

PE4201 Power Factor Correction IC

The PE4201 represents a new dimension of integrated circuits providing power factor correction. Through its implemented safety features, it increases the reliability of operation. Additionally, by saving power, the PE4201 reduces system cost.

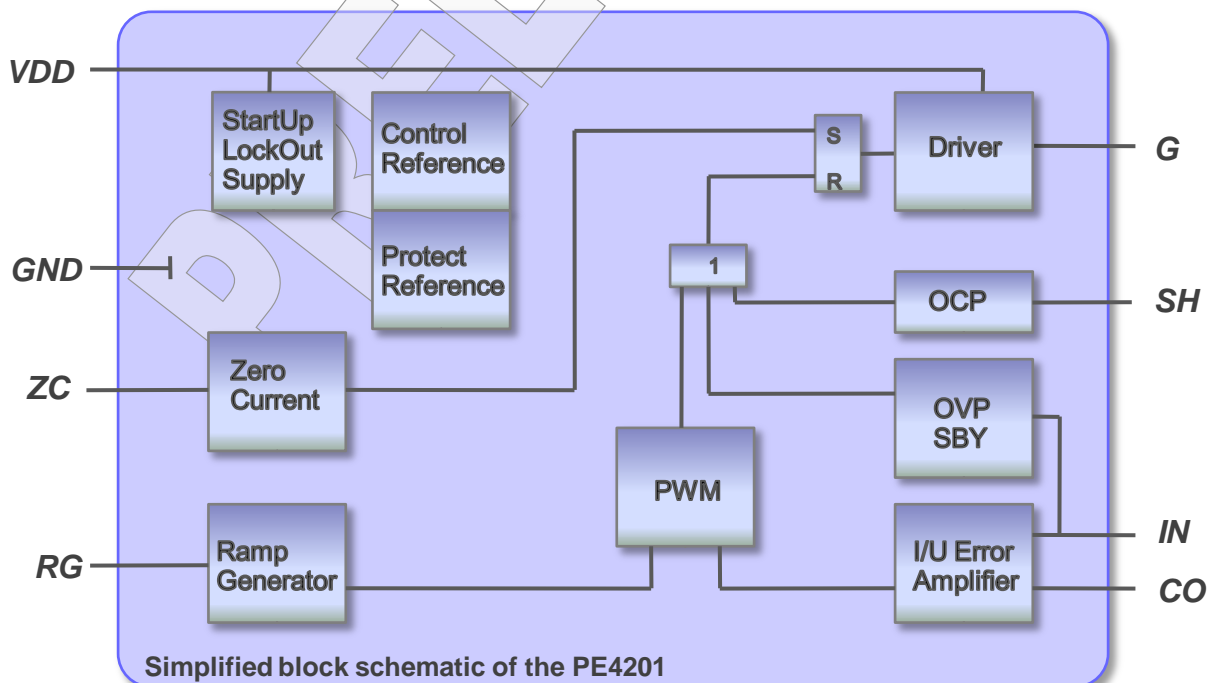
Description

The PE4201 is a wide input range controller IC for active power factor correction converters.

The IC operates in CRMode with voltage controlled PWM and in DCMMode at light load condition. The maximum switching frequency is determined by an internal delay circuitry. The control loops are compensated by the means of external components.

