

## 0.5 A, inverting buck-boost LED driver board based on the LED6000

Data brief



### Features

- 15 V to 30 V input voltage
- Negative buck-boost topology
- 8 white LEDs, 0.5 A programmed current
- 500 kHz switching frequency
- Digital dimming
- Compliant with ceramic output capacitors
- 180° out of phase synchronization available
- Auto recovery overcurrent and thermal protection
- RoHS compliant

### Description

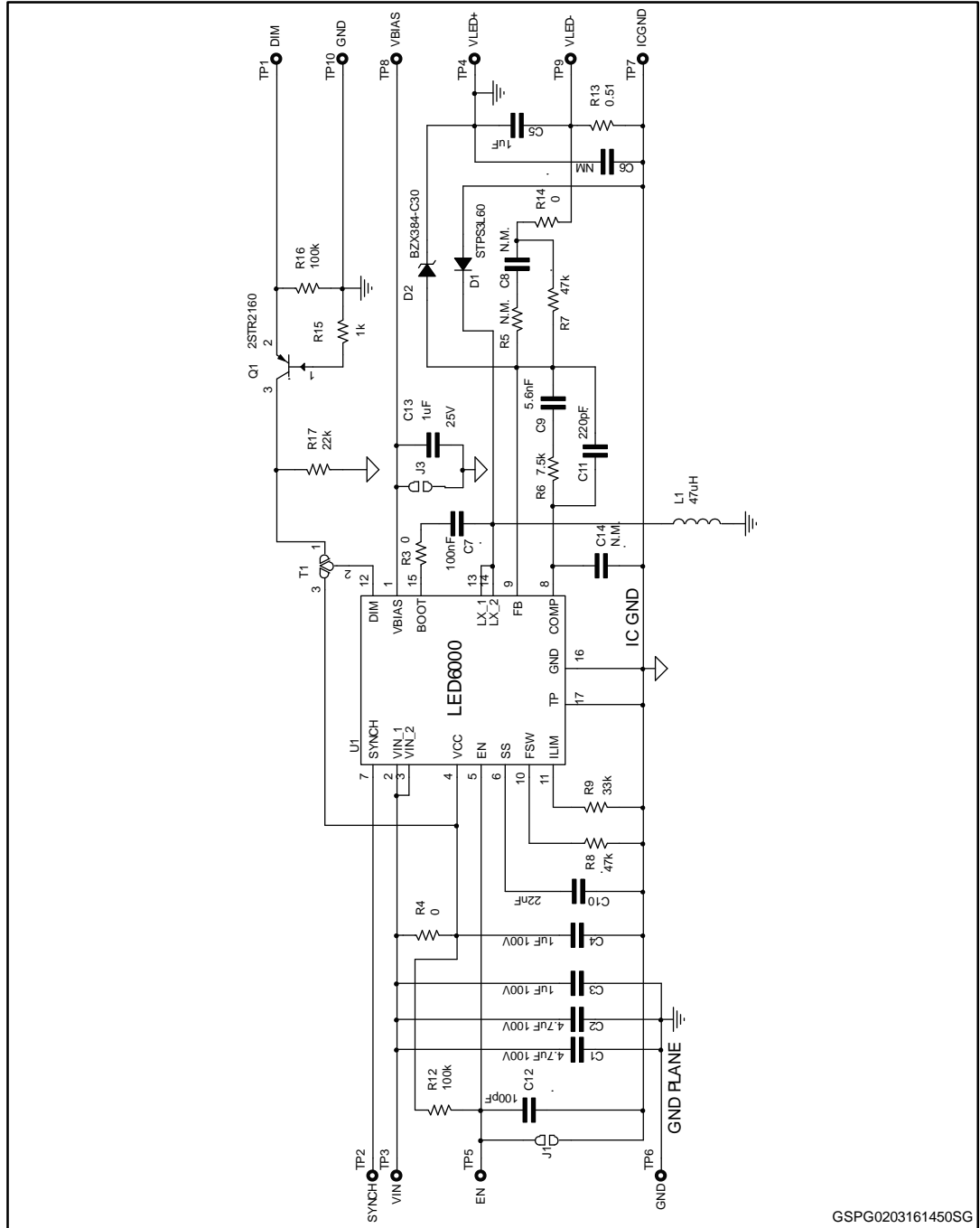
The STEVAL-ILL079V1 product evaluation board is based on LED6000 monolithic current source for high power LED driving. Thanks to the wide device input voltage range, alternative topologies like inverting buck-boost can be effectively implemented. Eight white LED (30 V max.) can be powered by 0.5 A programmed current. Digital dimming is implemented by driving the dedicated DIM pin and the necessary level shifting is achieved with inexpensive external circuitry.

The LED6000 is a 61 V asynchronous switching regulator, with an embedded power MOSFET, designed to source up to 3 A DC current depending on the application conditions. The 250 mV typical RSENSE voltage drop, the embedded switch-over feature on the VBIAS pin and the light load management (pulse skipping) are intended to maximize power conversion efficiency across the entire load range.

The current limit threshold and the switching frequency are adjustable for application optimization. The device includes an internal 250 kHz oscillator that can be externally adjusted up to 1.5 MHz. The size of the overall application is minimized thanks to the high switching frequency and its compatibility with ceramic output capacitors. Two LED6000 regulators can be synchronized in a 180° out-of-phase configuration for reduced total input RMS current.

# 1 Schematic diagram

Figure 1: STEVAL-ILL079V1 circuit schematic



## 2 Revision history

Table 1: Document revision history

Date	Version	Changes
04-Mar-2016	1	Initial release.

**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.

© 2016 STMicroelectronics – All rights reserved