

### DESCRIPTION

The HR1201 is a high-performance controller that integrates an advanced digital PFC controller and a half-bridge LLC resonant controller. The HR1201 requires low input power at no-load or ultra-light load, making it compliant with the Energy Using Product Directive (EuP) Lot 6 and Code of Conduct Version 5 Tier 2 specifications.

The PFC of the HR1201 employs a patented average current control scheme, which can operate both in continuous conduction mode (CCM) and discontinuous conduction mode (DCM) according to the instantaneous condition of the input voltage and output load. The IC exhibits excellent efficiency and a high power factor (PF) at light load. In CCM, the HR1201 can be used in applications up to 500W with minimal board size limitations. The performance of the PFC can be optimized by programming multiple parameters through an I<sup>2</sup>C GUI. Programming can be completed either by the factory or by the customer with a detailed user guide.

The half-bridge LLC resonant converter achieves high efficiency with zero-voltage switching (ZVS). The HR1201 implements an adaptive dead-time adjustment (ADTA) function to guarantee ZVS in different load conditions. Additionally, the HR1201 can prevent the LLC converter from operating in capacitive mode, making it more robust and easier to design.

Full protection features include thermal shutdown, open-loop protection (OLP), over-current protection (OCP), over-voltage protection (OVP), and brown-in/-out protection.

The HR1201 is suitable for standby power applications. The HR1201 is available in a SOIC-28 package.

### FEATURES

#### *General System Features*

- Meets EuP Lot 6 and COC Version 5 Tier 2 Specifications
- Standard I<sup>2</sup>C Interface
- 1k EEPROM to Store Parameters
- User-Friendly GUI for Digital PFC
- VCC Supplied by External DC Input from Additional Isolated Power Source

#### *PFC Controller*

- Variable Frequency Control for Flat Efficiency and PF Curve
- High PF Due to Patented Input Capacitor Current Compensation
- Programmable Frequency Jittering
- Programmable Brown-In and Brown-Out
- Programmable Soft Start (SS)
- Cycle-by-Cycle Current Limit
- Open-Loop Protection

#### *LLC Controller*

- 600V High-Side Gate Driver with Integrated Bootstrap Diode and High dv/dt Immunity
- Adaptive Dead-Time Adjustment of HB LLC with Minimum and Maximum Limit
- Burst Mode Switching
- Safe Start-Up in Case of System Fault
- Two-Level Over-Current Protection (OCP)
- Latch Shutdown Protection
- Over-Temperature Protection (OTP)
- Capacitive Mode Protection

### APPLICATIONS

- Notebook Adapters
- All-in-One or Gaming Power Supply
- Desktop PC and ATX Power
- General AC/DC Power Supply up to 600W
- LCD TV and Plasma TV Power Supply

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