X-NUCLEO-LED61A1
DC-DC LED driver expansion board based on LED6001 for STM32 Nucleo

Features

- Single channel LED Driver, 350 mA constant current
- PWM and analog brightness control with the STM32 Nucleo board
- Selectable boost or SEPIC converter topology
- Up to 92% efficiency (boost converter)
- Open LED, feedback disconnection, LED overcurrent and output-to-ground short-circuit (SEPIC only) fault detection and management
- Onboard photo-transistor for ambient light switch function (analog dimming)
- Wide DC input voltage range: 8 V – 24 V
- Compatible with Arduino™ UNO R3 connectors
- Compatible with STM32 Nucleo boards
- RoHS compliant

Description

The X-NUCLEO-LED61A1 is an expansion board designed to provide a sample application for the compact LED driver based on LED6001. The expansion board is equipped with a single-channel, constant-current LED driver for boost or SEPIC topologies. The X-NUCLEO interfaces with the STM32 microcontroller. It is compatible with the Arduino™ UNO R3 connector.

The brightness of the LED string connected to its output can be controlled through a PWM signal (0 % - 100 % dimming) or a control voltage (analog dimming). Open/Short LED fault, feedback disconnection, LED overcurrent and output-to-ground short-circuit (SEPIC only) faults are detected and managed through the LED driver.

The expansion board is designed to provide examples for applications involving several LEDs arranged in a single string (e.g., indoor and architectural LED lighting, off-grid street lighting, emergency LED lighting, white goods, gaming, etc.).
Figure 1: X-NUCLEO-LED61A1 board schematic (1 of 3)

Figure 2: X-NUCLEO-LED61A1 board schematic (2 of 3)

Figure 3: X-NUCLEO-LED61A1 board schematic (3 of 3)

ST M Old Connector
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Max input voltage depends on both topology and number of LEDs at the output. In any case, it must not exceed 24V.

Input Connector

Output Connector

LED temperature protection is achieved by placing a 47k NTC (NTC 50K50G0750395B) close to the LED.
# Revision history

Table 1: Document revision history

<table>
<thead>
<tr>
<th>Date</th>
<th>Version</th>
<th>Changes</th>
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<tbody>
<tr>
<td>11-Dec-2015</td>
<td>1</td>
<td>Initial release.</td>
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