



**THE DATASHEET OF  
SKY81294-12-001**



**PRODUCT SUMMARY**

# SKY81294: 1.5 A Single Flash LED Driver with I<sup>2</sup>C Control Interface

## Applications

- LED photo flash with Movie/Torch mode
- IR facial recognition
- Camera-enabled mobile devices
- Cell phones/smartphones
- Digital still cameras

## Features

- Input voltage range: 2.5 V to 5.5 V
- Up to 1.5 A regulated output current
- Up to 90% efficiency
- 2.75 MHz switching frequency
- Soft-start and input current limit
- Separate flash enable/flash inhibit
- Programmable blinking LED notification
- Industry standard I<sup>2</sup>C programming:
  - Flash and Movie mode (MM) current
  - Input voltage monitor with programmable thresholds
  - Current read-back in input voltage monitor operation
  - Programmable safety timer
  - Fault read back
- Fault protection:
  - Integrated flash safety timer
  - Over-voltage protection (open LED, open circuit)
  - Short circuit
  - Over-temperature protection
  - Programmable inductor current limit
  - Flash mode input voltage monitor
  - Open-drain fault output (only for 16-bump version)
- –40 °C to +85 °C temperature range
- Small WLCSP (16-bump, 1.741 mm × 1.741 mm, 0.4 mm pitch; 9-bump, 1.741 mm × 1.741 mm, 0.5 mm pitch) packages (MSL1, 260 °C per JEDEC J-STD-020)

## Description

The SKY81294 is a high-efficiency, 1.5 A high-current boost converter with a programmable constant current. The device is intended for LED photo flash applications in all single-cell Li-Ion powered portable products.

The SKY81294 maintains the flash LED output current using a DC-DC step-up converter with a bypass function to maximize efficiency under all load conditions. The flash current can be programmed up to 1.5 A. This provides a direct flash LED cathode connection to the ground plane that helps heat dissipation and simplifies PCB routing.

The high-frequency, 2.75-MHz DC-DC boost switching frequency allows the use of a small external inductor and output capacitor, which makes the SKY81294 ideally suited for small battery-powered applications. A start-up control circuit automatically senses the flash LED forward voltage at any programmed output current setting and determines the most efficient operation mode.

An industry standard I<sup>2</sup>C digital interface is used to program the SKY81294 LED Flash and Movie modes. Device operations are fully configurable, such as for movie and flash current level, current limits, and fault reporting. The SKY81294 has a separate flash enable input to initiate the flash operation and a flash inhibit input either to reduce the flash current to Movie-mode levels or to shut off the flash current during high battery demand conditions. The flash inhibit mode can be programmed through the FLINHM bit set.

Fault status may be read using the I<sup>2</sup>C interface after the system is alerted by an open-drain fault flag. Built-in circuitry prevents excessive inrush current during start-up.

The SKY81294 is provided in small, 16-bump/9-bump, 1.741 mm × 1.741 mm Wafer Level Chip Scale Packages (WLCSP).

A typical application circuit is shown in Figure 1.



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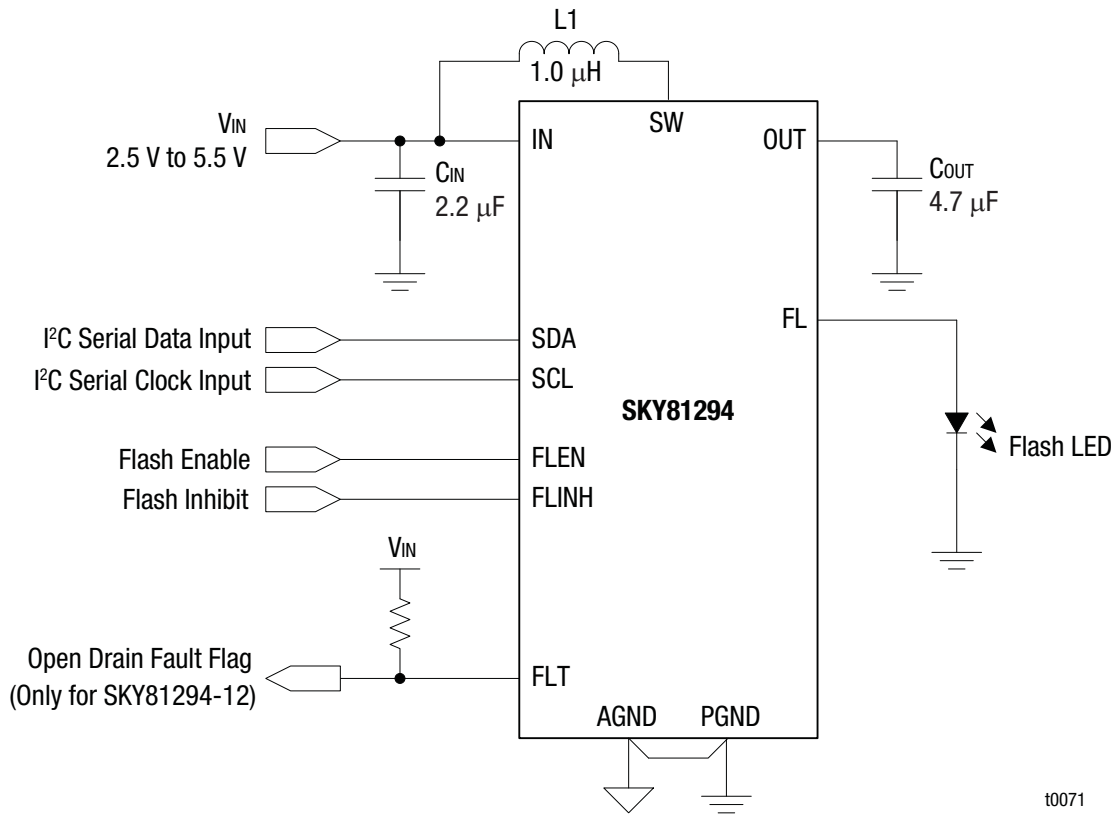


Figure 1. SKY81294 Typical Application Circuit

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## Ordering Information

Model Name	Package	Manufacturing Part Number	Evaluation Board Part Number
SKY81294: 1.5 A Single Flash LED Driver with I <sup>2</sup> C Control Interface	1.75 mm × 1.75 mm, 16-bump WLCSP	SKY81294-12-001	SKY81294-12-EVB
	1.75 mm × 1.75 mm, 9-bump WLCSP	SKY81294-14-001	SKY81294-14-EVB

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