

Brief Description

The ZLED7022, one of our ZLED family of LED control ICs, is a low-noise, constant-frequency charge pump DC/DC converter that can drive up to six LED channels, providing a programmable constant current level ranging from 1.8mA to 20mA per LED channel. It can also drive higher current LEDs because its current sinks can operate in parallel. It enables white or other color LED applications that require uniform intensity and/or linear progressions in brightness. Capable of operating efficiently with DC voltage supplies ranging from 2.8V to 5.5V, it is ideal for small, battery-powered applications because very few external components are needed: typically one small-dimension 1 μ F capacitor across the C+ and C- pins and two small-dimension 2.2 μ F capacitors to GND from the VCC and Vout pins.

The ZLED7022's Pulse Count Control (PCC) serial digital input is used to enable/disable the LEDs and set the current level (14 settings using a nearly logarithmic scale to provide a linear brightness progression). This simple, high-speed interface allows efficient real-time management of LEDs via microcontrollers or control systems.

The ZLED7022's features include integrated soft-start circuitry to protect against excessive in-rush current during power-on and a low-current shutdown mode that reduces quiescent current consumption to approximately 1 μ A (typical) by disconnecting the load from the input when the EN/SET pin is low for a specified time.

Features

- Low quiescent current in low-current shutdown mode: 1 μ A typical; <2 μ A maximum
- Integrated thermal shutdown protection prevents damage by shutting down the ZLED7022 if the die junction temperature exceeds 160 $^{\circ}$ C (typical)
- Fixed charge pump switching frequency: 1MHz (typ.)
- Soft-start feature protects against excessive inrush current during power-on

Benefits

- Current matching accuracy: $\pm 0.9\%$ (typical)
- One-pin on/off or brightness control for up to six LEDs via a simple PCC serial interface—no pulse-width modulation or additional control circuit needed
- 14 programmable current levels for achieving real-time control of effects such as LED fade-out or sudden changes in brightness
- Low EMI and back-injected noise because the charge pump is not inductor-based
- Very few external components needed for operation
- Flexible design enables diverse LED applications: up to 20mA per channel
- LED driver family concept with low-voltage four-channel LED driver ZLED7012

