

PRODUCT SUMMARY

SKY81453: Six-Channel, High Efficiency White LED Driver with I²C Interface

Applications

- Tablet PCs
- Notebook computers
- Monitors
- Portable TV/DVD players

Features

- V_{IN} range: 2.5 V to 5.5 V
- Integrated 28 V boost converter
- Minimum off time: 50 ns
- Adjustable switching frequency: 600 kHz to 2 MHz
- Up to 93% efficiency
- Boost current limit selection
- Six current sinks
- Up to 30 V, 60 mA per channel
- Accuracy/matching: $\pm 1.5\%$ at 25 °C, 30 mA
- Fade in/out feature for brightness control
- I²C control
- Individual channel enable/disable, fault trigger point, and status programming
- 8-bit/256 programmable analog dimming
- PWM input frequency range: 1.5 kHz to 50 kHz
- Fault protection:
 - Independent channel shutdown for: open LED(s), shorted LED(s)
 - Boost over-voltage and over-current protection
 - Over-temperature shutdown
- WLCSP (25-bump, 2.44 mm \times 2.44 mm) (MSL1, 260 °C per JEDEC-J-STD-020)

Description

The SKY81453 is a highly integrated, high efficiency LED backlight solution for tablets, notebook computers, monitors, and other portable devices.

An integrated boost converter provides a high voltage output for driving up to 28 V. Six precision current sinks are programmable up to 60 mA per string. The integrated boost regulator switching frequency is adjustable from 600 kHz to 2 MHz for system integration flexibility, to optimize efficiency, and to minimize external passive component requirements.

The SKY81453 supports filtered Pulse Width Modulation (PWM) dimming and I²C dimming. The duty cycle of PWM input signal and the I²C brightness control program can be used to control the LED current level not to exceed the maximum LED current, which is set by an external R_{ISSET} resistor. The I²C brightness control and the PWM duty input signal are multiplied to control the output current level. When the PWM pin is not used, pull this pin to high or set the “ignore PWM input” bit (IGPW).

For system protection, the SKY81453 senses open or shorted LED conditions and over-temperature events. High voltage current sink design prevents damage resulting from short LEDs. System faults are reported through the I²C interface.

The SKY81453 is available in a Pb-free, 2.44 mm \times 2.44 mm 25-bump Wafer Level Chip Scale Package (WLCSP). Typical application circuits are shown in Figures 1 and 2 (single and dual-cell inputs, respectively).



Skyworks Green™ products are compliant with all applicable legislation and are halogen-free. For additional information, refer to *Skyworks Definition of Green™*, document number SQ04-0074.

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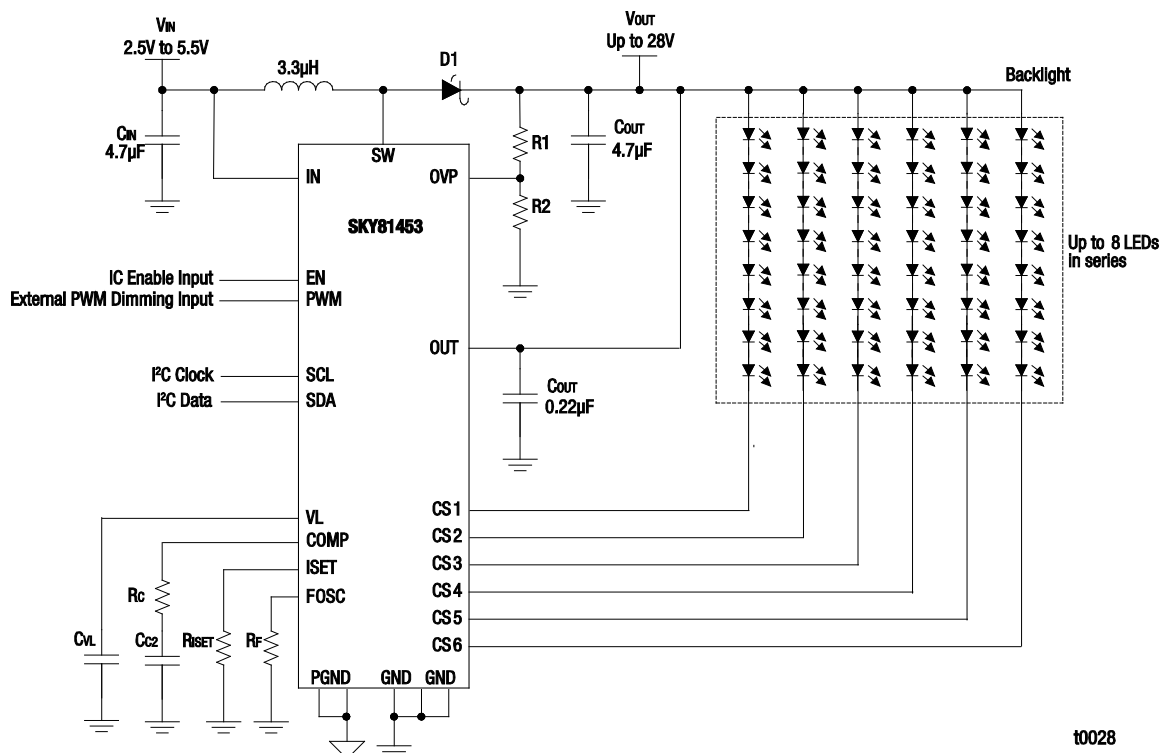


