

QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 965A

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

LTC3835EGN-1

DESCRIPTION

Demonstration circuit 965A is a single output high frequency step-down DC/DC converter featuring the low quiescent current LTC®3835 in a 16-pin GN package. The DC965A is programmed to generate a regulated 3.3V@5A output from a 4.5V to 36V input voltage.

To maximize battery usage, the demo circuit allows low dropout operation when the input voltage is close to the output voltage. Its selectable burst mode operation reduces the IC supply current at light loads to extend battery life. The phase-lockable frequency allows the LTC3835 to be synchronized by an external signal. The output voltage of the LTC3835 can track

an external ramp voltage signal during power-up and power-down. Also, the built-in current foldback prevents the overheating of output MOSFETs during short-circuit.

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

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	MINIMUM	TYPICAL	MAXIMUM
Input Voltage Range		4.5V		36V
Maximum Output Current	$4.5\text{V} < V_{IN} < 36\text{V}$		5A	
Output Voltage V_{OUT}	$0\text{A} < I_{OUT} < 5\text{A}$	3.234V	3.3V	3.366V
Output Ripple V_{OUT}	$I_{OUT} = 5\text{A}$ (20MHz BW) $V_{IN} = 36\text{V}$, $F_{SW} = 400\text{kHz}$			36mV _{p-p}
Nominal Switching Frequency			400kHz	
Efficiency	$V_{IN} = 14\text{V}$, $I_{OUT} = 3.5\text{A}$, 400kHz Switching Frequency		91.5%	

QUICK START PROCEDURE

Demonstration circuit 965A is easy to set up to evaluate the performance of the LTC3835EGN-1. 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 V_{in} or V_{out} and GND terminals. See Figure 2 for proper scope probe technique.

1. Place VOUT jumper in the OFF position, the PLLPF jumper (JP2) at the selected frequency and the

MODE jumper (JP3) in desired Mode (Burst, CCM or DCM) position. Table 2 shows the default setting for DC965A.

JP1 TRACK/SS	JP2 PLLPF	JP3 MODE	JP4 V_{OUT}
SS	400kHz	DCM	ON

Table 2. Default Jumper Settings

2. With power off, connect a 4.5V-36V, 6A power supply to V_{IN} and GND.

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3. Connect a load to VOUT and GND (maximum load is 5A).
4. Move the VOUT jumper to the 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 proper output voltages. 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 proper output voltages are established, adjust the load within the operating range and observe the output voltage regulation, ripple voltage, efficiency and other parameters.

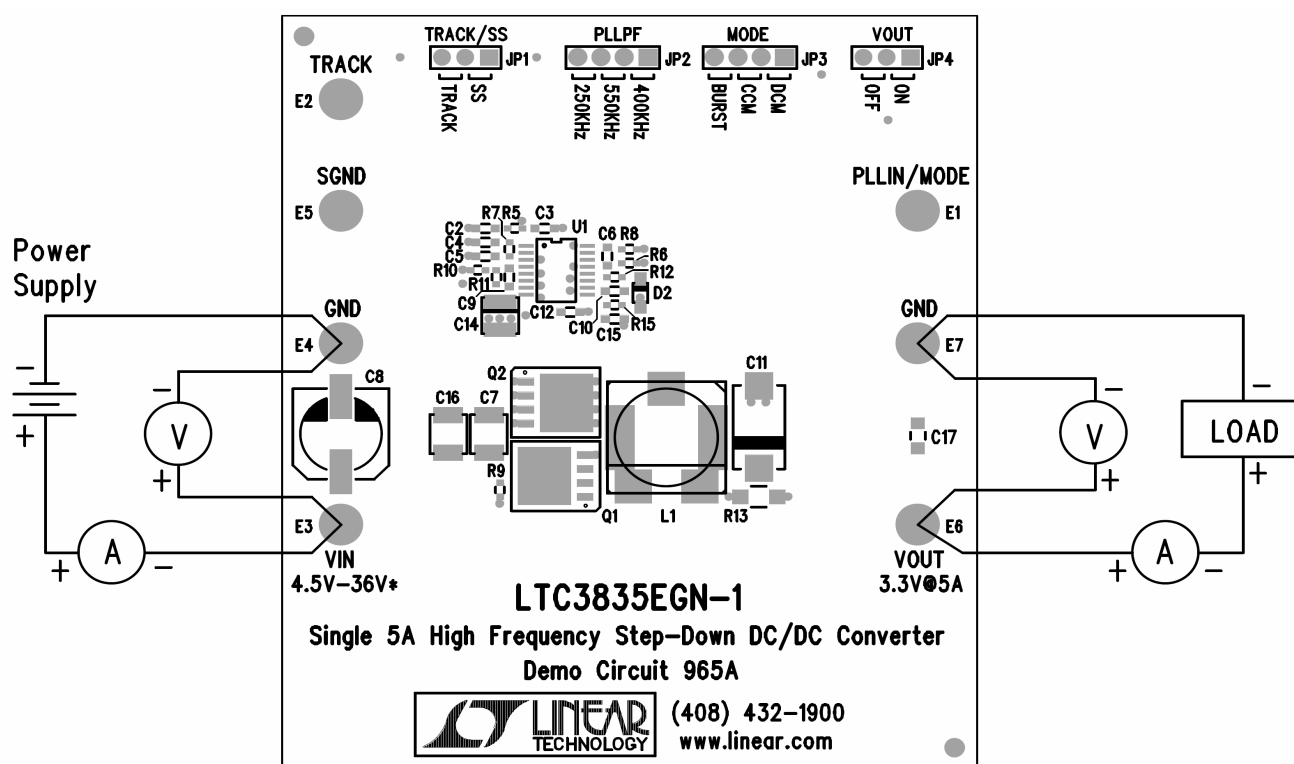


Figure 1. Proper Measurement Equipment Setup

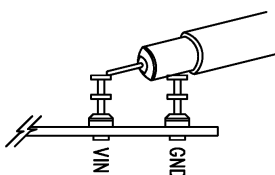


Figure 2. Measuring Input or Output Ripple

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