



## STEVAL-ILL023V1

Demonstration board: high-efficiency switching LED driver for high-current LEDs based on the L6726A

Data Brief

### Features

- Input voltage  $V_{in}$ : 8 V to 18 V
- Output voltage (with  $V_{in} = 18$  V): 2.5 V to 14 V
- Output current  $I_{LED}$ : 1 A / 1.5 A / 2.8 A
- Analog dimming (with  $I_{LED} = 0$  A): 0 V to 2.5 V
- Low level PWM signal: 0 V
- High level PWM signal: 2.8 V to 3.8 V (typ: 3.3 V)
- Duty cycle (at  $f_{dim} = 200$  Hz): 0% to 99 %
- Efficiency (with  $V_{in} = 18$  V and  $V_{out} = 12.6$  V): 94.8 %

### Description

Rapid advances in LED technology has led to increases in their output current capabilities in recent years. 0.350 A LEDs, for example, were soon followed by 0.7 A LEDs, and then 1 A devices appeared shortly thereafter. Currently, LEDs with currents as high as several amps are present on the market. However, these high currents increase the requirements of the driving circuitry of the LEDs, particularly in terms of efficiency.

The STEVAL-ILL023V1 demonstration board is based on the L6726A single phase PWM controller, with two external MOSFETS for synchronous rectification. Designed for 2.8 A LEDs (1-3 in a series string), the main benefit of the solution is its exceptional efficiency. Ease of dimming and scalability to even higher currents are additional advantages of the design.

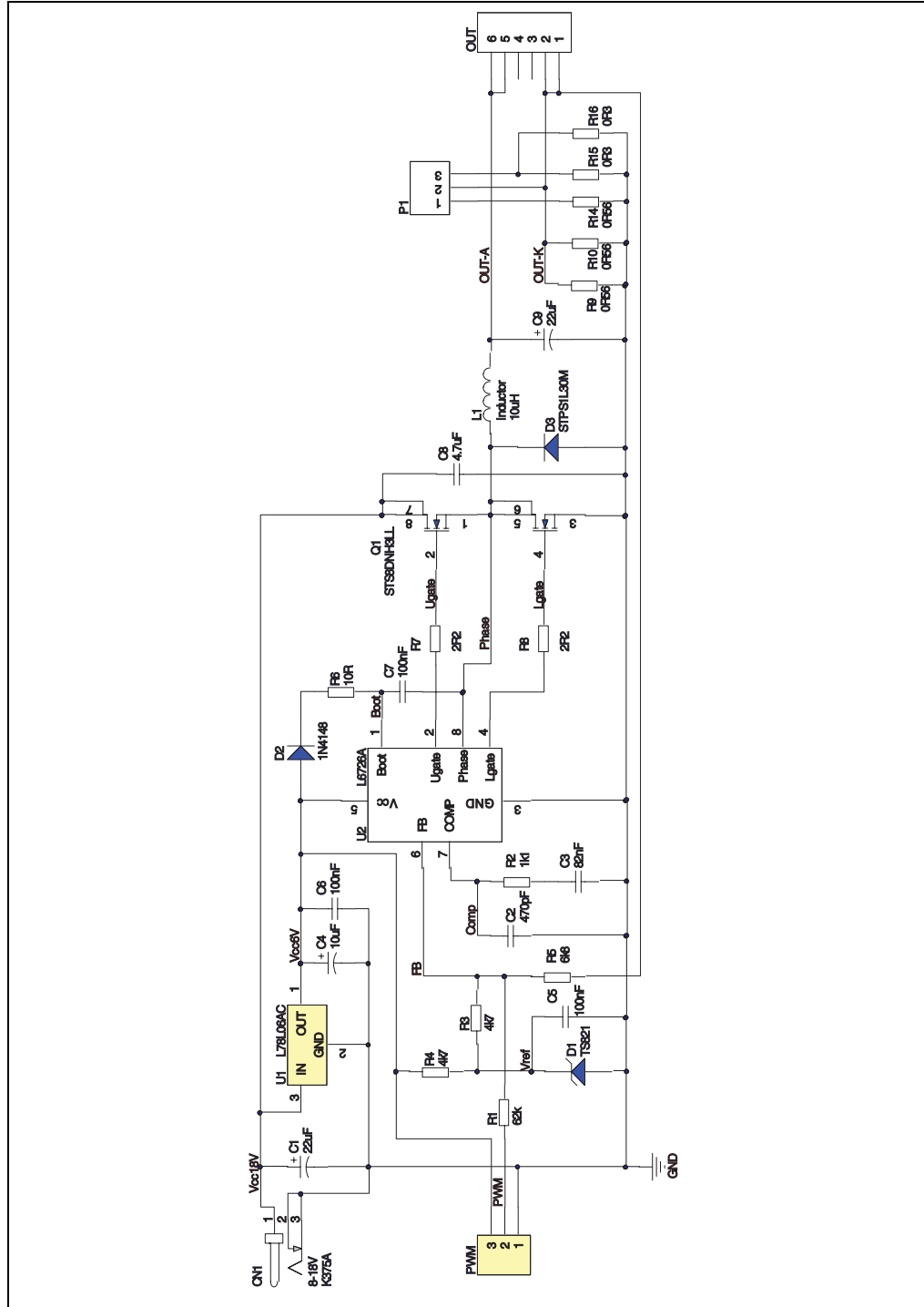
The solution is also much safer with regard to border conditions, since the current limit is based solely on the selection of the MOSFETS.



STEVAL-ILL023V1

# 1 Circuit schematic

Figure 1. STEVAL-ILL023V1 schematic diagram



## 2 Revision history

**Table 1. Document revision history**

| Date        | Revision | Changes          |
|-------------|----------|------------------|
| 26-Feb-2009 | 1        | Initial release. |

**Please Read Carefully:**

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

**UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.**

**UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED ST REPRESENTATIVE, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.**

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2009 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

[www.st.com](http://www.st.com)