

## DESCRIPTION

Demonstration circuit 765 is a general purpose assembly containing 1MHz, positive and negative converters featuring the LT3479. The demo circuit demonstrates small size and low component count in a Boost Circuit and an Inverting Circuit. The Boost Converter is set up to convert a 2.5V-4.2V input to 7V output at 300mA constant current to drive two LXHL-PW09 LUMILEDs but can be easily configured to run as a general purpose boost providing 7V at 600mA (See instructions on the schematic). The Inverting Circuit generates a -5V output at 600mA from an input of 2.5V to 12V. The boost circuit was designed to demonstrate the ability to drive high power LEDs with

a constant current and a minimum sense resistor power loss. Both circuits demonstrate the capacitor programmable Soft-Start feature, advantages of the 1MHz constant switching frequency and the internal 42V switches. Both outputs on this demo circuit can be modified for higher voltages. These circuits are intended for space-conscious applications such as high power LED drivers, DSL modems and Distributed Power.

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

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

PARAMETERS FOR BOOST CIRCUIT (USED AS GENERAL PURPOSE BOOST)	CONDITION	VALUE
Minimum Input Voltage		2.5V
Maximum Input Voltage		4.2V
Output Voltage $V_{OUT}$	$V_{IN} = 2.5\text{V to } 4.2\text{V}$ (Powering LUMILEDs)	6V to 7.5V
Typical efficiency	$V_{IN} = 3.3\text{V}$ , $V_{out} = 7\text{V}@300\text{mA}$ (Powering LUMILEDs)	83%
Typical efficiency as regular Boost converter	$V_{IN} = 3.3\text{V}$ , $V_{out} = 7\text{V}@600\text{mA}$	85%
Typical Output Ripple $V_{OUT}$ as regular Boost converter	$V_{IN} = 3.3\text{V}$ , $V_{out} = 7\text{V}@600\text{mA}$	60mV
PARAMETERS FOR INVERTING CIRCUIT		VALUE
Output Voltage $V_{OUT}$	$V_{IN} = 2.5\text{V}$ , $I_{OUT} = 0-600\text{mA}$	-5V $\pm 3\%$
Output Voltage $V_{OUT}$	$V_{IN} = 12\text{V}$ , $I_{OUT} = 0-600\text{mA}$	-5V $\pm 3\%$
Typical Output Ripple $V_{OUT}$	$V_{IN} = 3.3\text{V}$ , $I_{OUT} = 600\text{mA}$	10mV <sub>P-P</sub>
Typical efficiency	$V_{IN} = 7\text{V}$ , $V_{out} = -5\text{V}@600\text{mA}$	74%

Input capacitors C16 and C17 used only for operation with long inductive input leads.

## QUICK START PROCEDURE

Demonstration circuit 765 is easy to set up to evaluate the performance of the LT3479. 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 1 for proper scope probe technique.

**1. For Boost converter circuit:** Place jumper in the following position:

**JP1**    On

2. With power off, connect the input power supply to VIN and GND.
3. Before applying power place a shield on top of D2 and D3 and avoid looking directly at the light.

**4.** Check for the proper output voltages. VOUT will change between 6V and 7.5V, depending on the forward voltage of the LUMILEDs D2 and D3.

**NOTE:** If there is no output, there will be no light. Make sure that the unit is properly hooked up.

**5.** Once the proper output voltages are established, vary the input voltage within the operating range and observe the output voltage regulation, ripple voltage, efficiency and other parameters.

**6. For Inverter circuit:** Place jumper in the following position, and repeat tests 2 to 5.

**JP2**    On

7. Apply input voltage and monitor the output.
8. Once the proper output voltages are established, adjust the input and load within the operating range and observe the output voltage regulation, ripple voltage, efficiency and other parameters.

# QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 765

## GENERAL PURPOSE POSITIVE/NEGATIVE CONVERTERS

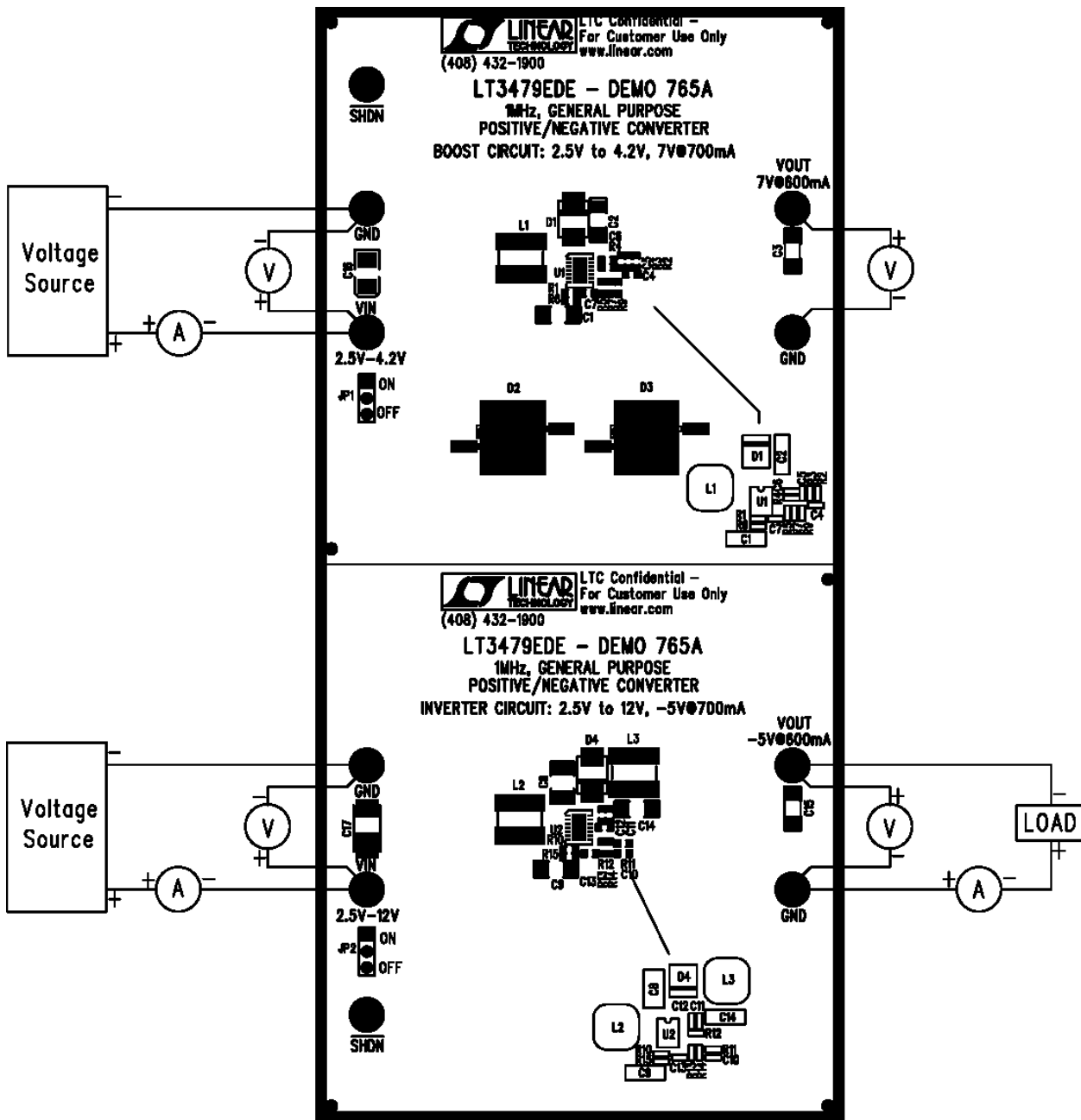


Figure 1. Proper Measurement Equipment Setup

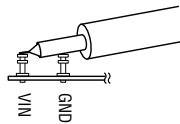


Figure 2. Measuring Input or Output Ripple

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## GENERAL PURPOSE POSITIVE/NEGATIVE CONVERTERS

