

High Efficiency 6-CH LED Backlight Driver with Dual LCD Bias Power

Features

➤ Backlight LED Driver

- Wide input range: 2.7V~5.5V
- High efficiency step-up LED driver with 6-Ch current sinks, up to 40V boost voltage.
 - Up to 30mA/Ch in backlight mode
 - $\pm 0.7\%$ current matching at 20mA
 - $\pm 2.2\%$ current accuracy at 20mA
- I²C/PWM dual dimming control scheme
 - High resolution I²C 11-bit linear or exponential dimming
 - Wide range PWM dimming
 - 100Hz to 100kHz frequency
 - 0.2% to 100% duty cycle at 20kHz
- Programmable current sink turn on/off ramp time/shape and transition ramp up/down time
- 1.0MHz typical boost switching frequency
- Programmable input PWM hysteresis to minimize jitter at low PWM duty cycle
- Programmable OVP and current limitation
- LED open/short protection

➤ LCD Panel Bias

- Wide input range: 2.7V~5.5V
- Programmable dual output Bias regulator using a single inductor
- Programmable ramp time for OUP and OUTN
- Charge pump PFM mode at light load
- LCD Bias efficiency: up to 85%
- Wide dual output voltage range $\pm 4.0V$ to $\pm 6.3V$ (50mV/step) and output current up to 200mA at $V_{IN} \geq 2.9V$
- Active output discharge function
- Current limitation and short protection

➤ Others

- System level input UVLO
- Thermal shutdown protection
- Low shutdown current $< 1\mu A$
- Flexible I²C interface
- Pb-free Packages: WLCSP-28
- RoHS and Green Compliant
- $-40^{\circ}C$ to $+85^{\circ}C$ Temperature Range

Applications

- Tablet Backlight and Bias

Brief Description

KTZ8866 is the ideal power solution for LED backlighting and LCD bias power of medium size panels. It integrates a step-up converter for LED backlighting, a step-up converter with LDO and inverting charge pump for LCD bias power, resulting in a simpler and smaller solution with fewer external components. High switching frequency allows the use of a smaller inductor and capacitor. Its input operating range is from 2.7V to 5.5V, accommodating 1-cell lithium ion batteries or 5V supply.

The LED driver's six regulated current sinks can regulate up to 30mA with its maximum boost output voltage up to 40V. 11-bit linear or exponential I_{LED} resolution can be obtained over I²C or PWM dimming. For additional flexibility, PWM dimming offers wide range frequency and duty cycle to support Content Adaptive Brightness Control (CABC).

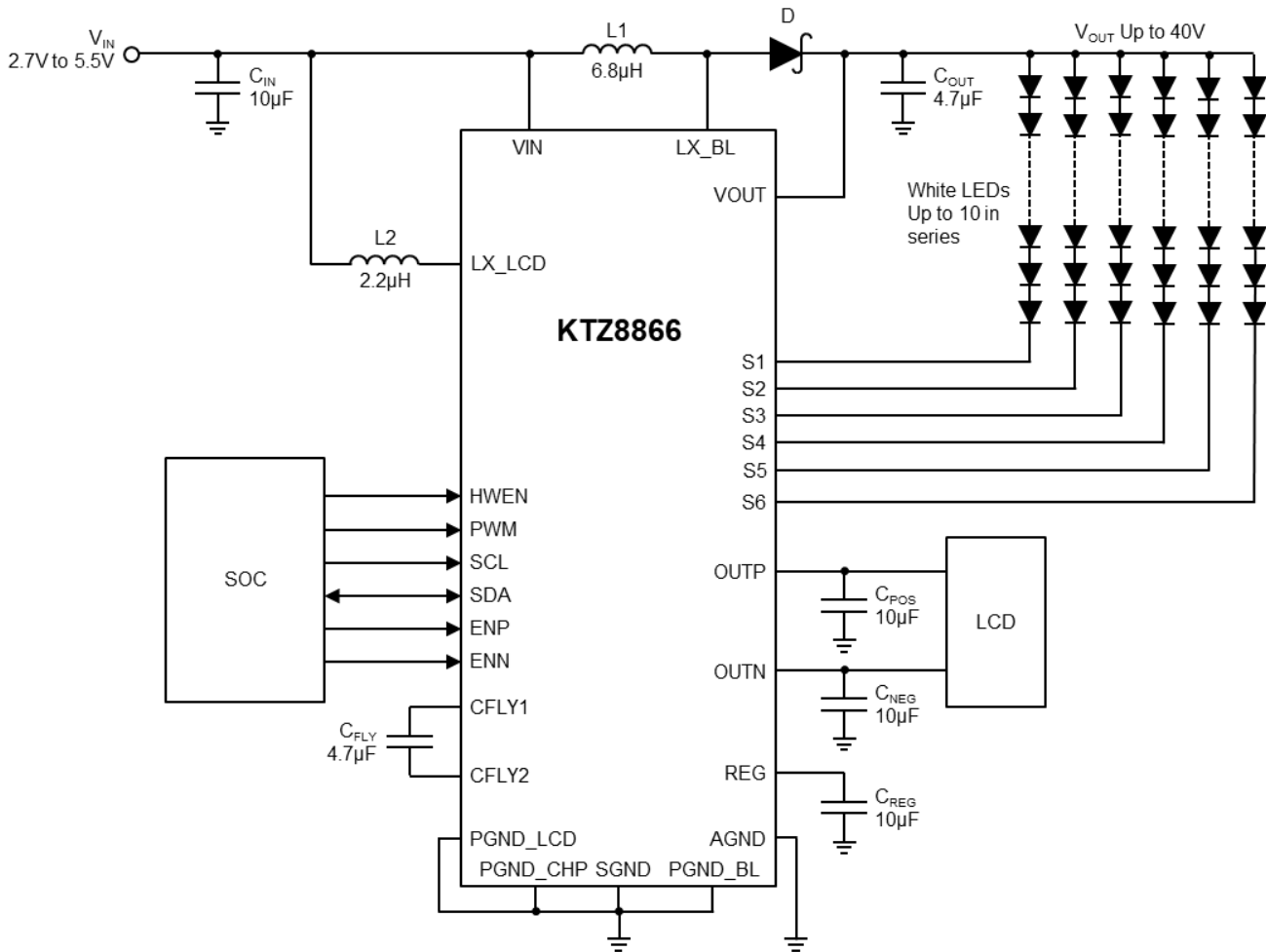
The LCD bias power section includes a step-up converter, LDO and an inverting charge pump to generate dual outputs, OUP and OUTN, whose voltages can be programmed via an I²C interface. By integrating synchronous rectification MOSFETs for the step-up converter and charge pump, the KTZ8866 maximizes conversion efficiency up to 85%.

Various protection features are built into KTZ8866, including inductor current limit protection, output short circuit protection, output over-voltage protection, LED fault (open or short) protection and thermal shutdown protection.

KTZ8866 is equipped with I²C interface for various controls and status monitor.

KTZ8866 is available in a RoHS and Green compliant 28-ball 1.73mm x 2.92mm x 0.62mm WLCSP package.

Typical Application



Ordering Information

Part Number	Marking ¹	Operating Temperature	Package
KTZ8866EKAA-TR	PRXXYYZZZZ	-40°C to +85°C	WLCSP-28

1. PR = Device ID Code, XX = Date Code, YY = Assembly Code, ZZZZ = Serial Number.

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