

SYNCHRONOUS BOOST CONVERTER WITH DOWN MODE HIGH POWER WHITE LED DRIVER

FEATURES

- **80% Efficient Synchronous Boost Converter**
 - 500-mA LED Current From 3.3-V Input (TPS61058)
 - 800-mA LED Current From 3.3-V Input (TPS61059)
- **Input Voltage Range: 2.7 V to 5.5 V**
- **Fixed Frequency 650 kHz (Typ) Operation**
- **LED Disconnect During Shutdown**
- **Open/Shorted LED Protection**
- **Low EMI-Converter (Integrated Anti-Ringing Switch)**
- **Internal Soft-Start**
- **Over-Temperature Protection**
- **Low Shutdown Current: 100 nA (Typ)**
- **Total Solution Of Less Than 80 mm²**
- **Small 3 mm x 3 mm QFN-10 Package**

APPLICATIONS

- **Torch/Camera White LED Supply for Cell Phones, Smart-Phones and PDAs**
- **Generic Lighting Applications**

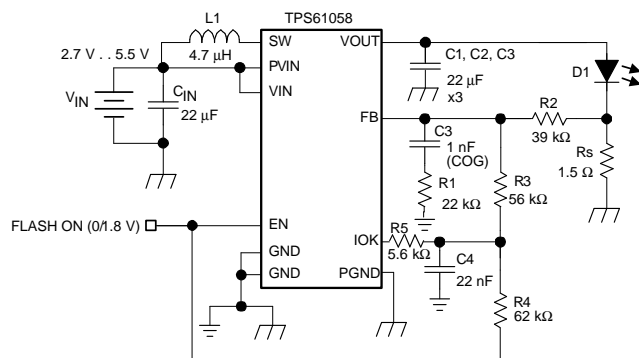


Figure 1. 500 mA Flashlight Application

DESCRIPTION

The TPS61058/9 devices are fixed frequency, synchronous boost dc-dc converters with an integrated down conversion mode. The devices are optimized for driving high power single cell white LEDs up to 800 mA from a 2.7-V to 5.5-V input. The LED current can be programmed to different levels (e.g. torch, flashlight) by a set of external resistors.

The boost converter is based on a 650 kHz fixed frequency, pulse-width-modulation (PWM) controller using a synchronous rectifier to obtain maximum efficiency. The maximum peak current in the boost switch is limited to 1000 mA (TPS61058) and 1500 mA (TPS61059).

The converter can be disabled to maximize battery life. In the shutdown mode, the load is completely disconnected and the current consumption is reduced to less than 1 µA. Built-in precharge and soft-start circuitry prevents excessive inrush current during start-up.

A low-EMI mode is implemented to reduce ringing and, in effect, lower radiated electromagnetic energy when the converter enters the discontinuous conduction mode. The device is packaged in a 10-pin QFN PowerPAD™ package measuring 3 mm x 3 mm (DRC).

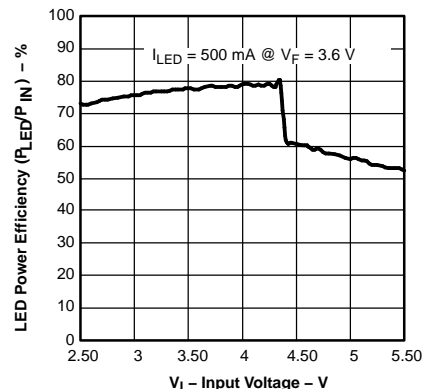


Figure 2. Flashlight Efficiency vs V_I

PRODUCT PREVIEW



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