



Product Overview

NCP1651: Single Stage Power Factor Correction Controller

[For complete documentation, see the data sheet](#)

Product Description

The NCP1651 is an active power factor correction controller that is designed for operation over the universal input range (85 VAC-265 VAC) in 50/60 Hz power systems. It provides a low cost, low component count solution for isolated ac-dc converters with mid-high output voltage requirements and eases the task of meeting the IEC1000-3-2 harmonic requirements for converters in the range of 50W - 250W.

The NCP1651 is a fixed frequency controller that drives a flyback converter topology to operate in continuous/discontinuous mode. It programs the average input current to follow the line voltage in order to provide unity power factor. By using an average current mode control CCM algorithm, the NCP1651 can help provide excellent power factor while limiting the peak primary current. Its fixed frequency operation simplifies the design of the input filter.

The NCP1651 uses a proprietary multiplier design that gives much more accurate operation than conventional analog multipliers.

Features

- Fixed Frequency Operation
- Average Current Mode PWM
- Internal High Voltage Start-Up Circuit
- Continuous or Discontinuous Mode Operation
- High Accuracy Multiplier
- Overtemperature Shutdown
- External Shutdown
- Undervoltage Lockout
- Low Cost/Parts Count Solution
- Ramp Compensation Does Not Affect Oscillator Accuracy

Applications

- High Current Battery Chargers
- Front Ends for Distributed Power Systems

NCP1651

DESIGN GUIDELINES

NOTE: This is a theoretical design, and it is not implied that a circuit designed by this procedure will operate properly without normal troubleshooting and adjustments as are common with any power conversion circuit. ON Semiconductor provides a spread sheet that incorporates the relevant equations, and will calculate the bias components for a circuit using the schematic shown.

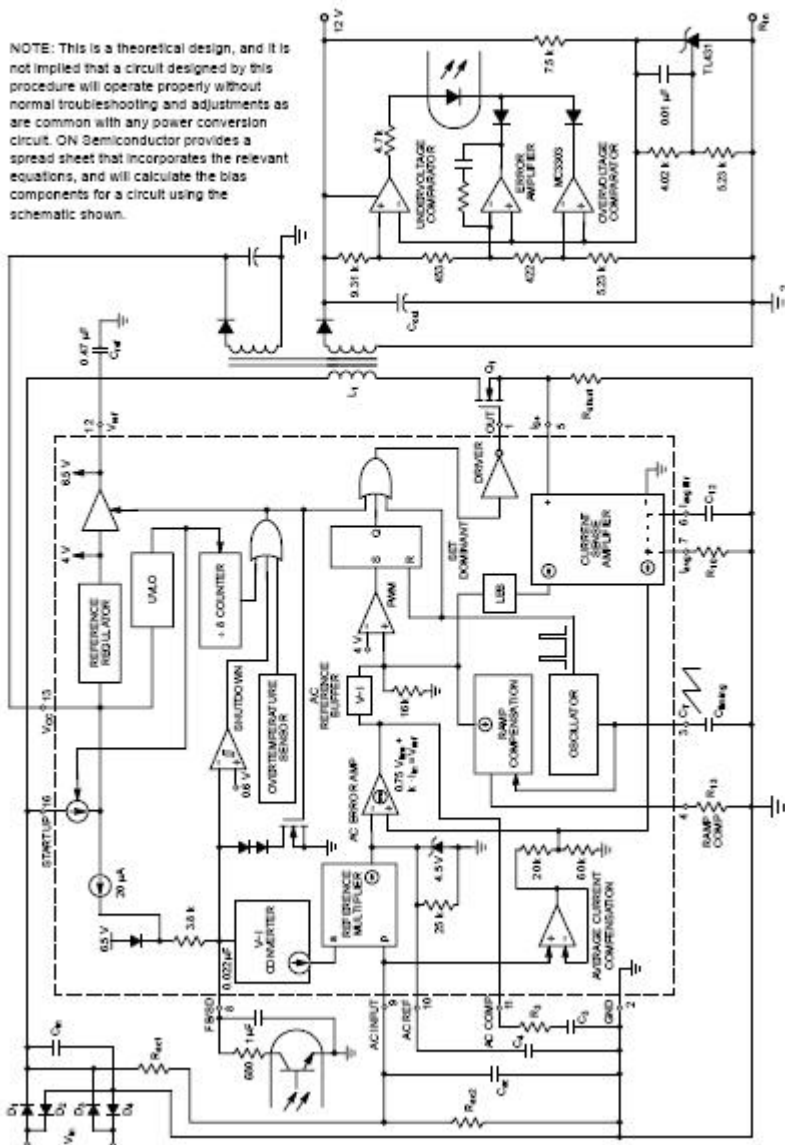


Figure 38. Typical Application Schematic

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

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