

DESCRIPTION

Demonstration circuit 433 features a high frequency 1.25MHz 12Vout DC/DC monolithic boost converter featuring the LT1961. This current-mode control monolithic (switch included) converter has a wide operating supply voltage, a minimum peak switch current rating of 1.5A, and a low resistance 0.2Ω power switch. The switch current limit is constant at all duty cycles. The tiny MSOP 8-Pin exposed leadframe package is optimal for high power in a tiny space with excellent heat dissipation capabilities.

The small size and wide input voltage of the LT1961 are demonstrated by the 2.8V–12V input to 12V output boost converter. The maximum output current varies with respect to the input voltage. The board is optimized for 5V input to 12V output at up to 450mA load current.

Compensation components are designed for stable operation over the entire input voltage range 2.8V–12V input for this 12V output application. Adjustable feedback resistors allow simple customization of the output voltage. For this particular output, stability and transient response can be more optimally chosen for specific input voltages such as $5V_{IN} \pm 10\%$ or $3.3V_{IN} \pm 10\%$. The high 1.25MHz switching frequency allows for the use of tiny ceramic input and output capacitors as well as a very small inductor, making possible tiny and low cost boost converter solutions. High switching frequency results in lower output voltage ripple than lower frequency converters.

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

Table 1. Typical Performance Summary

PARAMETER	CONDITION	VALUE
Input Voltage Range (V_{IN})	$V_{OUT} = 12V$	2.8V–12V
Output Voltage (V_{OUT})	$2.8V \leq V_{IN} \leq 12V$	12V $\pm 3\%$
Maximum Output Current	$V_{IN} = 3V, V_{OUT} = 12V, ISW_{PK} = 1.5A$	220mA
Maximum Output Current	$V_{IN} = 5V, V_{OUT} = 12V, ISW_{PK} = 1.5A$	450mA
Maximum Output Current	$V_{IN} = 8V, V_{OUT} = 12V, ISW_{PK} = 1.5A$	750mA
Maximum Output Current	$V_{IN} = 10V, V_{OUT} = 12V, ISW_{PK} = 1.5A$	1A
Typical Switching Frequency		1.25MHz
Typical Efficiency	$V_{IN} = 5V, V_{OUT} = 12V, I_{OUT} = 450mA$	85%

QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 433

ADJUSTABLE OUTPUT BOOST REGULATOR

QUICK START PROCEDURE

Demonstration circuit 433 is easy to set up to evaluate the performance of the LT1961. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below:

Make sure that the input voltage does not exceed 12V.

The synchronization and shutdown functions are optional and their pins can be left floating (disconnected) if not being used.

1. Connect the 2.8V–12V input power supply to the Vin and Gnd terminals on the board.
2. Since this demo circuit operates with low input voltages and up to 1.1A output current, it is essential that the input voltage source be well regulated. If the input power supply is equipped with sense lines, connect SENSE+ to the Vin terminal and SENSE- to the Gnd terminal on the board.
3. Verify that the output voltage is 12V.

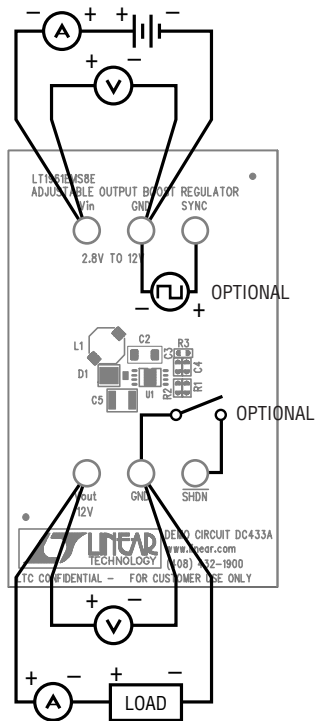


Figure 1. Proper Measurement Equipment Setup

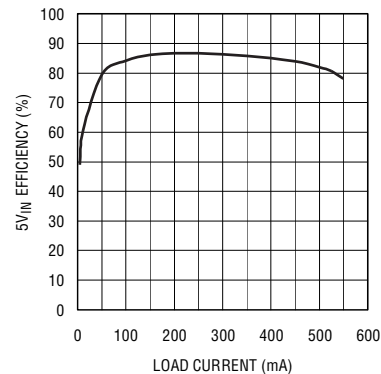


Figure 2. Efficiency vs. Load Current