STEVAL-ILL020V1

LCD panels backlight demonstration board based on the LED7706

Data brief

Features

- Features boost section
  - 4.5 V to 36 V input voltage range
  - internal power MOSFET
  - internal +5 V LDO for device supply
  - up to 36 V output voltage
  - constant frequency peak current-mode control
  - 200 kHz to 1 MHz adjustable switching frequency
  - external sync for multi-device application
  - pulse-skip power saving mode at light load
  - programmable soft-start
  - programmable OVP protection
  - single ceramic output capacitor
  - non-latched thermal shutdown
- Features backlight driver section
  - six rows with 30 mA maximum current capability (adjustable)
  - pp to 10 white LEDs per row
  - rows disable option
  - less than 500 ns minimum dimming time (1% minimum dimming duty-cycle at 20 kHz dimming frequency)
  - ±2.0% current matching between rows
  - LED failure (open and short circuit) detection
- RoHS compliant



STEVAL-ILL020V1

Description

This demonstration board is based on the LED7706 and implements a high efficiency monolithic boost converter and six controlled current generators (rows) specifically designed to supply LEDs arrays used in the backlight of LCD panels.

The device can manage an output voltage up to 36 V (i.e. ten white-LEDs per row).

The generators can be externally programmed to sink up to 30 mA and can be dimmed via a PWM signal (1% dimming duty cycle at 20 kHz can be managed).

The device allows to detect and manage the open and shorted LED faults and to let unused rows floating.

Basic protections (output overvoltage, internal MOSFET overcurrent and thermal shutdown) are provided.

For further information contact your local STMicroelectronics sales office. www.st.com

1 Circuit schematic and PCB layout

Figure 1. Schematic diagram

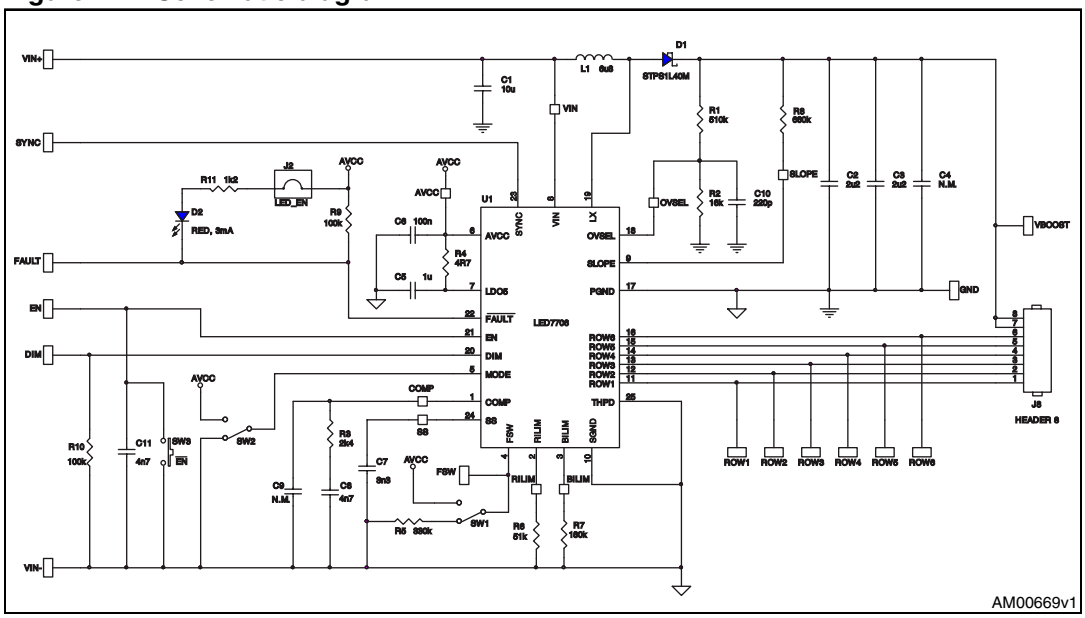


Figure 2. Top side component placement

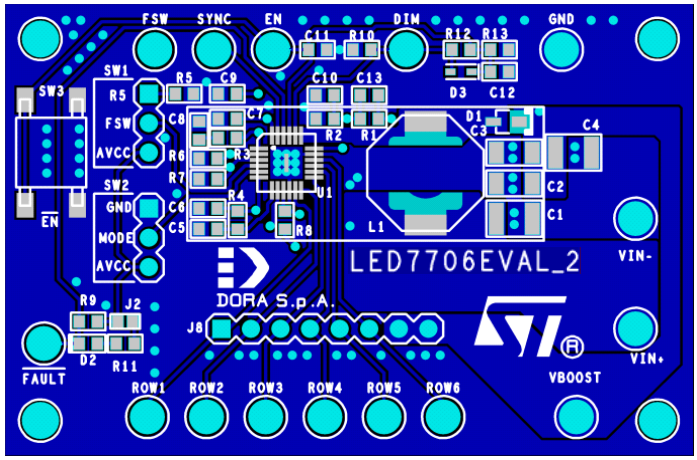
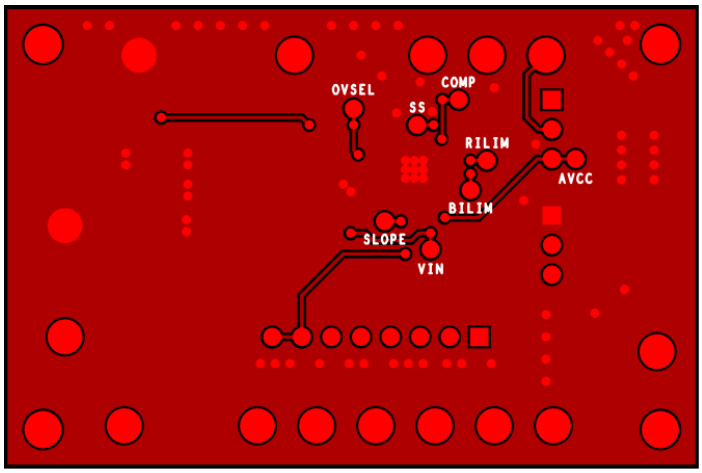


Figure 3. Bottom side



2 Revision history

Table 1. Document revision history

Date	Revision	Changes
06-May-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 - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com