

4 Channel White LED Driver with Internal-switch Boost Regulator

Features

- 5 V to 36 V Input Supply Voltage Range
- Maximum Output Adjustable up to 47 V
- High-Efficiency Step-up Regulator
 - . Peak-Current Mode Control – Fast Transient
 - . 200 kHz to 1.4 MHz Adjustable Switching Frequency
 - . Built-in 50 V, 2.5 A, 0.18 Ω MOSFET
- Four LED Current Sources
 - . Full-Scale LED Current Adjustable up to 40 mA
 - . $\pm 1.5\%$ Current Matching between Channels
 - . Headroom Control to Maximize Efficiency
- Dimming Control
 - . Wide PDIM Input Frequency: 100 Hz to 22 kHz
 - . Adjustable Output Dimming Frequency: 100 Hz to 22 kHz
 - . Selectable Dimming Control
- Direct PWM or Phase Shift PWM
- Protections
 - . Output Overvoltage Protection
 - . LED Open Circuit Protection
 - . Thermal Shutdown

Applications

- Notebook Backlighting
- LCD Monitor LED Backlighting

Description

The SM2001 is a high-efficiency white LED driver with an internal-switch current mode step-up regulator. It drives up to four channels of the series LED array with a $\pm 1.5\%$ current regulation accuracy. Each current source for LED driving is adjustable up to 40 mA. The step-up DC-DC converter provides the regulated supply voltage for LED driving. To reduce power loss, the SM2001 features the headroom control which detects the lowest channel voltage and uses to set the output voltage. The high switching frequency of the converter makes it possible to use ultra-small inductors and ceramic capacitors. The device provides two brightness control methods – phase shift PWM and direct PWM – and the dimming mode is selected by an external dimming mode selection pin. In case of phase shift PWM, output dimming frequency is adjusted by an external resistor. The SM2001 features multiple protections to protect the controller from fault conditions.

Device Information

Part	Package	Size
SM2001	20 QFN	4 mm x 4 mm

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