

FEATURES

Highly flexible digital Totem Pole PFC controller (TPPFC) with integrated 650 V half-bridge gate driver

High flexibility digital PWM

- PWM frequency range from 20 kHz to 200 kHz
- PWM soft start during AC line cross zero
- Switching frequency spread spectrum for improved EMI
- Integrated 650 V half-bridge gate driver for slow-switching leg with typically 2.5 A peak driver current

High performance control loop

- 25 MHz sigma-delta ADC for line voltage and current sense, 12.5 MHz sigma-delta ADC for output voltage
- Enhanced dynamic loop response
- Input voltage feedforward to avoid reverse current during AC drop
- Support HVDC input

Multi-mode operation

- Continuous Conduction Mode (CCM) in heavy load Conditions
- Discontinuous Conduction Mode (DCM) in light load conditions
- Burst mode in the zero load conditions

Advanced control functions

- True RMS power metering
- Inrush current control with programming relay delay
- Two channels X-capacitor discharge during shut down

Extensive fault protections

- Fast over-voltage protection
- Bulk under-voltage protection and over-voltage protection
- External NTC thermal protection
- Cycle-by-cycle current limit
- Average switching current protection
- Built-in 1 kBit MTP to store custom configurations

Low power consumption

I²C interfaces

Programming via easy-to-use Graphical User Interface

Available in SSOP-24L packages

-40°C to 125°C operating temperature

APPLICATIONS

Cloud/Server Power Supplies

High Performance Computing

5G/Telecom Power Supplies

Industrial Power Supplies

Ultra-High Density (UHD) Power Supplies

Merchant Power

GENERAL DESCRIPTION

The HP1012 is a highly flexible digital Power Factor Correction (PFC) controller designed to drive the totem pole PFC power stage.

A fast-switching leg driven at the PWM switching frequency and a second leg that runs at the AC line frequency make up the totem pole PFC. This design allows for a considerable increase in efficiency and power density by removing the diode bridge that is present at the input of a traditional PFC circuit.

The HP1012 offers precise input voltage, current, and power measurement at rms. Through the I²C, this information can be communicated to microcontroller.

The HP1012 requires independent power supply for VDD and VCC. The devices are available in 7.8 mm x 8.2 mm SSOP-24L package that is specified over an ambient temperature range of -40°C to +125°C.

Device Information

PART NUMBER	PACKAGE	BODY SIZE
HP1012	SSOP-24L	7.8 mm x 8.2 mm

TYPICAL APPLICATION CIRCUIT

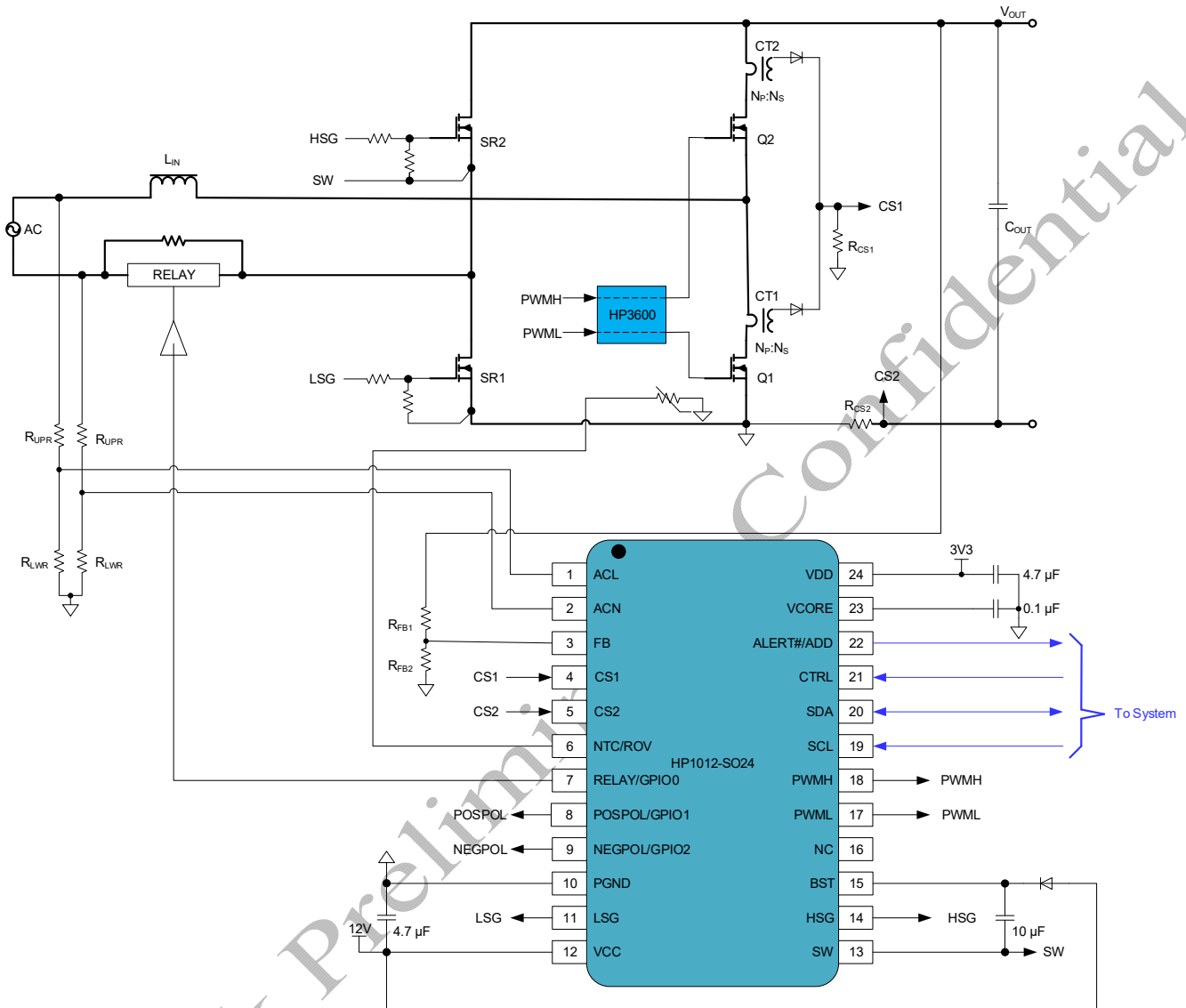


Figure 1. Typical Application Circuit