National Semiconductor

LM3555 PRODUCT BRIEF
Synchronous Boost Converter with 500 mA High Side LED Driver and Dual-Mode Control Interface

General Description

The LM3555 is a 2 MHz fixed frequency, current mode synchronous boost converter designed to drive either a single flash LED at 500 mA or two series flash LEDs at 400 mA. A high-voltage current source allows the LEDs to be terminated to the GND plane eliminating the need for an additional return trace back to the IC.

A dual mode control interface allows the user to configure the LM3555 with a general purpose interface using two enable pins for control or an I2C allowing a higher level of control. Both interfaces allow access to the indicator, assist light and flash modes. A dedicated Strobe pin provides a direct interface to trigger the flash event, while an external Torch pin provides an additional method for enabling the LEDs in a constant current mode.

The LM3555 can adaptively scale the maximum flash level delivered to the LED/LEDs based upon the flash configuration, whether it be a single LED or two LEDs in series.

Eight protection features are available on the LM3555 ranging from over-voltage protection, to broken inductor detection. The LM3555 has four selectable inductor current limits to help the user select an inductor that is appropriate for the design.

Features

- High Voltage High-Side Current Source Allows for Grounded Cathode LED Operation
- Synchronous Boost Converter
- Peak Converter Efficiency >90%
- Accurate and Programmable LED Current ranging from 60mA to 500mA
- Adaptive LED Current Range Based on LED Configuration
- Dedicated Indicator Current Source
- Dedicated Torch and Strobe Pins
- Dual Mode Control (General Purpose or I2C)
- Broken Inductor Detection
- Output Over-Voltage Protection
- Output and LED Short-Circuit Protection
- 400kHz I2C Compatible Interface
- 12–Bump, 1.575 mm x 2.1 mm x 0.6 mm micro SMD Package (TLA12BCA)

Applications

- Camera Phone LED Flash

Typical Application Circuits
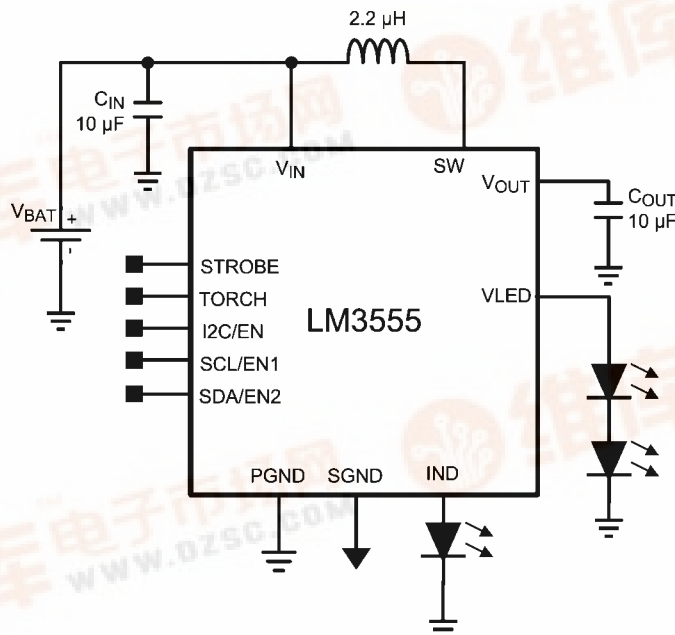
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Notes

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Products		Design Support	
Amplifiers	www.national.com/amplifiers	WEBENCH® Tools	www.national.com/webench
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Clock and Timing	www.national.com/timing	Reference Designs	www.national.com/refdesigns
Data Converters	www.national.com/adc	Samples	www.national.com/samples
Interface	www.national.com/interface	Eval Boards	www.national.com/evalboards
LVDS	www.national.com/lvds	Packaging	www.national.com/packaging
Power Management	www.national.com/power	Green Compliance	www.national.com/quality/green
Switching Regulators	www.national.com/switchers	Distributors	www.national.com/contacts
LDOs	www.national.com/ldo	Quality and Reliability	www.national.com/quality
LED Lighting	www.national.com/led	Feedback/Support	www.national.com/feedback
Voltage Reference	www.national.com/vref	Design Made Easy	www.national.com/easy
PowerWise® Solutions	www.national.com/powerwise	Solutions	www.national.com/solutions
Serial Digital Interface (SDI)	www.national.com/sdi	Mil/Aero	www.national.com/milaero
Temperature Sensors	www.national.com/tempsensors	Solar Magic®	www.national.com/solarmagic
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