

## 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
- 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

### 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 <sub>sw</sub> Typ (kHz) | V <sub>cc</sub> Max (V) | Drive Cap. (mA) | UVLO (V) | Latch | UVP | Inhibition | Package Type |
|----------------|-------------------|--------------------------------------|--------|----------|---------------------|----------------------|----------|---------------------------|-------------------------|-----------------|----------|-------|-----|------------|--------------|
| NCP1680AAD1R2G | 3.2952            | <div><div>Pb</div><div>H</div></div> | Active | CRM      | Variable            | Current/Voltage Mode | Step-Up  | Variable                  | 30                      | 100 / 100       | 10.5     | Yes   | Yes | No         | SOIC-16      |
| NCP1680ABD1R2G | 2.024             | <div><div>Pb</div><div>H</div></div> | Active | CRM      | Variable            | Current/Voltage Mode | Step-Up  | Variable                  | 30                      | 100 / 100       | 10.5     | Yes   | Yes | No         | SOIC-16      |