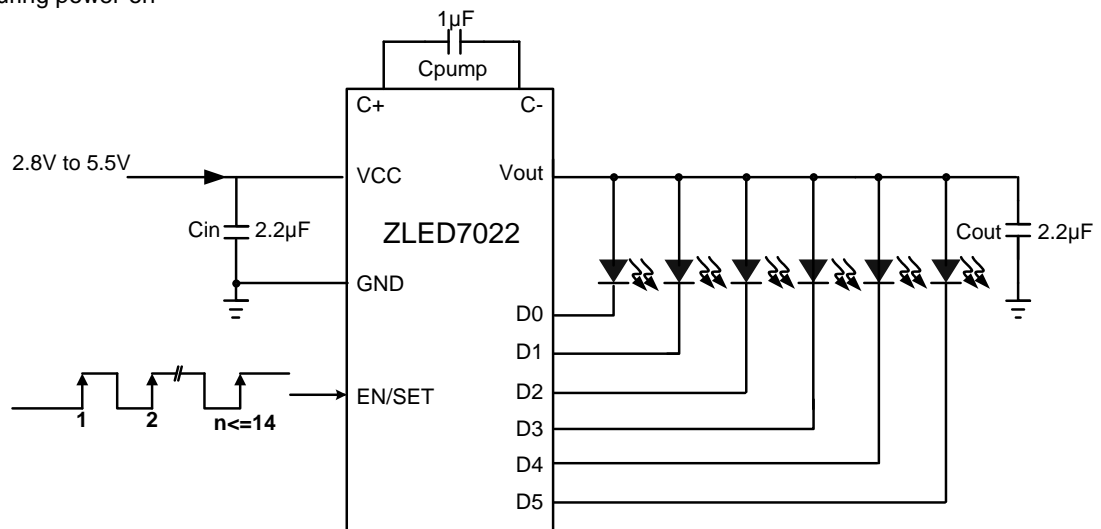
Available Support

- Evaluation Kit

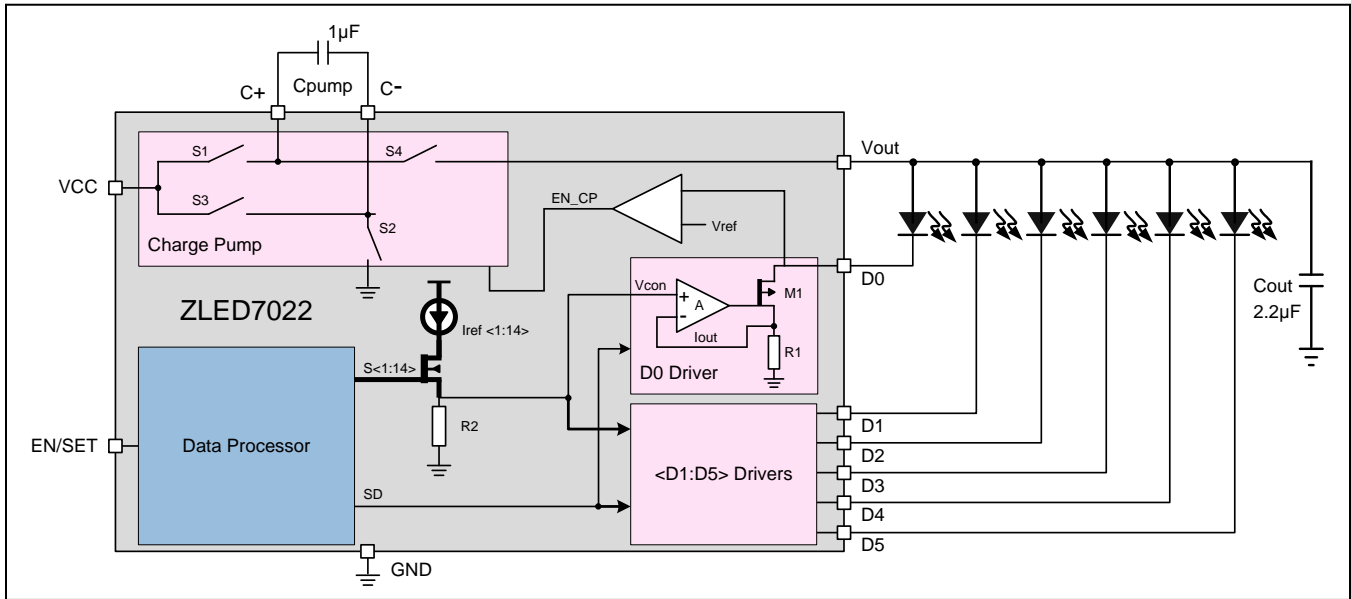
Physical Characteristics

- Voltage supply: 2.8V to 5.5V DC
- Operating temperature: -40 $^{\circ}$ C to 85 $^{\circ}$ C
- Small footprint 12-pin UTQFN package (2mmx2mm)

ZLED7022 Application Circuit



Block Diagram



Typical Applications

- ❖ LED backlighting for portable devices
- ❖ LED lighting for cell phones, smartphones, PDAs
- ❖ Illumination of digital photo frames
- ❖ Backlighting for GPS / navigation systems
- ❖ Low voltage LED lighting fixtures
- ❖ General purpose low-voltage industrial and consumer applications

Ordering Information

Product Sales Code	Description	Package
ZLED7022ZI1R	ZLED7022 – Low-Voltage Six-Channel LED Driver	UTQFN12 (2x2)mm - Tape & Reel
ZLED7022KIT-E1	ZLED7022 Evaluation Board	Kit



Corporate Headquarters
6024 Silver Creek Valley Road
San Jose, CA 95138
www.IDT.com

Sales
1-800-345-7015 or 408-284-8200
Fax: 408-284-2775
www.IDT.com/go/sales

Tech Support
www.IDT.com/go/support

DISCLAIMER Integrated Device Technology, Inc. (IDT) reserves the right to modify the products and/or specifications described herein at any time, without notice, at IDT's sole discretion. Performance specifications and operating parameters of the described products are determined in an independent state and are not guaranteed to perform the same way when installed in customer products. The information contained herein is provided without representation or warranty of any kind, whether express or implied, including, but not limited to, the suitability of IDT's products for any particular purpose, an implied warranty of merchantability, or non-infringement of the intellectual property rights of others. This document is presented only as a guide and does not convey any license under intellectual property rights of IDT or any third parties.

IDT's products are not intended for use in applications involving extreme environmental conditions or in life support systems or similar devices where the failure or malfunction of an IDT product can be reasonably expected to significantly affect the health or safety of users. Anyone using an IDT product in such a manner does so at their own risk, absent an express, written agreement by IDT.

Integrated Device Technology, IDT and the IDT logo are trademarks or registered trademarks of IDT and its subsidiaries in the United States and other countries. Other trademarks used herein are the property of IDT or their respective third party owners. For datasheet type definitions and a glossary of common terms, visit www.idt.com/go/glossary. All contents of this document are copyright of Integrated Device Technology, Inc. All rights reserved.