

## Product Overview

### NCL30086BH: Analog/Digital Dimmable Power Factor Corrected Quasi-Resonant Primary

For complete documentation, see the data sheet.

The NCL30086BH is a controller targeting isolated and non-isolated “smart-dimmable” constant-current LED drivers. Designed to support flyback, buck-boost, and SEPIC topologies, its proprietary current-control algorithm provides near-unity power factor and tightly regulates a constant LED current from the primary side, thus eliminating the need for a secondary-side feedback circuitry or an optocoupler.

Housed in the SOIC10 which has the same body size as a standard SOIC8, the NCL30086BH is specifically intended for very compact space-efficient designs. The device is highly integrated with a minimum number of external components. A robust suite of safety protections is built in to simplify the design. To ensure reliable operation at elevated temperatures, a user configurable current foldback circuit is also provided. In addition, it supports analog and PWM dimming with a dedicated dimming input intended to control the average LED current.

Pin-to-pin compatible to the NCL30086, the NCL30086BH provides the same benefits with in addition, an increased resolution of the digital current-control algorithm for a 75% reduction in the LED current quantization ripple.

#### Features

- Constant Current Control with Primary Side Feedback
- Power factor correction with low harmonic distortion
- Precise Current Regulation Accuracy
- Line feedforward for enhanced regulation accuracy
- Wide Vcc operating range
- User Programmable Thermal Foldback
- Open and Shorted LED/Output Diode Protection
- Wide temperature range of -40 to 125 °C
- Dedicated Analog/Digital Dimming control
- VCC Undervoltage and overvoltage protection

For more features, see the data sheet

#### Benefits

- No Optocoupler or secondary control circuitry required
- Exceeds industry needs for lighting
- No need for binning of LEDs or production trimming
- Improve regulation across line variation
- Supports wide range of LED forward voltages
- Protects LED driver from overheating under severe conditions
- Enhanced fault handling
- Supports outdoor and high temperature environments
- Enables smart lighting applications
- VCC Undervoltage and overvoltage protection

#### Applications

- Integrated LED Drive Electronics
- LED Driver
- Open Frame LED Driver

#### End Products

- LED Bulbs and Tubes
- LED Light Engines
- Electronic Control Gear for LED Systems
- LED Driver Power Supplies and Adapters

### Part Electrical Specifications

Product	Pricing (\$/Unit)	Compliance	Status	Topology	V <sub>I</sub> Min (V)	V <sub>I</sub> Max (V)	V <sub>O</sub> Max (V)	I <sub>O</sub> Max (mA)	f <sub>SW</sub> Typ (kHz)	Package Type
NCL30086BHDR2G	0.48	Pb-free Halide free non AEC-Q and PPAP	Active	Step-Up/Step-Down/SEPIC	9.4	26	200	3000	Up to 150	SOIC-10 NB

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