National Semiconductor

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LP8501 PRODUCT BRIEF
Multi-Purpose 9-Output LED Driver

General Description

The LP8501 is a LED driver with 9 outputs, designed to produce versatile lighting effects for mobile devices. The device is equipped with an internal program memory, which allows operation without processor control. Internal program memory is used by three independent program execution engines to produce user defined lighting effects for the outputs.

A high-efficiency charge pump enables LED driving over full Li-Ion battery voltage range. The excellent efficiency over a wide operating range is achieved by autonomously selecting the best charge pump gain based on LED forward voltage requirements. LP8501 is able to automatically enter power-save mode when LED outputs are not active, thus lowering idle current consumption down to 10 µA (typ.)

The device has a flexible General Purpose Output (GPO), which can be used for example as a digital control pin for other devices. INT pin (interrupt function), which can be used to notify processor. Trigger input interface, which allows program execution start without I²C write.

The device requires only four small and low-cost ceramic capacitors. The LP8501 is available in a tiny 25–bump 2.27 mm x 2.27 mm x 0.60 mm micro SMD package (0.4 mm pitch).

Notice: This document is not a full datasheet. For more information regarding this product or to order samples, please contact your local National Semiconductor sales office or visit http://www.national.com/support/dir.html

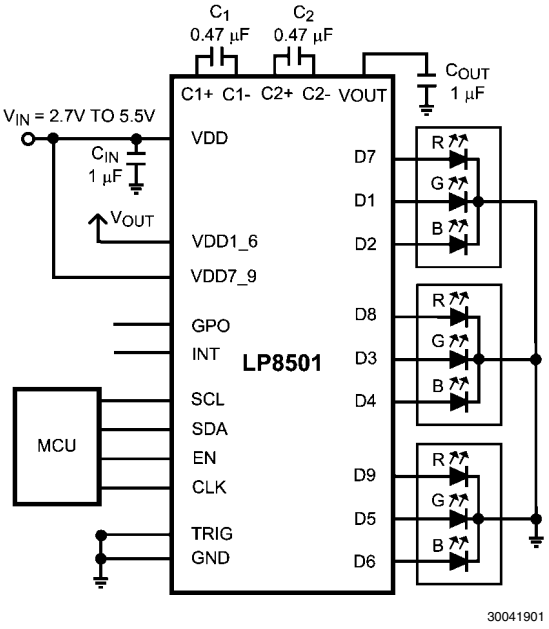
Features

- Three independent program execution engines for user defined programs with large SRAM memory for storing lighting programs
- 9 programmable source (high side) driver outputs with 25.5 mA full-scale current, 8-bit current setting resolution and 12-bit PWM control resolution
- Flexible grouping possibility for all 9 outputs including GPO into three groups with group PWM and Fade in/ Fade out controls
- Built-in LED test
- Adaptive charge pump with 1x and 1.5x gain provides up to 95% LED drive efficiency and with soft start and overcurrent/short circuit protection
- Automatic power save mode; I_{VDD} = 10 µA (typ.)
- Two wire, I²C-compatible, control interface
- Small application circuit
- Pin-configured LED powering for LEDs 1 to 6 and for LEDs 7 to 9
- Solution area <18 mm²

Applications

- Fun lights and indicator lights
- LED backlighting and color keypad lighting
- Programmable current source
- Haptic feedback driver and GPIO expander

Typical Application



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Voltage Reference	www.national.com/vref	Design Made Easy	www.national.com/easy
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