

## DESCRIPTION

Demonstration circuit 559 is a high efficiency synchronous boost DC/DC converter with output disconnect, inrush current limiting and soft-start functions featuring the LTC3429. The board is capable of supplying 90mA from a single AA cell input or 250mA from a 2-cell input with a 3.3V output. The input range is from 1V to 3.3V. DC559 version A uses the LTC3429; version B uses the LTC3429B. The LTC3429 shifts automatically to power saving Burst Mode operation at light loads; whereas the LTC3429B operates at a fixed frequency for all loads with minimum output voltage ripple.

A switching frequency of 500KHz allows up to 95% efficiency with a tiny solution footprint. Typical applications include MP3 players, GPS receivers, digital cameras, PDAs, LCD bias supplies and wireless handsets.

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

**Table 1. Performance Summary**

| PARAMETER                 | CONDITION  | VALUE   |
|---------------------------|--|---------|
| Maximum Load Current, Min | Vout = 3.3V, Vin = 1.0V                          | 90mA    |
| Maximum Load Current, Min | Vout = 3.3V, Vin = 2.0V                          | 250mA   |
| Switching Frequency, Typ  |  | 500KHz  |
| Efficiency, Typ           | Vout = 3.3V, Vin = 2.8V, Iout = 100mA            | 95%     |
| Output Ripple, Typ        | Vout = 3.3V, VIN = 1.5V, IOUT = 100mA (20MHz BW) | 20mVp-p |

## QUICK START PROCEDURE

Demonstration circuit 559 is easy to set up to evaluate the performance of the LTC3429. 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.

- Place the jumper in the following position:  
**JP1**    On
  - With power off, connect the input power supply to Vin and GND. Connect the load to Vout and GND. Set initial load = 0A (no load).
  - Turn on the power at the input.
- NOTE:** Make sure that the input voltage does not exceed 4.4V.

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4. Check for the output voltage.  $V_{out}$  should be  $3.3V \pm 0.1V$ .
5. 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.

**NOTE:** If there is no output, temporarily disconnect the load to make sure that the load is not set too high. The available output current depends on the input voltage.

## Demo Board 559A- Rev0

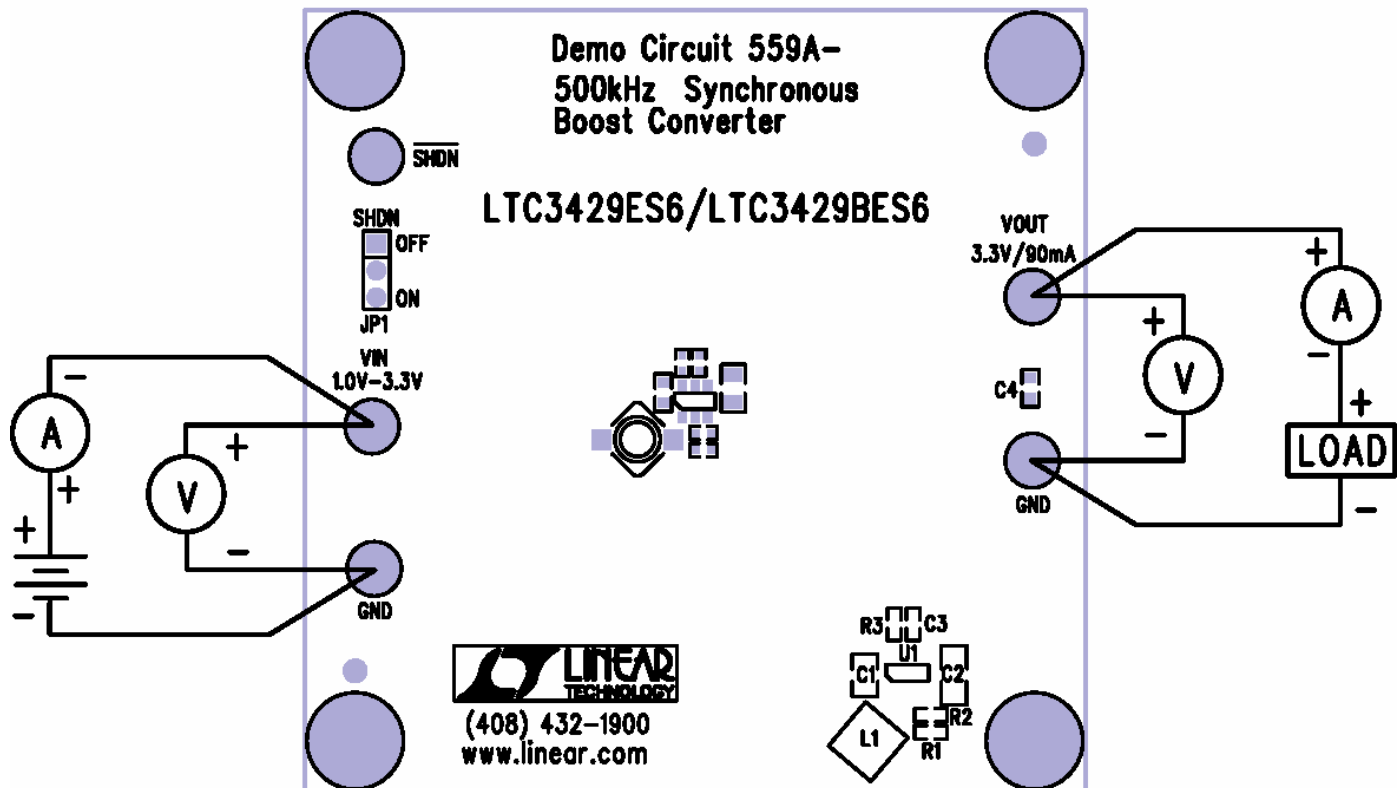


Figure 1. Proper Measurement Equipment Setup

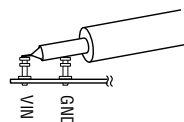


Figure 2. Measuring Input or Output Ripple

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## SYNCHRONOUS BOOST CONVERTER WITH OUTPUT DISCONNECT

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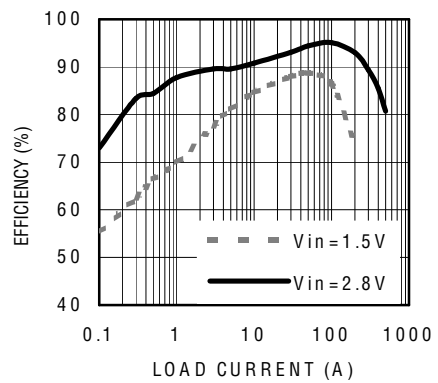


Figure 3. Efficiency curves:  $V_{out} = 3.3V$

