



## Product Overview

### NCL30086: AC-DC Power Factor Corrected Quasi-Resonant Primary Side Current Mode Controller for LED Lighting with Smart Analog/Dimming Capability

For complete documentation, see the data sheet

#### Product Description

The NCL30086 is an AC-DC power factor corrected flyback controller targeting isolated and non-isolated “Smart-dimmable” constant current LED drivers. The controller operates in a quasi-resonant mode to provide optimal efficiency. The current control algorithm supports flyback, buck-boost, and SEPIC topologies. Thanks to a novel control method, the device is able to tightly regulate a constant LED current from the primary side. This removes the need for secondary side feedback circuitry, biasing and an optocoupler.

The device is highly integrated with a minimum number of external components. A robust suite of safety protection is built in to simplify the design. This device is specifically intended for very compact space efficient designs and supports analog and PWM dimming with a dedicated dimming input intended to control the average LED current. To ensure reliable operation at elevated temperatures, a user configurable current foldback circuit is also provided. The NCL30086 is housed in the SOIC10 which has the same body size as a standard SOIC8.

#### 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

#### 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

#### 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	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
NCL30086ADR2G	Pb-free Halide free	Product Preview	Flyback Step-Up/Step-Down	9.4	26	200	3000	Up to 150	SOIC-10 NB
NCL30086BDR2G	Pb-free Halide free	Active	Flyback Step-Up/Step-Down	9.4	26	200	3000	Up to 150	SOIC-10 NB

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