

Brief Description

The ZLED7010, one of our ZLED Family of LED control ICs, is an inductive step-down converter that is optimal for driving a single LED or multiple LEDs (connected in series) from a voltage source greater than the voltage rating of the LED. The ZLED7010 operates in continuous mode. Capable of operating efficiently with voltage supplies ranging from 6 VDC to 40 VDC, it is ideal for low-voltage lighting applications. The ZLED7010 minimizes current consumption by remaining in a low-current standby mode (output is off) until a voltage of $\geq 0.3V$ is applied to the ADJ_I pin.

In operating mode, the ZLED7010 can source LEDs with an output current of $\leq 750mA$ (≤ 30 watts of output power*) that is externally adjustable. The ZLED7010's integrated output switch and high-side current sensing circuit use an external resistor to adjust the average output current. LED control is achieved via an external control signal at the ZLED7010's ADJ_I pin, implemented as a pulse-width modulation (PWM) waveform for a gated output current or a DC voltage for continuous current.

The ZLED7010 provides a temperature compensation function for maintaining stable and reliable LED operation. LED over-temperature conditions are detected via a negative temperature coefficient (NTC) thermistor mounted close to the LEDs. If an over-temperature condition occurs, the NTC value reaches the value of a threshold resistor and the IC reduces LED current automatically. After the circuit recovers to a safe temperature, current returns to the set value.

ADJ_O outputs and ADJ_I inputs of consecutive ICs can be interconnected as a driver chain deploying the temperature compensation information of the predecessor. This reduces the part count because only the first stage of the series requires an NTC.

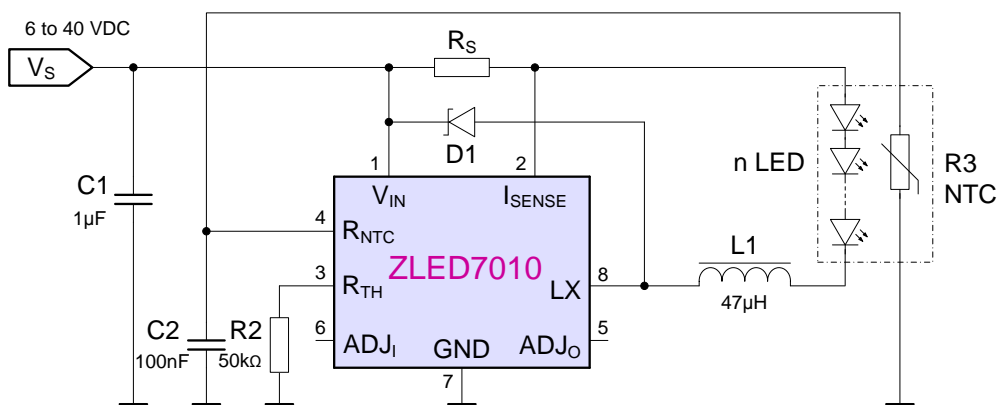
Features

- Capable of 95% efficiency*
- Operates in continuous mode with a wide input range from 6 VDC to 40 VDC
- Integrated 40V power switch
- One-pin on/off or brightness control via DC voltage or PWM control signal
- Switching frequency: $\leq 1MHz$
- Dimming rate: 1200:1 (typical)
- Output current accuracy: 5% (typical)
- Built-in temperature compensation and open-circuit protection for LEDs
- Thermal shutdown protection for the ZLED7010
- Very few external components needed for operation
- Broad range of applications: outputs up to $\leq 750mA$
- SOP-8 package

Application Examples

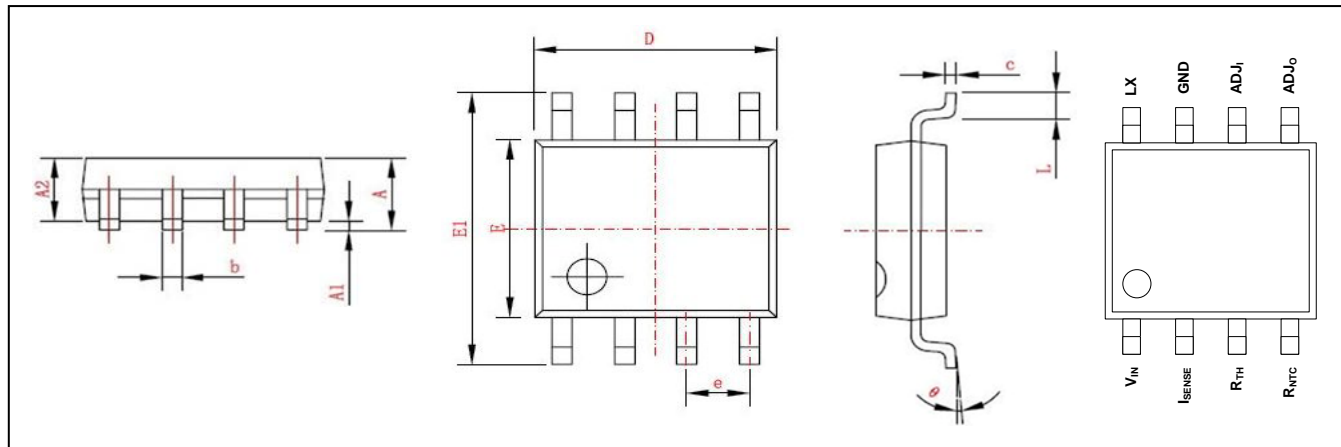
- Illuminated LED signs and other displays
- LED traffic and street lighting (low-voltage)
- Architectural LED lighting, including low-voltage applications for buildings
- Halogen replacement LEDs (low-voltage)
- LED flood-lighting
- LED backlighting
- General purpose exterior and interior LED lighting, including applications requiring low-voltage
- General purpose low-voltage industrial applications

ZLED7010 Application Circuit



* See section 2.3 and 1.4 for details

SOP-8 Package Dimensions and Pin Assignments



Symbol	Dimension (mm)		Symbol	Dimension (mm, except θ)	
	Min	Max		Min	Max
A	1.350	1.750	E	3.800	4.000
A1	0.100	0.250	E1	5.800	6.240
A2	1.450 Typical		e	1.270 Typical	
b	0.350	0.490	L	0.400	1.270
c	0.178	0.250	θ	0°	8°
D	4.800	5.000			

Ordering Information

Product Sales Code	Description	Package
ZLED7010ZI1R	ZLED7010 – 40V LED Driver with Temperature Compensation	SOP8 (Tape & Reel)
ZLED7010KIT-D1	ZLED7010 Demo Board with LED on Cool Body 12VAC/VDC	Kit
ZLED-PCB1	Test PCB with one 3W white HB-LED, cascadable to 1 multiple LED string	Printed Circuit Board
ZLED-PCB2	10 unpopulated test PCBs for modular LED string with footprints of 9 common HB-LED types	Printed Circuit Board

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Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,
Koto-ku, Tokyo 135-0061, Japan
www.renesas.com

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