

## Product Overview

### NCL30386: Dimmable Power Factor Corrected Quasi-Resonant Primary Side Current-Mode Controller for LED Lighting with thermal foldback

For complete documentation, see the data sheet.

The NCL30386 is a power factor corrected flyback controller targeting isolated constant current LED drivers. The controller operates in a quasi-resonant mode to provide high efficiency. 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, its biasing and for 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 digital dimming with two dedicated dimming inputs control ideal for Smart LED Lighting applications.

#### Features

- Integrated HV start up current source
- Digital PSR CC loop control
- Digital PSR CV loop control
- Digital PFC loop algorithm
- Valley Lock out and Frequency Foldback
- Analog/PWM Dimming input signal treatment for analog output
- Optional Dimming Curve
- Secondary Diode and Output Short Protection
- Open and Shorted LED Protection
- VCC Undervoltage and overvoltage protection

For more features, see the data sheet

#### Benefits

- Fast startup, Low standby power & Wide output operation range
- Constant Brightness Regulation -  $\pm 2\%$
- Good start up performance at cold temperature condition
- Over 0.9 PF at half load 230 Vac and Under 10% THD at half load universal input
- High efficiency at wide input and output range
- Precise dimming CC tolerance, Wide operation range and no audible noise
- Linear dimming curve (L) and Qdratic dimming curve (S)
- Avoids overheating in fault condition
- Robust fault handling of common LED system faults
- Robust fault handling

#### Applications

- Integral LED Bulbs
- Integrated LED Drive Electronics
- LED Light Engines
- LED Driver Power Supplies

#### End Products

- LED Bulbs
- LED Power Supply Drivers
- LED Light Engines
- LED Tubes
- Electronic Control Gear for LED Systems

#### 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
NCL30386A1DR2G	0.4533	Pb-free Halide free non AEC-Q and PPAP	Active	Step-Up/Step-Down/SEPI C	9.7	25	14	+300/-500	Variable	SOIC-9 NB
NCL30386A2DR2G	0.4533	Pb-free Halide free non AEC-Q and PPAP	Active							SOIC-9 NB
NCL30386B1DR2G	0.4533	Pb-free Halide free non AEC-Q and PPAP	Active	Step-Up/Step-Down/SEPI C	9.7	25	14	+300/-500	Variable	SOIC-9 NB
NCL30386B2DR2G	0.4533	Pb-free Halide free non AEC-Q and PPAP	Active							SOIC-9 NB

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