

PRODUCT SUMMARY

SKY81299: 2.4 A Two-Channel Flash LED Driver with I²C Control Interface

Applications

- LED photo flash with Movie/Torch mode
- Dual LED flash with color compensation
- “Selfie” flash for front-facing camera (PIP enabled)
- Smartphones/tablets

Features

- Input voltage range: 2.5 V to 5.5 V
- Each channel can program to 1.5 A with 12 mA programming step size; up to 2.4 A total combined output current
- > 90% LED efficiency at 250 mA
(3.3 V < V_{IN} < 3.6 V, V_F = 3.3 V);
> 85% LED efficiency at 1 A
(3.4 V < V_{IN} < 3.9 V, V_F = 3.3 V)
- 2.75 MHz switching frequency
- Soft-start and input current limit
- Separate flash enable/flash inhibit
- Programmable blinking LED notification
- Industry standard 1 MHz I²C programming
 - Flash and Movie mode current
 - Input voltage monitor with programmable thresholds
 - Current read-back in input voltage monitor operation
 - Programmable safety timer
 - Fault read back
- Fault protection
 - Integrated safety timer
 - Over-voltage (open LED, open circuit)
 - Short circuit
 - Over-temperature protection
 - Flash mode input voltage monitor
 - Open-drain fault output
- –40 °C to +85 °C temperature range
- Small WLCSP (16-bump, 1.903 × 1.903 × 0.605 mm, 0.4 mm pitch) package (MSL1, 260 °C per JEDEC J-STD-020)

Description

The SKY81299 is a high-efficiency, 2.4 A high-current boost converter with two independently programmable constant current outputs. The device is intended for LED photo flash/facial recognition and “selfie” front-facing camera flash applications in all single-cell Li-ion powered portable products.

The SKY81299 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 for each channel can be programmed up to 1.5 A at 12 mA step. The device uses a common cathode (current source) topology to allow a direct flash LED cathode connection to the ground plane which facilitates LED heat dissipation. The total combined output current for flash outputs is 2.4 A.

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 SKY81299 ideally suited for small battery-powered applications. A startup 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 I²C digital interface is used to program the SKY81299 LED Flash and Movie modes. Device operations are fully configurable; Movie and Flash current level, current limits, and fault reporting are managed through I²C. Also included are separate flash enable inputs 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 SKY81299 is available in a small 1.903 × 1.903 × 0.605 mm, 16-bump Wafer-Level Chip Scale (WLCSP) package.

A typical application circuit is shown in Figure 1.



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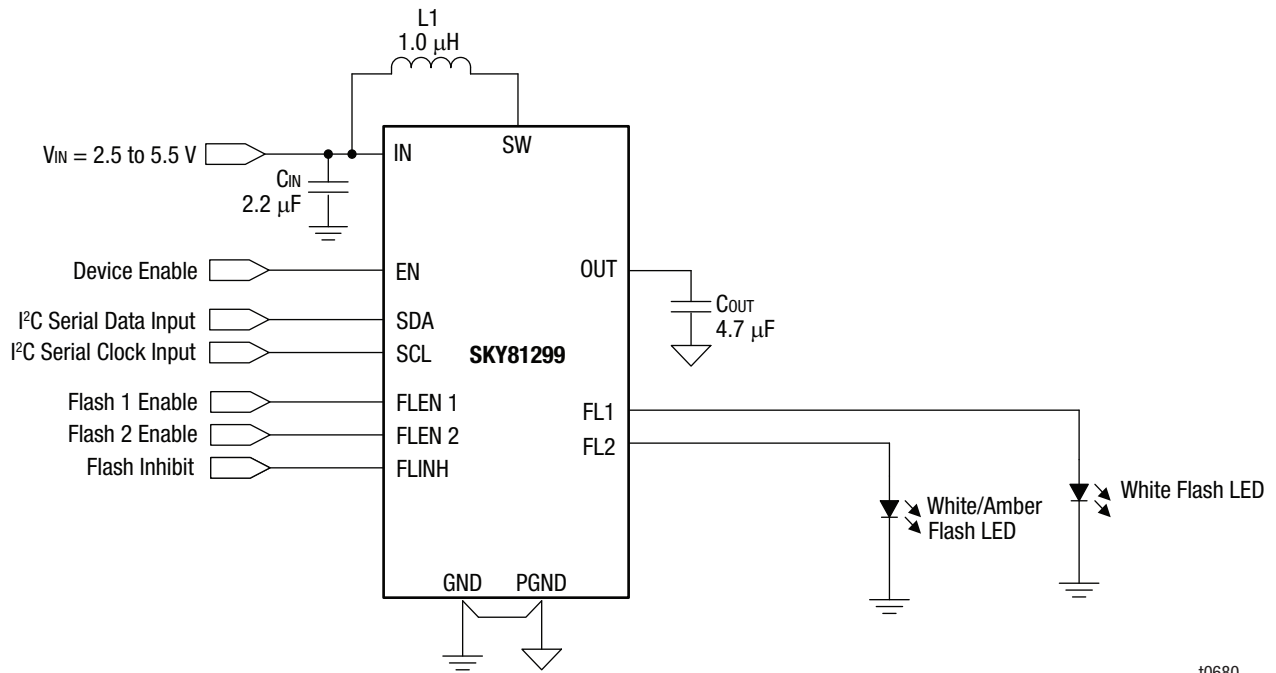


Figure 1. SKY81299 Typical Application Circuit

t0680

Ordering Information

Model Name	Total Output Current	With Vin Monitor Function	With Blinking Function	Manufacturing Part Number
SKY81299-11	2.4 A	Yes	Yes	SKY81299-11-001
SKY81299-12	2.4 A	Yes	No	SKY81299-12-001
SKY81299-13	2.4 A	No	Yes	SKY81299-13-001
SKY81299-14	2.4 A	No	No	SKY81299-14-001
SKY81299-21	2 A	Yes	Yes	SKY81299-21-001
SKY81299-22	2 A	Yes	No	SKY81299-22-001
SKY81299-23	2 A	No	Yes	SKY81299-23-001
SKY81299-24	2 A	No	No	SKY81299-24-001

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