

High Efficiency 4-CH LED Backlight Driver with Dual LCD Bias Power

Features

- Backlight LED Driver
 - Wide input range: 2.9V~5.5V
 - High efficiency step-up LED driver with 4-Ch current sinks, up to 32V 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
 - Selectable boost switching frequency 1.0MHz or 500kHz with Auto-Frequency Mode supported
 - 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: 2.9V~5.5V
 - Programmable dual output Bias regulator using a single inductor
 - Programmable ramp time for OUTP 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 150mA
 - I_{REG_OUT} up to 300mA at V_{REG_OUT} = 6.0 V, V_{IN} ≥ 3.0 V
 - Active output discharge function
 - Current limitation and short protection
- Others
 - System level input UVLO
 - Thermal shutdown protection
 - Low shutdown current <1 μ A
 - Flexible I²C interface
 - Pb-free Packages: WLCSP-24
 - RoHS and Green Compliant
 - -40°C to +85°C Temperature Range

Brief Description

KTZ8864A is the ideal power solution for LED backlighting and LCD bias power of small and 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 2.9V to 5.5V, accommodating 1-cell lithium ion batteries or 5V supply.

The LED driver's four regulated current sinks can regulate up to 30mA with its maximum boost output voltage up to 32V. 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, OUTP 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 KTZ8864A maximizes conversion efficiency up to 85%.

Various protection features are built into KTZ8864A, including inductor current limit protection, output short circuit protection, output over-voltage protection, LED fault (open or short) protection and thermal shutdown protection.

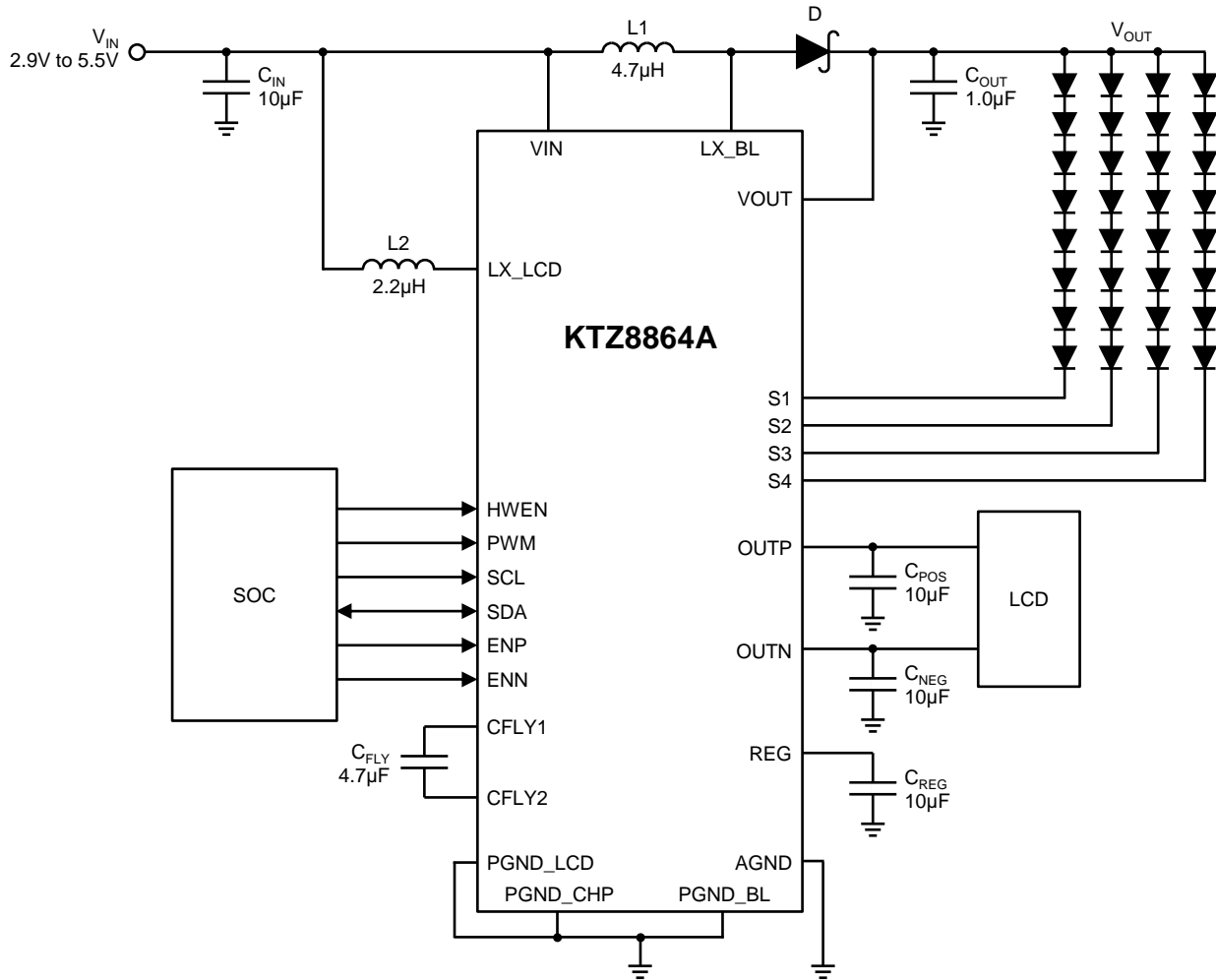
KTZ8864A is equipped with I²C interface for various controls and status monitor.

KTZ8864A is available in a RoHS and Green compliant 24-ball 1.72mm x 2.45mm x 0.62mm WLCSP package.

Applications

- Smartphone/Tablet Backlight

Typical Application



Ordering Information

Part Number	Marking ¹	Operating Temperature	Package
KTZ8864AEJAA-TR	OJXXYYZZZZ	-40°C to +85°C	WLCSP-24

1. "WWXXYYZZZZ" is the device code, date code, assembly code and serial number.

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