

NCP1680

Totem Pole Critical Conduction Mode (CrM) Power Factor Correction Controller



Product Overview

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

Applications

- Power Factor Correction
- Offline Power Supply





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

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) | UVO (V) | Latch | UVP | Inhibition | Package Type |
|----------------|-------------------|---|--------|----------|---------------------|----------------------|----------|---------------------------|-------------------------|-----------------|---------|-------|-----|------------|--------------|
| NCP1680AAD1R2G | 3.2952 |   | Active | CRM | Variable | Current/Voltage Mode | Step-Up | Variable | 30 | 100 / 100 | 10.5 | Yes | Yes | No | SOIC-16 |
| NCP1680ABD1R2G | 2.024 |   | Active | CRM | Variable | Current/Voltage Mode | Step-Up | Variable | 30 | 100 / 100 | 10.5 | Yes | Yes | No | SOIC-16 |