

## Product Overview

### NCP1612: Power Factor Controller, Enhanced, High Efficiency

For complete documentation, see the data sheet.

The NCP1612 is active power factor corrected (PFC) controller specifically designed for use as a boost pre-converter in ac-dc adapters, flat TVs, lighting ballasts and other medium powered offline applications. The controller is based on an innovative Current Controlled Frequency Foldback (CCFF) method. In this mode, the circuit classically operates in Critical conduction Mode (CrM) when the inductor current exceeds a programmable value. When the current is below this preset level, the NCP1612 linearly reduces the frequency down to about 20 kHz when the current is at a null. CCFF maximizes the efficiency at both nominal and light load. In particular, the standby losses are reduced to a minimum. The controller features a robust suite of protection features to properly handle an array of power supply operating and fault conditions. This device is particularly suited a PFC stage for LLC controllers due to its dedicated PFC\_Okay Output.

#### Features

- Critical conduction mode with current controlled frequency foldback
- Dynamic Response Enhancer
- Soft Overvoltage Protection
- -500 mA/+800 mA Drive Capability
- Valley turn on
- Wide Vcc Range of 9.5-35 Vdc
- Two Vcc startup versions: 10.5 V (A) and 17 V (B)
- AC Line Brownout Detection
- Cycle-by-cycle switch current monitoring
- Saturated inductor and shorted boost or bypass diode detection

For more features, see the data sheet

#### Benefits

- Optimizes conversion efficiency across load range
- Improved transient response for line and load steps
- Reduces accoustic noise and stress in the event of an overvoltage fault
- Supports wide range of MOSFETs and power levels
- Improved efficiency amd reduced EMI generation
- Easy to bias even under light load or high line conditions
- B version allows smaller Vcc capacitor and faster startup in self biased applications
- Protects boost stage power components during line fault conditions
- Enhances system robustness
- Enhanced safety monitoring without extra components

#### Applications

- Offline Power Supplies
- Lighting Ballasts
- LED Lighting Drivers and Power Supplies

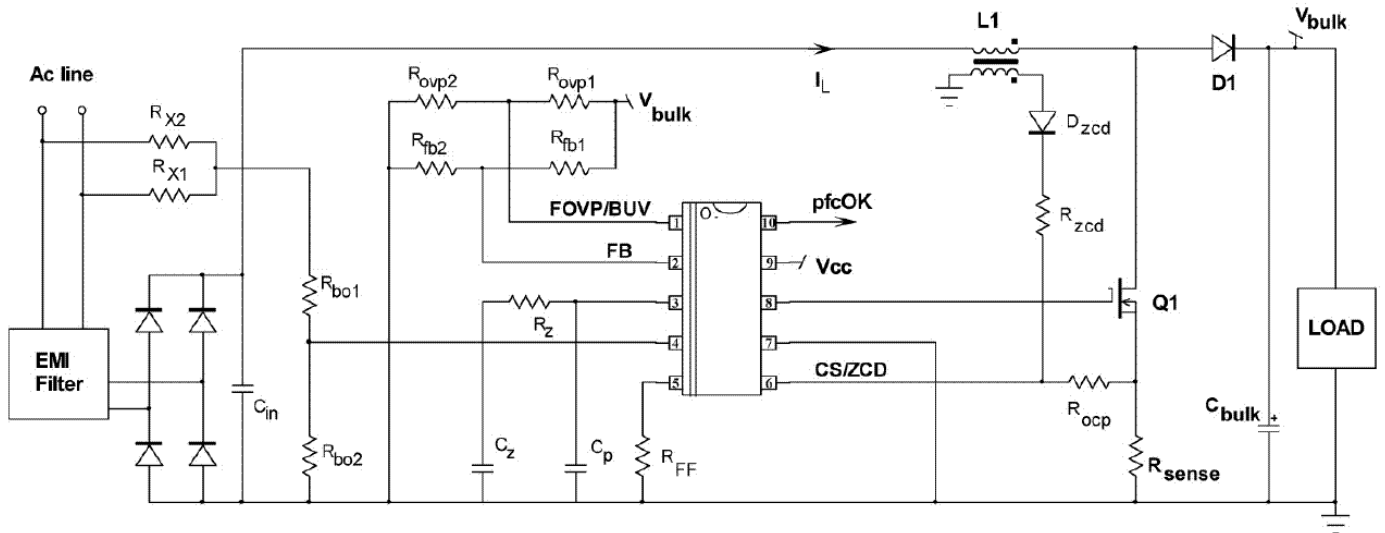
#### End Products

- Flat TV
- All-In-One Computers
- High Powered Adapters
- LED Lighting

### Part Electrical Specifications

Product	Compliance	Status	PFC Mode	Frequency Operation	Control Mode	Topology	$f_{sw}$ Typ (kHz)	V <sub>cc</sub> Max (V)	Drive Cap. (mA)	UVLO (V)	Latch	UVP	Inhibition	Package Type
NCP1612A1DR2G	Pb-free Halide free	Active	DCM CRM	Variabl e	Current Mode	Step- Up	Variabl e	35	500 / 800	9	Yes	Yes	Yes	SOIC- 10 NB
NCP1612A2DR2G	Pb-free Halide free	Active	DCM	Variabl e	Current Mode	Step- Up	Variabl e	35	500 / 800	9	Yes	Yes	Yes	SOIC- 10 NB
NCP1612A3DR2G	Pb-free Halide free	Active	CRM DCM	Fixed	Current Mode	Step- Up	Variabl e	35	500 / 800	9	Yes	Yes	Yes	SOIC- 10 NB
NCP1612ADR2G	Pb-free Halide free	Active	DCM CRM	Variabl e	Current Mode	Step- Up	Variabl e	35	500 / 800	9	Yes	Yes	Yes	SOIC- 10 NB
NCP1612BDR2G	Pb-free Halide free	Active	CRM DCM	Variabl e	Current Mode	Step- Up	Variabl e	35	500 / 800	9	Yes	Yes	Yes	SOIC- 10 NB

# Application Diagram



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

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