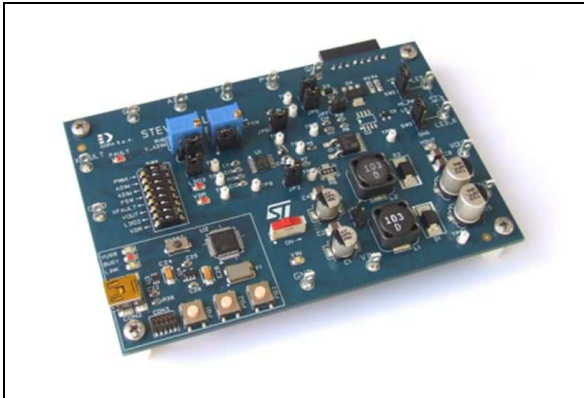


Single-channel LED driver for automotive day-time running lights (DTRL) and front lights based on ALED6001 and STM32F103C6T6

Data brief



Features

- Wide DC input voltage range: from 6 to 24 V
- Integrated boost converter with adaptive output voltage for minimum power dissipation
- Up to 92% boost converter efficiency
- Single output LED driver with programmable current capability up to 350 mA
- High-side current sensing feedback
- External dimming MOSFET driver for superior dimming performance
- PWM and analog LED brightness control
- Up to 60 V output (16 white LEDs)
- On-board STM32 microcontroller for simple device evaluation
- USB connection for device control through dedicated PC GUI
- RoHS compliant

Description

The STEVAL-ILL048V1 demonstration board showcases ST's new LED driver chip, the ALED6001. The demonstration also includes an on-board microcontroller that permits full control of the device through a USB connection and dedicated PC GUI. The ALED6001 has been specifically designed to supply a string of medium/high current (50 -1000 mA) LEDs starting from a single low-voltage rail or a car battery. It integrates a boost controller, high-side current sensing feedback circuitry and an external dimming MOSFET controller for superior dimming performance. The boost controller regulates the output voltage adaptively, based on the requirements of the LEDs, resulting in improved overall efficiency. The maximum output voltage of the boost converter is 60 V, allowing the device to drive up to 16 white LEDs in series.

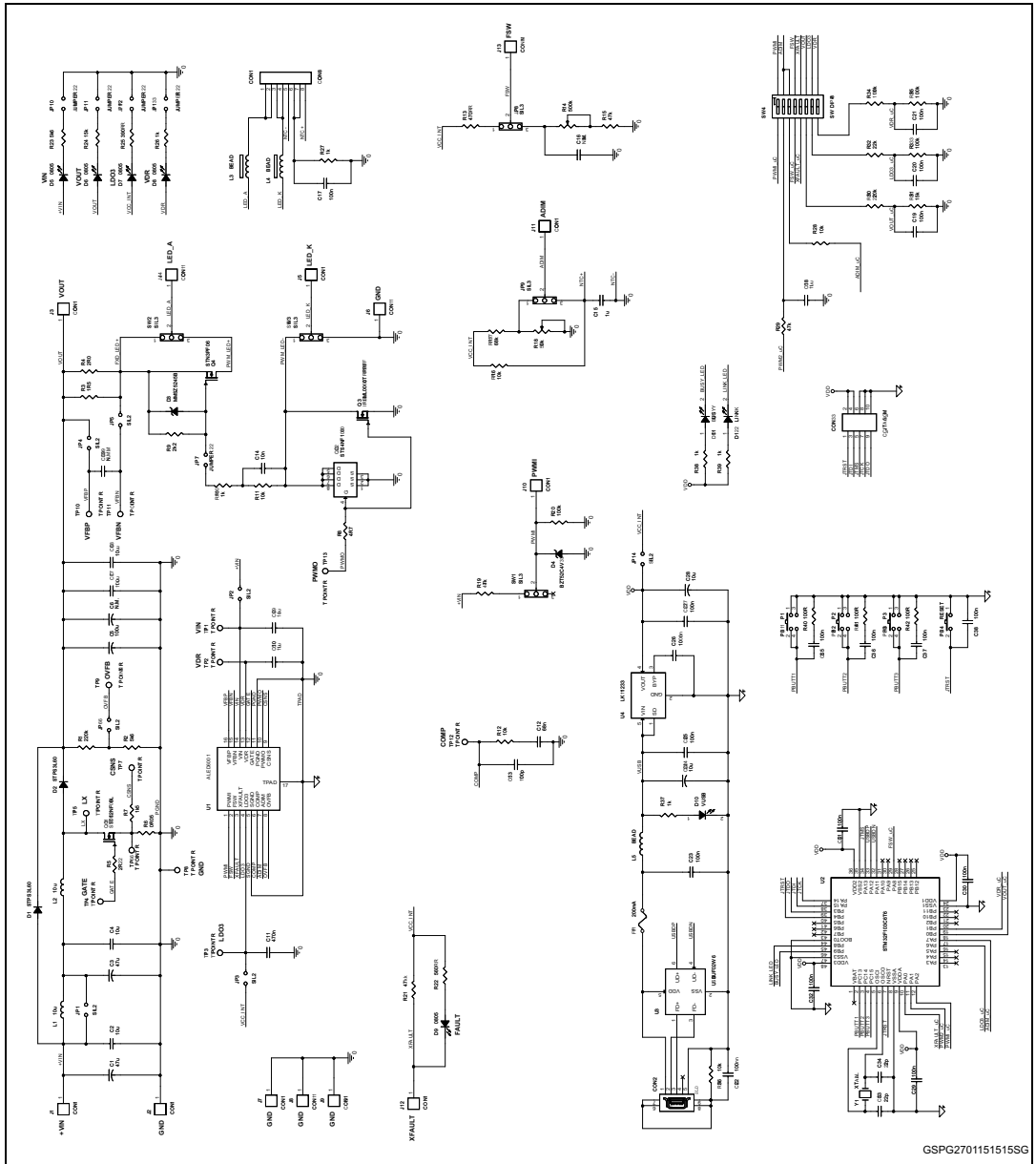
The brightness of the LEDs is controlled by using both PWM modulation and analog current control (analog dimming).

The device includes dedicated pins to lock synchronization with other devices for switching noise reduction in multi-device applications.

The ALED6001 implements basic protection features (OVP, OCP and thermal shutdown) in addition to LED array protection (load disconnection, feedback disconnection, and LED overcurrent).

1 Schematic diagram

Figure 1. STEVAL-ILL048V1 circuit schematic



GSPG2701151515SG



2 Revision history

Table 1. Document revision history

Date	Revision	Changes
12-Feb-2013	1	Initial release.
27-Jan-2015	2	Updated Figure 1: STEVAL-ILL048V1 circuit schematic

IMPORTANT NOTICE – PLEASE READ CAREFULLY

STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2015 STMicroelectronics – All rights reserved