577

STEVAL-ILL035V1

Multi-channel LED driver with integrated boost controller for medium, large LCD panel backlight based on LED7708 and STM32F103C6T6A

Data brief

Features

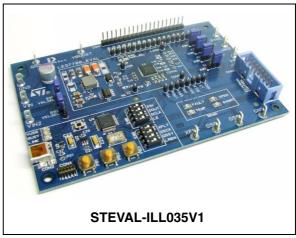
- Wide DC input voltage: 10 V to 28 V
- Integrated boost converter with adaptive output voltage for minimum power dissipation
- Up to 92% boost converter efficiency
- 16 channels with up to 85 mA/ch current capability and independent PWM brightness control
- Up to 15 white LEDs per channel
- On-board STM32 microcontroller for total device control through 4-wire serial interface
- Embedded open-channel and LED short-circuit faults management
- USB connection for device control through dedicated PC-GUI
- Expansion connector to support slave devices (daughterboard)
- RoHS compliant

Description

The purpose of the STEVAL-ILL035V1 demonstration board is to provide an application example of a compact LED backlight driver using the LED7708 device.

The board is equipped with a 16-channel LED driver with integrated boost controller (the LED7708), power section components, and an STM32 microcontroller to easily control all the features via a USB connection.

The output voltage required by the LED strings connected to the output channels is derived from a single input rail and continuously adjusted to minimize the voltage drop (and power dissipation) across them, despite an independent PWM duty cycle for each one. The brightness of each LED string is digitally controlled with 12- or 16-bit dimming resolution.



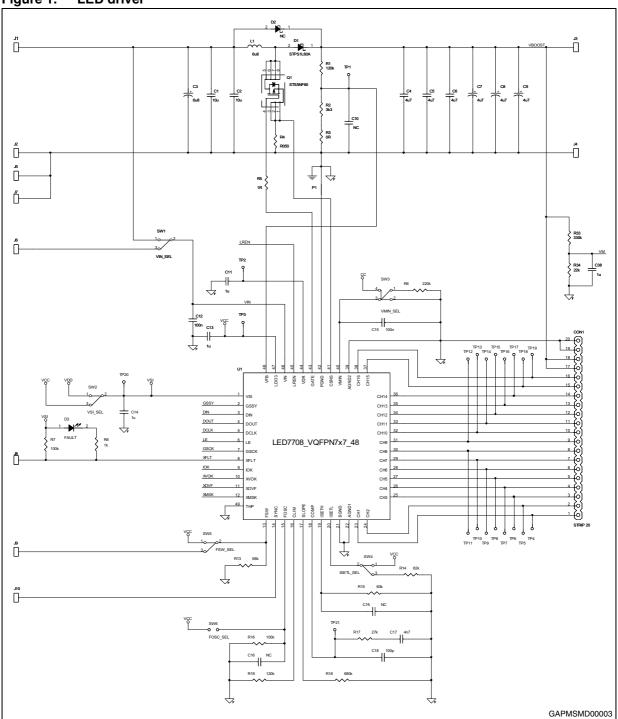
Embedded, programmable fault detection and management circuitry can be set to automatically disconnect faulty channels without the need for intervention by the host controller.

The board has been designed as a demonstration of a solution for medium/large LCD panel backlight drivers, but is suitable for any application involving several LEDs assembled in strings (e.g. advertisement panels, signs, gaming, etc.).

Schematic diagrams STEVAL-ILL035V1

1 Schematic diagrams

Figure 1. LED driver



SHORT_LED TEMP_LED 810 ĝο C_JTAG_M 8 C26 100n ន 25 g R25 82 83 82 **K**26 VOUT ВУР LK11233 GND 100R 100R 100 1 R27 100R Σ S Z 823 83 00 L 525 100 100 89 PBUTT2 PBUTT3 PBUTT1 8 JTRST <u></u> P4 VUSB 8 ₹ C29 100n BEAD C24 100n 2 3 37 VDD3 38 VSS3 39 PB9 40 PB8 41 BOOT0 43 PB7 42 PB6 48 PB5 47 PB4 46 PB3 45 PA15 44 PA14 PA3 PA4 PA5 PA6 PA7 PB0 PB1 PB2 PB10 PB11 VSS1 VDD1 250mA STM32F103C6T6 USBDN Ξ LINK LED BUSY_LED VBAT PC13 PC14 PC15 OSCI OSCO NRST VDDA VDDA PA0 PA1 PA2 ģ ġ C28 100n ΔOV VSS Ē 뎐 ន JTRST VM XFLT uC GSSY_uC ន្ត នូ 10¹ ş XIAL 82 8 8 g Σ

Figure 2. STM32 controller

GAPMSMD00002

Schematic diagrams STEVAL-ILL035V1

Figure 3. Connector

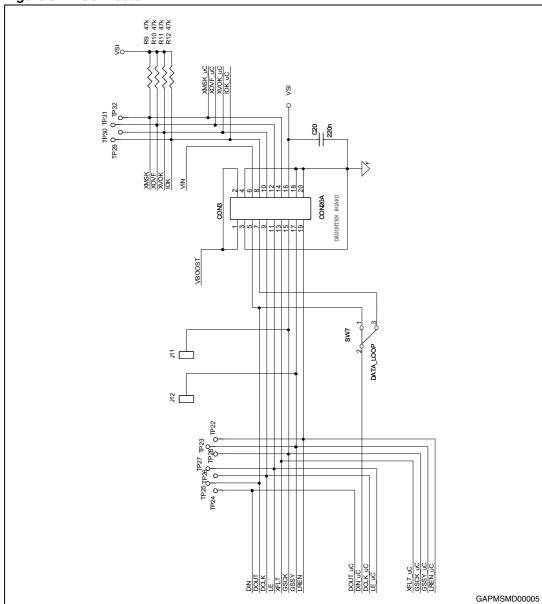
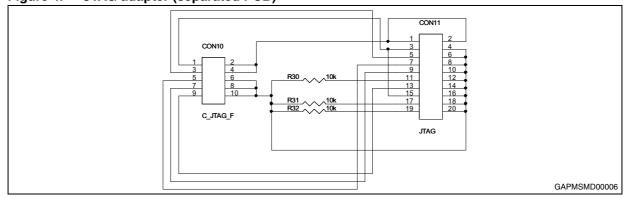


Figure 4. JTAG adapter (separated PCB)



STEVAL-ILL035V1 Revision history

2 Revision history

Table 1. Document revision history

Date	Revision	Changes
04-Jun-2012	1	Initial release.