

## Product Overview

### NCL30083: Step Dimmable Quasi-Resonant Primary Side Current-Mode Controller for LED Lighting with thermal foldback

For complete documentation, see the data sheet.

The NCL30083 is a PWM current mode controller targeting isolated flyback and non-isolated buck-boost constant current topologies. The controller operates in a quasi-resonant mode to provide high efficiency. Thanks to a novel control method, the device is able to precisely 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. The device supports 5 step log dimming down to 5%. To enhance system lifetime, it has current foldback at a user programmable temperature point. While the NCL30083 has integrated fixed overvoltage protection, the designer has the option to program a lower overvoltage protection level.

#### Features

- Primary Side Sensing
- Wide VCC Range
- Precise LED Current Regulation of  $\pm 1\%$  typical
- $\sim 0.9$  power factor with passive valley fill
- User Programmable Thermal Foldback
- Open and Shorted Output Protection
- Secondary Diode Short Protection
- 5 Step Dimmable to  $< 5\%$  output current
- VCC undervoltage and overvoltage protection
- Latched (A version) and Auto-recoverable (B version) fault handling

For more features, see the data sheet

#### Applications

- Line Powered LED Drivers
- Integral Driver Electronics

#### Benefits

- No optocoupler or secondary control circuitry required
- Allows support for wide number of LEDs in string and simplifies transformer design
- No need for binning of LED forward voltage or trimming in production for accuracy
- Meets Energystar® LED Bulb and Residential Luminaire Standards
- Protects system from overheating by gracefully reducing current
- Robust handling of faults
- Avoids overheating in fault conditions
- Allows dimming with standard wall switch
- Reliable operation across all conditions
- Flexibility in design

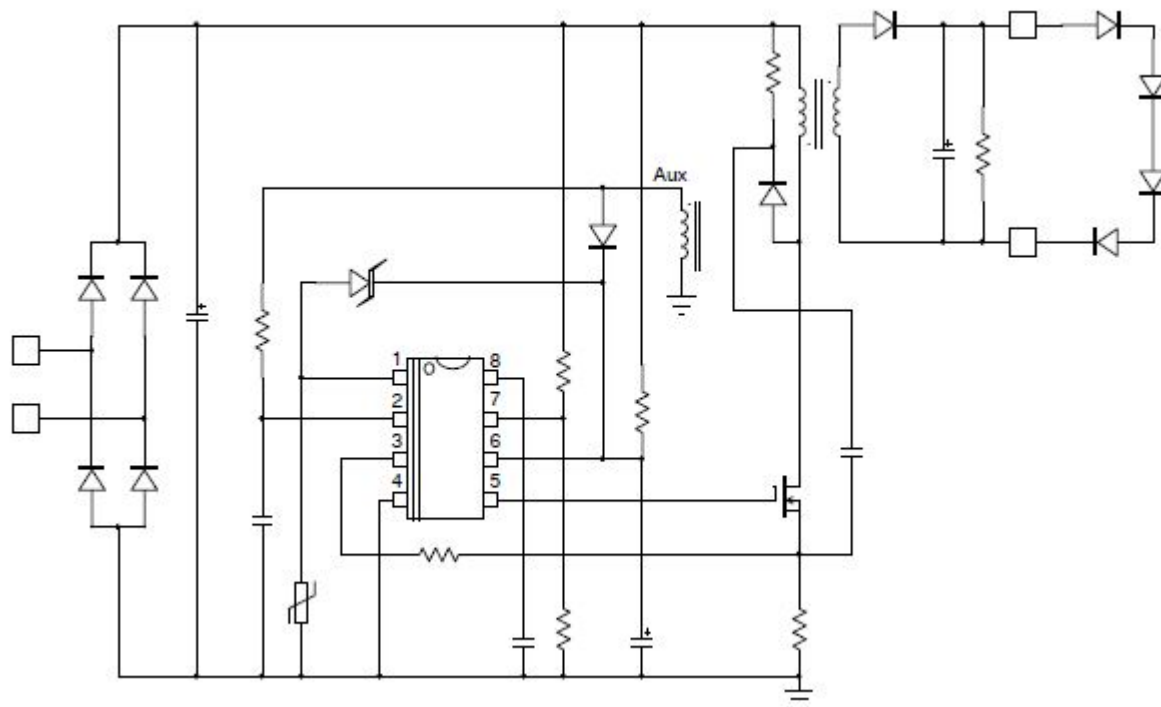
#### End Products

- Integral LED Bulbs and downlights
- LED Light Engines
- Electronic Control Gear for LEDs

### 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
NCL30083BDR2G	0.3733	Pb-free Halide free non AEC-Q and PPAP	Active	Flyback	9.4	26	300	3000	Up to 150	SOIC-8

# Application Diagram



For more information please contact your local sales support at [www.onsemi.com](http://www.onsemi.com).

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