

MCP1012

Primary-Side Auxiliary Controller

General Information

The MCP1012 enables the system start up, gating and protection of an offline flyback converter for a secondary MCU. Its tight integration with the MCU simplifies the implementation of the power function using fewer devices and at a reduced cost. Other system benefits include direct measurement and accurate regulation of voltage and/or current, higher loop bandwidth by direct loop closure and easier system communication for load-referenced systems. This high-voltage, self-powered device also offers protection features, a MOSFET driver and low-power sleep mode.



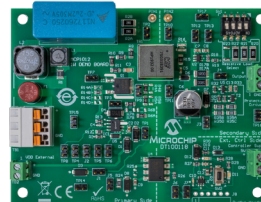
Features

- High-voltage start-up (rated 500V/700V)
- Few external components
- Internal open-loop, Peak Current-Mode (PCM) current regulator for start-up
- Current regulator constant 21 μ s off time
- Programmable Low-Frequency Oscillator (LFO) period
- Cycle-by-cycle current limiting
- Protection against Continuous Conduction Mode (CCM) of operation
- Able to accept external PWM Commands from a secondary side controller via isolator (optocoupler or pulse transformer)
- Undervoltage Lockout (UVLO) and Overvoltage Lockout (OVLO) protections
- Sleep and wake-up commands
- Low sleep power <15 mW
- Robust gate driver, able to drive 2.2 nF load to 65 KHz
- Overtemperature protection (thermal shutdown)
- Package: 7-Lead SOIC

Applications

- 120-240 VAC AC-DC applications
- High input voltage applications, up to 500 VDC
- DC-DC conversion where galvanic isolation is required
- Offline Switch Mode Power Supply (SMPS) applications, such as:
 - Power-on Reset (POR) voltage source
 - Current source for battery charging
 - Isolated bulk energy storage for power distribution consumer

Evaluation Board



The DT100118 is a simple evaluation development tool for the MCP1012 that allows functional evaluation. The MCP1012 is a primary-side controller that starts an off-line Flyback Converter working in conjunction with a secondary-side controller. The secondary-side controller can be a Microchip Digitally-Enhanced Power Analog (DEPA) device, a PIC-based digital controller, or other. The Secondary-Side Controller's PIC[®] resources can be made available and interactive to the application (load) since being located on the isolated side of the power supply.

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