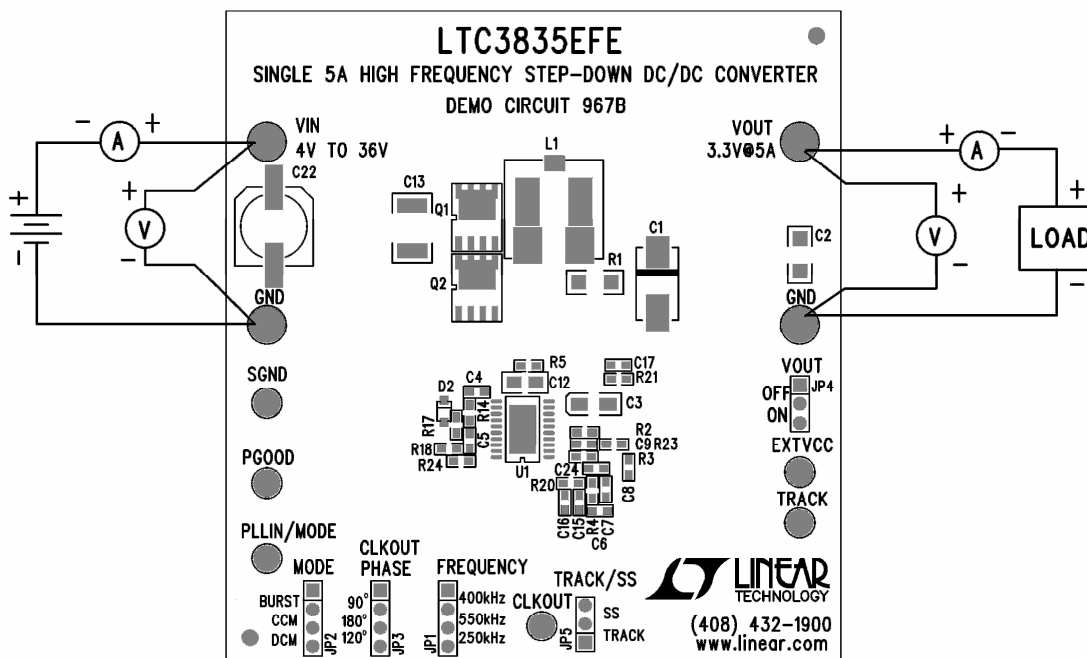


Figure 1. Proper Measurement Equipment Setup

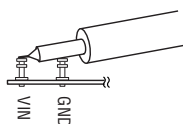


Figure 2. Measuring Input or Output Ripple

