



# High Efficiency Step-Up Controller for LEDs with 6 Channel Current Sink and Auxiliary Gate Drive

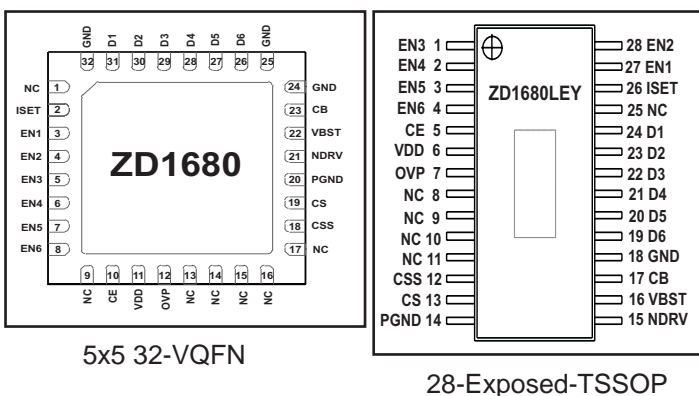
## Features

- Drives 6 Strings of Up to 16, Serially Connected LEDs
- 6 Channels of Current Sink at **60mA** Each Channel
- Supports up to 15W with an External RSENSE Resistor
- Greater Than 90% Efficiency
- Adjustable LED Brightness with PWM or DC Voltage through the ISET Pin
- LED Currents Set By One External RSET Resistor
- CHIP ENABLE (CE) Pin for Enable or Shutdown
- VBST Pin to set a Higher Gate Drive Voltage (>VDD) for More Efficient and Versatile N-Channel Power FETs can be used
- Output Over-Voltage Protection (OVP) Limiting, Externally Adjustable
- Under Voltage Lockout, UVLO
- Internal Soft Start Inrush Current Limiting
- Internal Thermal Protection
- Simpler, Low Cost, More Reliable Compared to CCFL or EL Backlighting
- Available in a 5x5mm 32-pin VQFN or a 28-pin Exposed-TSSOP Green Package

## Applications

- Battery-Powered Backlighting Applications
- LCD Panel And Monitor Display Backlighting And Plane-lighting
- GPS Navigation Panel Display Backlighting
- PMPs And Portable Handy Terminals
- Portable LED Projectors
- Street Lamp Industrial Lighting
- Solar Panel Lighting

## Pin Configuration



## General Description

The ZD1680 is a high efficiency step-up controller especially designed for driving multiple strings of serially connected LEDs. 6 channels of low dropout current sinks are included to provide excellent matching of currents for each LED string. The boost converter control loop regulates the current source outputs to 0.3V for maximum efficiency. All 6 channel LED current outputs are set by a resistor RSET to ground at the ISET pin. A CHIP ENABLE (CE) input provides an enable or shutdown function to the IC and the ISET pin can be used to adjust the LED string current with a PWM signal or a DC voltage. Each LED channel can be individually enabled for maximum flexibility. Unused channels must be disabled for proper circuit operation. Also included is an Under Voltage Lockout (UVLO) circuit to discontinue operation when input VDD falls below 2.7V and automatic soft start to limit inrush currents during power start-up or following a re-CHIP ENABLE function. Output Over-Voltage Protection (OVP) is available by user-defined resistor network setting to protect the LEDs and the IC.

The ZD1680 is available in a 5x5mm 32-pin VQFN or 28-pin Exposed-TSSOP Green Package.

## Ordering Information

Part Number	Temperature Range	Package Type
ZD1680LEQ	-40°C to +85°C	32-Pin 5x5 VQFN
ZD1680LEY	-40°C to +85°C	28-EP-TSSOP
ZD1680YEVB	n/a	Evaluation Board for ZD1680LEY
ZD1680QEVB	n/a	Evaluation Board for ZD1680LEQ

Please contact the factory for pricing and availability on T&R option.

## Typical Application

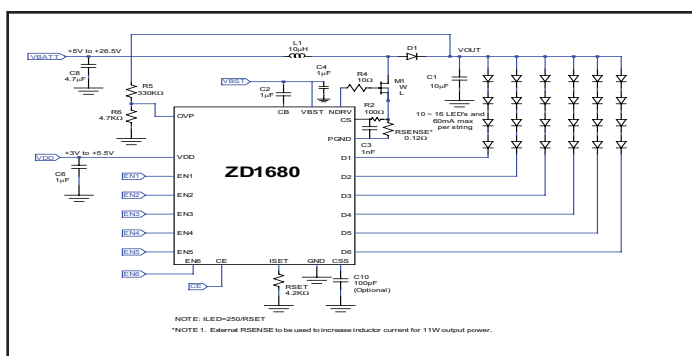


Figure 1. ZD1680 high efficiency step-up controller for LEDs with 6 channels of constant current sink and enables

Specifications subject to change without notice

