

## Switched Capacitor Voltage Converter

### FEATURES

- Plug-In Compatible with 7660 with These Additional Features:
  - *Guaranteed* Operation to 9V, with No External Diode, Over Full Temperature Range
  - Boost Pin (Pin 1) for Higher Switching Frequency
  - Lower Quiescent Power
  - Efficient Voltage Doubler
- 200 $\mu$ A *Max.* No Load Supply Current at 5V
- 97% *Min.* Open Circuit Voltage Conversion Efficiency
- 95% *Min.* Power Conversion Efficiency
- Wide Operating Supply Voltage Range, 1.5V to 9V
- Easy to Use
- Commercial Device *Guaranteed* Over  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$  Temperature Range

### APPLICATIONS

- Conversion of +5V to  $\pm 5\text{V}$  Supplies
- Precise Voltage Division,  $V_{\text{OUT}} = V_{\text{IN}} / 2 \pm 20\text{ppm}$
- Voltage Multiplication,  $V_{\text{OUT}} = \pm nV_{\text{IN}}$
- Supply Splitter,  $V_{\text{OUT}} = \pm V_{\text{S}} / 2$

### DESCRIPTION

The LTC1044 is a monolithic CMOS switched capacitor voltage converter which is manufactured using Linear Technology's enhanced LTCMOS™ silicon gate process. The LTC1044 provides several voltage conversion functions: the input voltage can be inverted ( $V_{\text{OUT}} = -V_{\text{IN}}$ ), doubled ( $V_{\text{OUT}} = 2V_{\text{IN}}$ ), divided ( $V_{\text{OUT}} = V_{\text{IN}} / 2$ ) or multiplied ( $V_{\text{OUT}} = \pm nV_{\text{IN}}$ ).

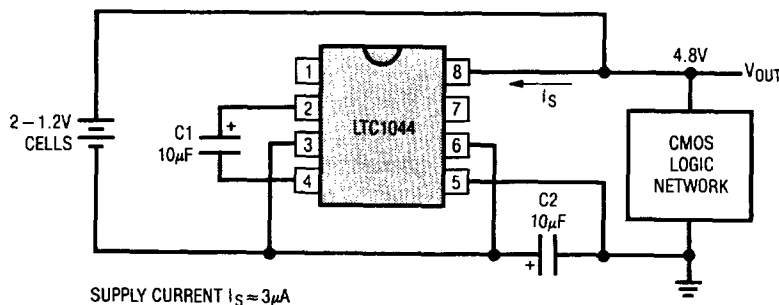
Designed to be pin-for-pin and functionally compatible with the popular 7660, the LTC1044 provides significant features and improvements over earlier 7660 designs. These improvements include: full 1.5V to 9V supply operation over the entire operating temperature range, without the need for external protection diodes; 2½ times lower quiescent current for greater power conversion efficiency; and a "boost" function which is available to raise the internal oscillator frequency to optimize performance in specific applications.

*Although the LTC1044 provides significant design and performance advantages over the earlier 7660 device, it still maintains its compatibility with existing 7660 designs.*

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Generating CMOS Logic Supply from 2 Mercury Batteries



Supply Current vs Supply Voltage

