





the LT1615. The constant-current design of the circuit guarantees the same LED current through all series LEDs, regardless of the forward voltage differences between the LEDs. Although this circuit is designed to operate from a single Li-Ion battery (2.5V to 4.2V), the LT1615 is also capable of operating from inputs as low as 1V with commensurate output power reductions.

Brightness Control

The brightness of the LED can be controlled by applying a PWM signal to the $\overline{\text{SHDN}}$ pin on any of the backlight circuits shown as long as a couple of precautions are taken. Because of the “soft-start” circuitry incorporated in these DC/DC converters, the output voltage will not immediately rise to full output after the $\overline{\text{SHDN}}$ pin is taken high. Consequently, a PWM signal in the range of 200Hz is recommended—much faster and brightness control will be nonlinear; much slower and flicker may be observed. It may also be desirable to place a resistor between the DC/DC converter output and ground (in parallel with the LED load) to discharge the output during shutdown. Select a resistor that will draw approximately 1mA when the DC/DC converter is operational. (A parallel resistor is not required with the LTC1682 because it contains internal discharge circuitry.)

As an alternative to using PWM control, a DAC output can also be used to control the brightness of the LEDs

For applications help,
call (408) 432-1900

Linear Technology Corporation
1630 McCarthy Blvd., Milpitas, CA 95035-7417
(408) 432-1900 • FAX: (408) 434-0507 • www.linear.com

dn231f conv LT/TP 0500 370K • PRINTED IN THE USA

