Low Noise, Regulated Charge Pump DC/DC Converter
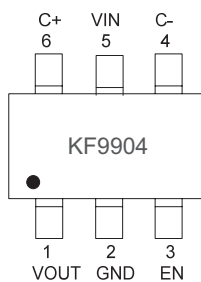
Description

The KF9904 is a low noise, constant frequency (400kHz) switched capacitor voltage doubler. It produce a regulated output voltage from a 2.5V to 4.5V input with up to 250mA of output current. Low external parts count (one flying capacitor and two small bypass capacitors at VIN and VOUT) make the KF9904 ideally suited for small, battery-powered applications.

A new charge-pump architecture maintains constant switching frequency to zero load and reduces both output and input ripple. The KF9904 have thermal shutdown capability and can survive a continuous short circuit from VOUT to GND. Built-in soft-start circuitry prevents excessive inrush current during start-up.

High switching frequency enables the use of small ceramic capacitors. A low current shutdown feature disconnects the load from VIN and reduces quiescent current to <1uA.

The KF9904 is available in the industry standard SOT-23-6 power packages.

Features

- Fixed 5V ± 4% Output
- VIN Range: 2.5V to 5V
- Output Current: Up to 250mA
- Constant Frequency Operation at All Loads
- Low Noise Constant Frequency (400kHz) Operation
- Automatic Soft-Start Reduces Inrush Current
- Shutdown Current <1µA
- Short-Circuit Protection
- No Inductors
- Available in Low Profile 6-Lead SOT23 Package

Application

- White LED Backlighting
- Li-Ion Battery Backup Supplies
- Local 3V to 5V Conversion
- Smart Card Readers
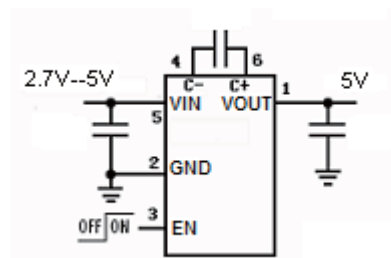- PCMCIA Local 5V Supplies

Typical Applications

Pin Description

PIN NUMBER SOT-23-6	PIN NAME
1	VOUT
2	GND
3	EN
4	C-
5	VIN
6	C+

Figure 1: Regulated 5V Output

Absolute Maximum Ratings (Note 1)

V_{IN} ....- 0.3V to 6V

V_{OUT}...- 0.3V to 5.5V

VOUT Short-circuit Duration...indefinite

V_{EN}...- 0.3V to 6V

IOUT (Note 2) 300mA

Operating Temperature Range (Note 3)..…..- 30℃ to 85℃

Lead Temperature (Soldering 10 sec.) ....300℃

Storage Temperature Range ....…......- 65℃ to 125℃