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ON Semiconductor®

Energy Efficient Innovations

Product Overview



NCP1680: Totem Pole Critical Conduction Mode (CRM) Power Factor Correction Controller

For complete documentation, see the data sheet.

The NCP1680 is a CRM 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.

Features

- Totem Pole PFC Topology Eliminates Input Diode Bridge
- Critical Conduction Mode (CRM) Operation
- Discontinuous Conduction Mode (DCM) with Valley Turn On Under Light Load Condition
- Frequency Foldback in DCM With 25 kHz Minimum Frequency
- Skip Mode in Very Light Load Condition
- Proprietary 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 Performance Across Power Levels
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- 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
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- Complies with Energy Efficiency Regulatory Standards
- Allows Communication with Downstream Converter to Optimize System Performance

Applications

- Power Factor Correction
- Offline Power Supply

End Products

- Industrial Power Supplies
- 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
NCP1680AAD1R2G	1.9066	Pb-free Halide free non AEC-Q and PPAP	NEW	CRM	Variable	Current/Voltage Mode	Step-Up	25 kHz to 130 kHz	30	100 / 100	10.5	Yes	Yes	No	SOIC-16
NCP1680ABD1R2G	1.9066	Pb-free Halide free non AEC-Q and PPAP	NEW	CRM	Variable	Current/Voltage Mode	Step-Up	25 kHz to 275 kHz	30	100 / 100	10.5	Yes	Yes	No	SOIC-16

For more information please contact your local sales support at www.onsemi.com.

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