

## NCP1623

# Critical Conduction Mode (CrM) Power Factor Correction Controller, Follower Boost

## Product Overview

For complete documentation, see the data sheet.

The NCP1623 is a controller designed to drive PFC boost stages. Based on an innovative Valley Synchronized Frequency Fold-back (VSFF) method, it operates in critical conduction mode (CrM) until the power drops below a threshold level. The PFC controller enters discontinuous conduction mode (DCM) with increased dead-time as the load further decays (frequency foldback). VSFF maximizes the efficiency at both nominal and light loads. In addition, an internal circuitry ensures a near-unity power factor even when the switching frequency is reduced.

Housed in a TSOP-6 package, the circuit also incorporates the features necessary for robust and compact PFC stages, with few external components. The A version provides the follower boost capability for drastic low-line efficiency improvement. This controller is also available in the SOIC-8 package, which features an ultra-low-consumption mode externally controlled by the disable pin.

### Features

- Critical Conduction Mode (CrM) in heavy load conditions
- Discontinuous Conduction Mode (DCM) with Frequency Foldback in light load
- Follower Boost capability (NCP1623A only)
- Sleep Mode with circuit consumption below 100  $\mu$ A (SOIC-8 version only)
- Zero Current Detection via Drain sensing
- Dynamic Response Enhancer
- Near unity power factor over the load range

### Benefits

- Maximizes the efficiency at both nominal and light loads
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- Improves low line and full load efficiency
- Improves no load and ultra light load efficiency
- Simplifies PFC inductor design, eliminates auxiliary winding
- Fast line & load transient response
- Meets typical power supply spec

### Applications

- Power Factor Correction
- Offline Power Supply

### End Products

- USB PD Mobile & Laptop Charging
- Industrial Power Supplies
- Computing Power Supplies
- Gaming 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
NCP1623ADR2G	0.3467		NEW	CRM	Variable	Current Mode	Step-Up	Variable	30	500 / 800	10.5	Yes	Yes	No	SOIC-8
NCP1623ASNT1G	0.3267		Active	CRM	Variable	Current Mode	Step-Up	Variable	30	500 / 800	10.5	Yes	Yes	No	TSOP-6
NCP1623CDR2G	0.3467		NEW	CRM	Variable	Current Mode	Step-Up	Variable	30	500 / 800	10.5	Yes	Yes	No	SOIC-8