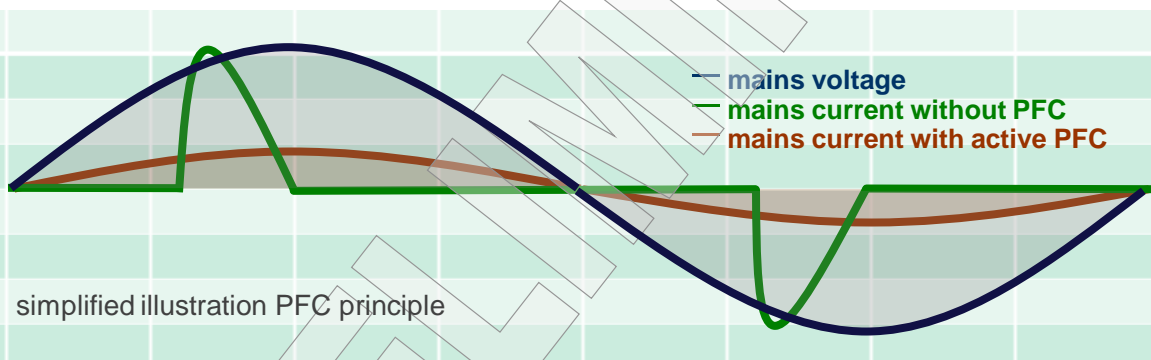
The PE4201 provides a set of protection features such as over voltage protection, open loop protection, under voltage lockout and peak current protection. Important protection features are supported by an independent reference. This ensures that the protection features remain working even in case of a deficient regulation reference.

The soft start function reduces the start up current and lowers the stress at the boost diode. In disabled mode the current consumption is less than 170 μ A.



Features

- low total harmonic distortion (THD)
- low start-up current ($< 5\mu\text{A}$)
- low operating current ($< 450\mu\text{A}$)
- disable function ($< 170\mu\text{A}$)
- under voltage lockout with $> 8\text{V}$ hysteresis
- over voltage and peak current protection with independent reference
- reduced operating frequency at low output power
- high efficiency at high and low output power
- internal clamping resistor at driver output
- very fast driver switch off speed at peak current detection
- driver load up to 5nF



Applications

- AC/DC converter
- Electric Light Ballast
- PC & TV & Monitor SMPS
- Low- & Mid-Power Applications

Parameters

- input voltage range 85 to 280 V_{AC}
- operating current (without driver load) $< 450\mu\text{A}$
- start-up current $< 5\mu\text{A}$
- start-up/lock-out hysteresis $> 8\text{V}$
- driver load 5nF
- operating temperature $-40..125^\circ\text{C}$
- supply voltage $8..30\text{V}$
- output voltage regulation $\pm 1\%$

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PE4301 Power Factor Correction IC

The PE4301 represents a new dimension of integrated circuits providing power factor correction. Through its implemented safety features, it increases the reliability of operation. Additionally, by saving power, the PE4301 reduces system cost.

Description

The PE4301 is an 8 pin control IC for power factor correction converters. It is suitable for a wide range of line input applications from 85 to 265 V_{AC}. The IC supports converters in boost topology and operates in continuous conduction mode (CCM) with peak current control.

A new regulation principle modulates the pulse width and the switching frequency, raising the adjustment range considerably. This enables power supplies from 70W up to 280W with excellent power factor. On top, there is no need to change the external circuitry. Even more, this power range can be widened, depending on the input voltage (see figure 2).

Two loops are combined to control the amplitude, phase and shape of the input current, with respect to the input voltage, giving near-unity power factor. The IC is equipped with various protection features to ensure safe operating condition for the system and for the device.

