6 Channel, 1X/1.5X Charge Pump White LED Driver

DESCRIPTION

The EUP3654 is a high efficiency charge pump white LED driver. It supports 6 white LEDs with regulated constant current for uniform intensity. The EUP3654 maintains the highest efficiency by utilizing a 1.5X fractional charge pump and low dropout current regulators. A low external parts count (two 2.2uF flying capacitors and two small 2.2uF capacitors at V_{IN} and V_{OUT}) makes the EUP3654 ideally suited for small battery-powered applications.The charge pump provides backlight current utilizing six matched current sinks. The load and supply conditions determine whether the charge pump operates in 1x, 1.5x mode.

The EUP3654 uses single wire serial pulse interface which controls all functions of the device, including enabling the part and setting LED driver's current level with 32 steps.

The EUP3654 also provides an external PWM dimming control while DPWM duty cycle is controlled directly from an external PWM signal, adjusting brightness further based on image contents. And Direct PWM dimming signal frequency range is from 200Hz to 1KHz.

With a 3mm×3mm TQFN-16 package and 4 small capacitors, the EUP3654 provides a complete LED driver solution with a minimal PCB footprint.

FEATURES

- 1X/1.5X Mode for Ultra-High Efficiency
- 0.5mA to 25mA Output Current for Each Channel
- 2.7V to 5.5V Input Voltage
- 1MHz Fixed Switching Frequency
- Single-Wire Serial Pulse Interface to Set LED Current with 32-Step Scale
- External PWM Dimming with 200Hz - 1KHz Frequency Range
- High Backlight Current Matching ±0.5% Typical
- High Backlight Current Accuracy ±1.5% Typical
- Soft Start Function
- Built-In Short-Circuit Protection
- Built-in Thermal Protection
- I_Q<1uA in Shutdown
- TQFN 3mm×3mm TQFN-16 package
- RoHS Compliant and 100% Lead(Pb)-Free Halogen-Free

APPLICATIONS

- Cell phones, smart phones, and PDAs
- Portable media players
- Digital cameras and GPS units
- Small LCD Backlighting
- Display/keypad backlighting and LED indicators

Typical Application Circuit

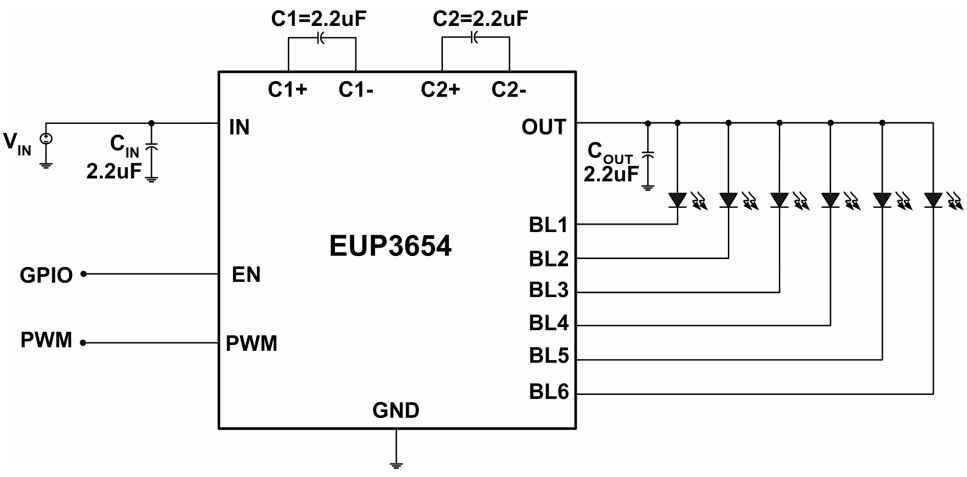


Figure1.