LED driver includes frequency synchronization, PWM dimming, and thermal foldback

Texas Instruments introduced a 1.5-A constant current DC/DC buck converter with an industry-leading combination of frequency synchronization, pulse-width modulation (PWM) dimming and thermal foldback. The TPS92510 features a wide 3.5-V to 60-V input voltage operating range and integrated MOSFET. Together with TI's WEBENCH LED Architect [1], the lighting developer can quickly design a power management circuit to drive a string of up to 17 high-brightness LEDs at up to 97-percent power efficiency in automotive, industrial and general illumination applications. For more information and samples, visit www.ti.com/tps92510-pr [2].

Unlike conventional buck LED drivers, TI’s TPS92510 can operate with fixed frequency either by utilizing its internally-generated clock or via synchronization to an external PWM clock source. In multi-string implementations, the use of an external clock eliminates beat frequencies that may be visible in the lighting application and simplifies EMI filter design. Thermal foldback ensures some light output remains even in an LED over-temperature condition, which improves safety in the lighting environment.

The TPS92510 joins TI’s LED driver portfolio that includes the 0.5-A LM3402 [3], 1.0-A LM3404 [4] and 1.5-A LM3406 [5] hysteretic, non-synchronous, constant current LED buck regulators that feature LED open circuit protection, low-power shutdown and thermal shutdown. For more information on all of TI’s lighting products, visit www.ti.com/lighting-pr [6].

Key features and benefits of the TPS92510 LED driver

- 3.5-V to 60-V input voltage operating range supports a wide variety of DC LED lighting applications, including area and street lighting.
- Fixed switching frequency range from 100 kHz to 2.5 MHz can be synchronized to optimize for efficiency or solution size.
- LED thermal foldback with external negative temperature coefficient (NTC) protects LED array from over-temperature while maintaining reduced light output.
- Dedicated PWM dimming input from 100 Hz to 1 kHz adjusts LED brightness without color shift or perceivable flicker.

Availability, packaging and pricing

The TPS92510 is available in volume now from TI and its authorized distributors. Offered in a 4.9-mm by 3-mm, 10-pin PowerPad™ MSOP [7] package, the TPS92510 is priced at US$1.65 each in 1,000-unit quantities.

Find out more about TI's LED lighting portfolio:

- Order samples and an evaluation module of the new LED driver: www.ti.com/tps92510-pr [2].
- Read the application note, "How to Design an LED Driver Using the TPS92510 [8]," for information on compensating and measuring the feedback loop, implementing thermal foldback protection and designing the PCB layout.
- Get more information on all of TI's lighting products: www.ti.com/lighting-pr [6].
- Design a complete LED power management system with TI's WEBENCH LED Architect: www.ti.com/ledwebench-pr [9].
- Ask questions and share knowledge in the LED forum in the TI E2E Community: www.ti.com/ledforum-pr [10].
- Download LED reference designs from TI's PowerLab Reference Design Library: www.ti.com/powerlab-pr [11].

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[3] http://nsc.pr-optout.com/Url.aspx?517623x77226x467901
[4] http://nsc.pr-optout.com/Url.aspx?517623x77225x547343

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