Figure 1. Typical Application Circuit (Single Cell Input)

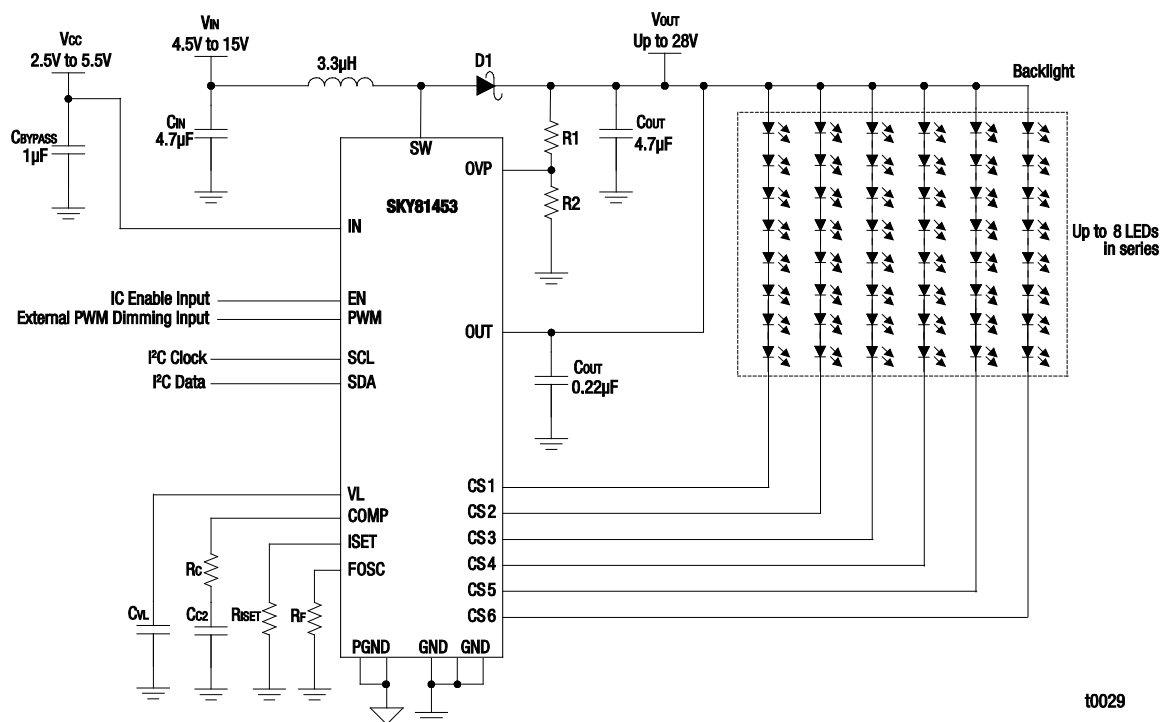


Figure 2. Typical Application Circuit (Dual Cell Input)

Ordering Information

Model Name	Manufacturing Part Number	Evaluation Board Part Number
SKY81453 White LED Driver with I ² C Interface	SKY81453-13-001	SKY81453-13-001-EVB

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