Brief Description

The ZLED7001, one of our ZLED family of LED control ICs, is a peak current-mode control LED driver IC that is optimal for buck LED driver applications. The ZLED7001 operates in constant off-time mode. Capable of operating efficiently with voltage sources ranging from 8 VDC to 450 VDC or rectified 110 VAC/220 VAC, it is ideal for High Brightness (HB) LED applications. The ZLED7001 provides a PWM input for an external dimming control signal. The ZLED7001’s linear dimming input can be used both for linear dimming (0 to 240 mV) and temperature compensation of the LED current.

Because the ZLED7001’s response time is limited only by the rate of change in the inductor current, it attains a high performance pulse-width modulation (PWM) dimming response. The ZLED7001 ensures proper output current regulation, without loop compensation, via peak current-mode operation.

ZLED7001 Features

- Wide input range from 8 VDC to 450 VDC or 110 VAC/220 VAC
- Temperature compensation to protect the LEDs and extend LED lifetime
- Operates in constant off-time mode
- Both PWM and linear dimming control signal inputs available
- Very few external components needed for operation
- Broad range of applications: outputs greater than 1A

Application Examples

- Line-powered replacement LED lighting
- Illuminated LED signs and other displays
- LED street and traffic lighting
- Constant-current source for general purposes
- Architecture / building LED lighting
- LED backlighting
- Line powered LED flood lighting
- Interior / exterior LED lighting

ZLED7001 Application Circuit
Universal LED Driver with Temperature Compensation

ZLED7001 Datasheet

ZLED7001 Block Diagram

8 to 450 VDC

Voltage Regulator

7.1V Clamp

Bandgap

Blanking 480ns

Timing Circuit

GATE

CLED

RS

PWM

Q1

RCS

CS

LD

VREF

VIN

PWMD

GND

Timing

Circuit

7.1V Clamp

R

R

R

0.24V

0.05V

+

–

0.24V

Driver

R

S

Q

CMP1

CMP2

CMP3

8

vdda

vdda

vddd

Voltage

Regulator

REN

ZLED7001 – Universal LED Driver with Temperature Compensation

ZLED7001 Evaluation Board up to 24VAC / 40VDC, including 1 ZLED-PCB1 Kit

Test PCB with one 3W white HB-LED, cascadable to one multiple LED string Printed Circuit Board

10 unpopulated test PCBs for modular LED string with footprints of 9 common HB-LED types Printed Circuit Board

SOP-8 Package Dimensions (mm, except Ø)

<p>| | |</p>
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<thead>
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<tbody>
<tr>
<td>A</td>
<td>1.550 ± 0.200</td>
</tr>
<tr>
<td>A1</td>
<td>0.175 ± 0.075</td>
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<tr>
<td>A2</td>
<td>1.450 Typical</td>
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<tr>
<td>b</td>
<td>0.420 ± 0.070</td>
</tr>
<tr>
<td>c</td>
<td>0.214 ± 0.036</td>
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<tr>
<td>D</td>
<td>4.900 ± 0.100</td>
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<tr>
<td>E</td>
<td>3.900 ± 0.100</td>
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<tr>
<td>E1</td>
<td>6.020 ± 0.220</td>
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<tr>
<td>e</td>
<td>1.270 Typical</td>
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<tr>
<td>L</td>
<td>0.835 ± 0.435</td>
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<tr>
<td>θ</td>
<td>4° ± 4°</td>
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Ordering Information

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<td>ZLED7001 – Universal LED Driver with Temperature Compensation</td>
<td>SOP8 (Tape &amp; Reel)</td>
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<td>ZLED7001 Evaluation Board up to 24VAC / 40VDC, including 1 ZLED-PCB1</td>
<td>Kit</td>
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<td>ZLED-PCB1</td>
<td>Test PCB with one 3W white HB-LED, cascadable to one multiple LED string</td>
<td>Printed Circuit Board</td>
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<td>ZLED-PCB2</td>
<td>10 unpopulated test PCBs for modular LED string with footprints of 9 common HB-LED types</td>
<td>Printed Circuit Board</td>
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