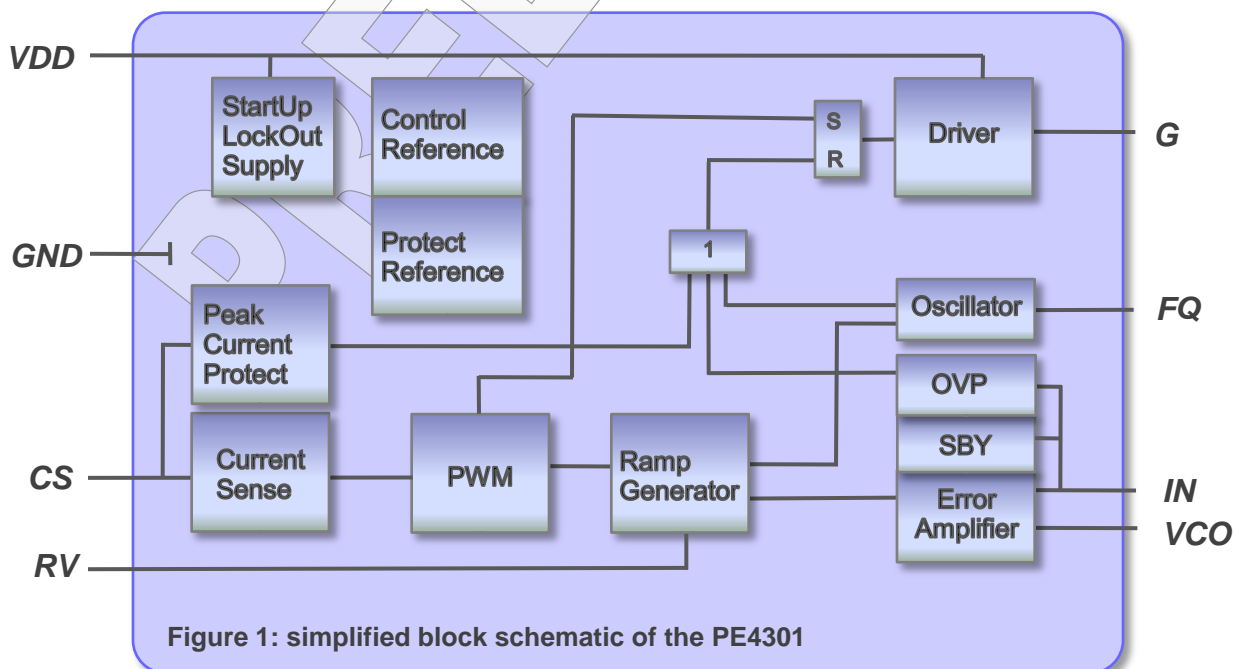


Figure 1: simplified block schematic of the PE4301

Features

- low total harmonic distortion (THD)
- under voltage lockout with > 8V hysteresis
- over voltage and peak current protection with independent reference
- excellent power factor at high and low output power with new regulation principle
- good power factor at zero crossing input voltage
- internal clamping resistor at driver output
- low operating current (< 500µA)
- low start-up current (< 5µA)
- disable function (< 200µA)
- fast driver switch off speed

Applications

- AC/DC converter
- Electric Light Ballast
- PC & TV & Monitor SMPS
- Low- & Mid-Power Switching Applications

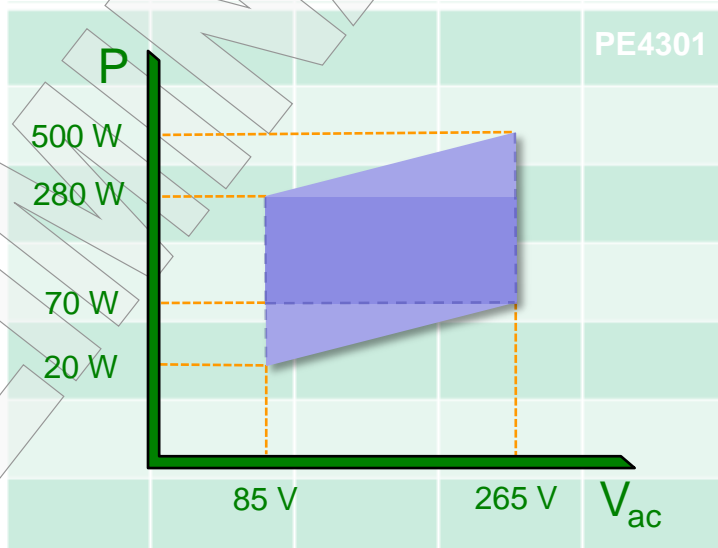


Figure 2: covered power range depending on input voltage

Parameters

- input voltage range 85 to 265 V_{AC}
- operating current (without driver load) <500 µA
- start-up current <5 µA
- start-up/lock-out hysteresis >8 V
- driver load 5 nF
- switching frequency 40..300 kHz
- operating temperature -40..125°C
- supply voltage 8..30 V
- output voltage regulation ±1%

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