

## European Solar Energy Storage

# Led drive energy storage inductor design



## Overview

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What is a led inductor & how does it work?

Inductors are energy storage devices. Energy is stored in the inductor during the ON time and delivered to the LED during the OFF time. The rule of thumb to design the inductor is to set the peak-to-peak ripple current in the inductor to 30 percent of the nominal LED current.

Do LED drivers need an inductor or transformer?

Most LED driver circuits need an inductor or transformer to drive the LED. Eaton has a large selection of inductors and transformers in various sizes, inductance values and current ratings to satisfy any particular LED driver circuit requirement. A buck circuit regulates input DC voltage down to a desired DC voltage (Figure 1).

What are Buck circuit light emitting diodes?

Buck circuit Light Emitting Diodes (LEDs) are semiconductor devices that contain no moving parts. This makes LEDs very reliable in demanding applications with high vibration and shock. These properties, along with high efficiency, long life, and brightness also make LEDs very attractive in lighting applications.

What is the power factor of LED driver circuit?

level. CONCLUSION 10 W LED driver circuit designed and developed. The performance of LED circuit has been verified for variable voltage condition. Under all voltage condition the power factor is unity. 5 W LED light output light intensity much higher than the CFL and.

Why should I use a single inductor?

This enables the use of a single inductor and eliminates the need for bias winding. The use of a single inductor reduces overall system cost and solution size, but matches the necessary performance specifications listed in the next

section. Figure 2.

What are the topologies used in LED drivers?

The topologies used in present day LED drivers are: Each topology is selected according to the required power level and cost. Semiconductor companies have developed Integrated Circuits (ICs) to drive LEDs. Controlling the current is the most important consideration in designing circuits that drive LEDs.

## Led drive energy storage inductor design

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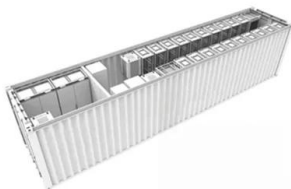


### Inductor selection for LED driver designs

Eaton has a large selection of inductors and transformers in various sizes, inductance values and current ratings to satisfy any particular LED driver circuit requirement.

### Successful Power Designs For LED Lighting: Guide on LED ...

The design consists of four principle elements: inductor, power switch (MOSFET, IGBT, or similar), diode, and capacitor. When the switch is closed the circuit is ON and the inductor experiences increased current flow and stores energy in its magnetic field.



### Design of an LED Sink Driver Using a Switched-Inductor and ...

A novel light emitting diode (LED) sink driver using a switched-inductor and switched capacitor (SISC) buck-boost converter is proposed in this paper. The propo

## LED DRIVER CIRCUIT

Figure 3: Prototype Model of LED Drive Circuit s a better choice. However, for the given transformer consideration and switch ratings,

etc., more output power can be transferred effectively during the continuous flux



## How to Design Energy Storage Inductor: A Practical Guide for

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Let's face it - designing an energy storage inductor isn't exactly cocktail party conversation material. But if you're reading this, you probably know these unsung heroes make modern electronics tick.

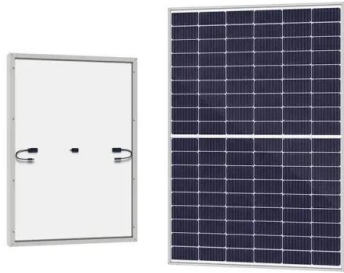
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## Energy storage inductor to adjust backlight

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## The Fundamentals of Power Inductors

This example demonstrates the use of the Coilcraft DC-DC Optimizer tool to select the inductor for a Texas Instruments Buck LED driver reference design based on the LED Driver TPS92515-Q1.

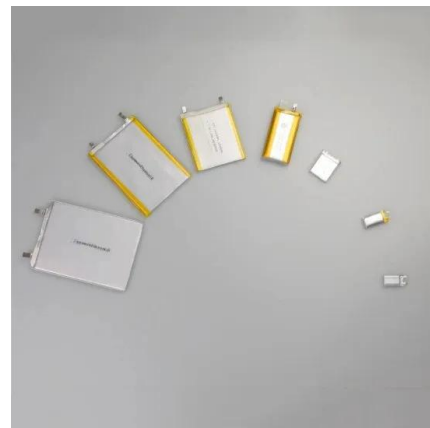


## **ENGINEERING DESIGN CONSIDERATIONS FOR THE ...**

Figure 2 Schematic representations of the different energy storage inductor concepts evaluated. a) Solenoid in a box, b) Air-core toroid, c) Two-winding picture frame.

## **Low Cost, Single Inductor Non-Isolated AC/DC LED Driver ...**

This application report describes how to design a non-isolated AC/DC buck LED driver with an integrated PFC control using the TPS92314A from Texas Instruments.



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