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NCP1681

Totem Pole Continuous Conduction Mode (CCM) / Multi-mode (CrM-CCM) Power Factor Correction Controller

Product Overview

For complete documentation, see the data sheet.

The NCP1681 is a PFC controller IC designed to drive the bridgeless totem-pole PFC topology. The bridgeless totem-pole PFC is a power factor correction architecture that consists of a fast switching leg driven at the PWM switching frequency and a second leg that operates at the AC line frequency. This topology eliminates the diode bridge present at the input of a conventional PFC circuit, allowing significant improvement in the power stage efficiency. The controller can be configured to operate in Continuous Conduction Mode (CCM) or Multi-Mode (CrM-CCM) operation.

Features

- Totem Pole PFC Topology Eliminates Input Diode Bridge
- Continuous Conduction Mode (CCM) Operation At High Power Level
- Optional Multi-mode Operation With CCM at High Power & CrM at Medium Power Level
- Frequency Foldback in DCM With 25 kHz Minimum Frequency
- Skip Mode in Very Light Load Condition
- Novel Current Sense Scheme
- Digital Voltage Loop Compensation
- AC Line Monitoring Circuit & AC Phase Detection
- Near Unity Power Factor in All Operating Modes
- PFC OK Indicator

For more features, see the data sheet

Benefits

- Enables High Efficiency & Compact Design
- Optimized Efficiency For High Power Design
- Optimized Performance Across Power Levels
- Prevents Operation in Audible Range
- Complies with Energy Efficiency Regulatory Standards
- Cycle-by-Cycle Current Limit Without Hall Effect Sensor
- Simplifies Design & Reduces External Components
- Simplifies Design & Reduces External Components
- Complies with Energy Efficiency Regulatory Standards
- Allows Communication with Downstream Converter to Optimize System Performance

Applications

- Power Factor Correction
- Offline Power Supply

End Products

- Server Power
- Telecom 5G Power
- Networking Power
- Gaming Console Power Supplies
- UHD TV Power Supplies

Part Electrical Specifications

Product	Pricing ($/Unit)	Compliance	Status	PFC Mode	Frequency Operation	Control Mode	Topology	f_{sw} Typ (kHz)	V_{CC} Max (V)	Drive Cap. (mA)	UVLO (V)	Latch	UVP	Inhibition	Package Type
NCP1681AAD2R2G	2.6399	Pb H	Active	CCM	Fixed	Current/Voltage Mode	Step-Up	65	30	100 / 100	10.5	Yes	Yes	No	SOIC 20 NB LESS PIN 17 & 19
NCP1681ABD2R2G	2.6399	Pb H	Active	CCM	Fixed	Current/Voltage Mode	Step-Up	95	30	100 / 100	10.5	Yes	Yes	No	SOIC 20 NB LESS PIN 17 & 19
NCP1681BAD2R2G	2.6399	Pb H	Active	MM	Variable	Current/Voltage Mode	Step-Up	65 / Variable	30	100 / 100	10.5	Yes	Yes	No	SOIC 20 NB LESS PIN 17 & 19