

NCP1840

LED Driver, 8-Channel, Programmable



Product Overview

For complete documentation, see the data sheet.

The NCP1840 is a highly integrated general purpose LED driver with the ability to drive up to eight LEDs. A high efficiency, low noise, charge pump allows the use of higher forward voltage LEDs while automatically maintaining a low operating battery voltage. Each of the eight driver currents is fully programmable, each utilizing a 5-bit current DAC. The current can be turned on or off achieving various dimming levels using a programmable 6-bit counter. The full-scale current of all eight current DACs is set by an external resistor. The NCP1840 requires only five small ceramic capacitors and one resistor to form a complete LED power supply and current controller. By utilizing a fourth mode (1.33x), the NCP1840's charge pump optimizes efficiency based on the voltage across the LED current sources. 1.33x mode can offer approximately 10 percent more efficiency than a typical 1.5x mode. The device powers up in 1x mode and will automatically boost to higher modes whenever any enabled LED current source begins to enter dropout. The first dropout switches the device into 1.33x mode, and subsequent dropouts switch the NCP1840 into 1.5x and 2x modes, respectively.

Features

- Programmable, Individual Output PWM Control with 6-Bit Counter
- Eight 30 mA Universal Current Sources with 5-Bit Programmable Logarithmic Brightness Control
- Read/Write Serial Interface for Convenient Programming
- Patented (1X, 1.33X, 1.5X and 2X) Charge Pump for Higher Forward Voltage LEDs (e.g. 4.1 V)
- Soft-Start Power-On-Reset (POR)

Benefits

- Increase dimming or blinking flexibility.
- Eight LEDs in parallel can be lit. Logarithmic brightness levels best accommodate natural human eye viewing. 30mA gives a higher maximum brightness level if desired. Programming flexibility can accommodate customer's LED pattern animation.
- Improved programming and troubleshooting because registers can be written to and read from. I2C instructions can also relieve system processor burden.
- Longer battery life in portable applications. A smaller PCB can be used because fewer external components are needed.
- Automatic device re-set, including soft start capability.

Applications

- Notebook Battery Power Indicator
- Multi-LED Status Indicators
- Small Format Display Drivers
- True-Green LED Applications

End Products

- Notebook Computers
- Toys and Games
- Electronic Musical Instruments

Application Diagram

