

Marvell 88EM8011

Digital Power Factor Correction Controller
Smart Green Technology



PRODUCT OVERVIEW

The Marvell® 88EM8011 is a high-performance, low-cost, minimum component count power factor correction (PFC) controller. The device is used for universal PFC front-end boost conversion in systems or in standalone products that have power ranges between 10W and 300W.

The 88EM8011 includes Marvell's patented mixed mode control (MMC) that ensures the lowest total harmonic distortion (THD) in the industry. The average current control mode (CCM) is also available as an option. The device has multiple switching frequency options and its soft start is programmable for a variety of applications. The powerful adaptive driver self-adjusting feature allows for flexible application in a wide range of MOSFET sizes, while reducing the electromagnetic interference (EMI).

Through Marvell's innovative digital signal processing (DSP) solution, the 88EM8011 controller improves the steady state and transient performance. The combination of the MMC built on top of the DSP solution elevates industry standards for PFC controllers.

The proprietary adaptive over-current protection ability ensures constant power constraint. The safety provisions include open loop and a high voltage protection protocol.

The 8-pin SOIC and DIP packages facilitate the application design process by minimizing the requirements for external components as well as for board space. This guarantees simple system design at a minimum cost making the 88EM8011 the best choice for any PFC application.

BLOCK DIAGRAM

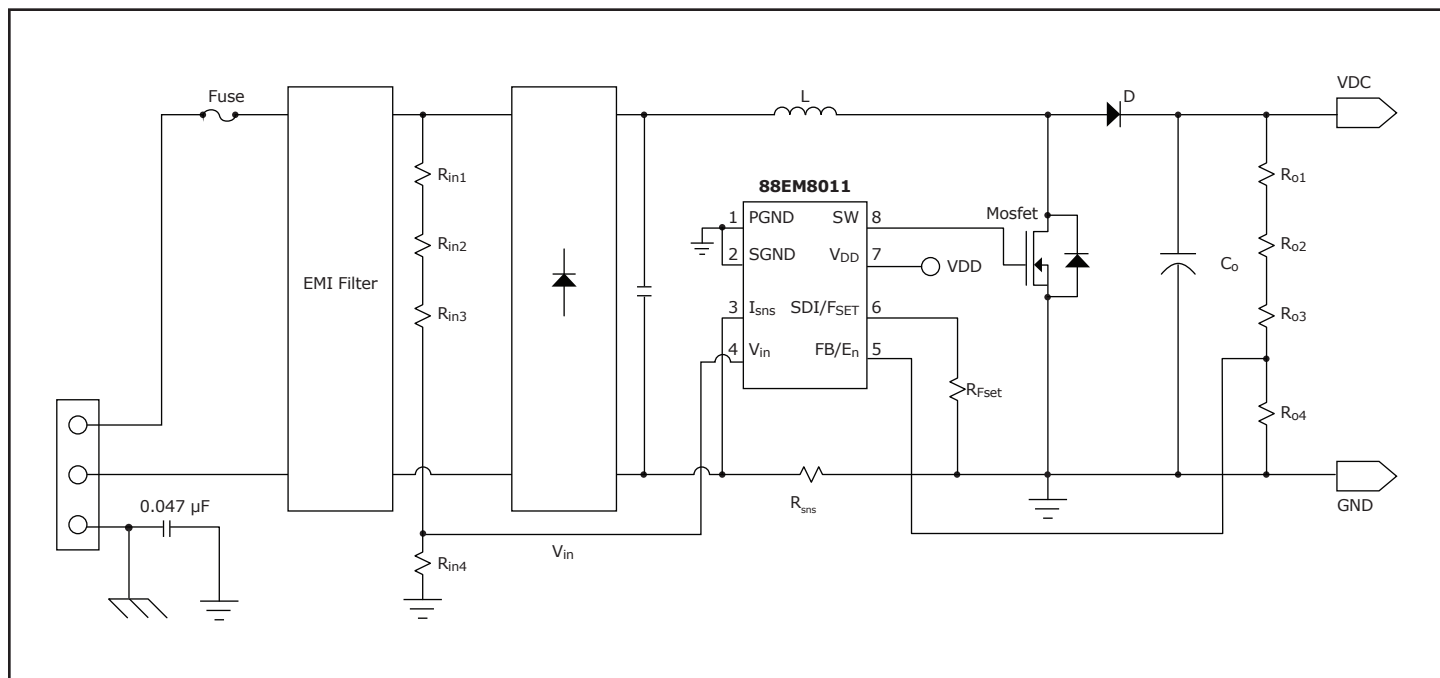


Fig 1. 88EM8011 Block Diagram

▶ FEATURES

- Energy savings of up to 50%
- Patented DSP control strategy
- Programmable switching frequency from 37.5 kHz up to 300 kHz
- Advanced MMC that utilizes CCM and DCM operation
- Programmable soft start
- High power factor and low harmonics performance for a wide range of load conditions
- Adaptive over current protection for universal voltage level
- Fast dynamic performance during input and load transient state
- Optimized total solution to reduce EMI and filter size
- Adaptive gate driver for applications between 10W-250W
- Minimal external components required
- Open loop protection
- Built-in Under Voltage Lockout (UVLO)
- Over Voltage Protection (OVP)
- Thermal shutdown

▶ APPLICATIONS

- Universal PFC input front-end boost controllers
- Ballasts
- Televisions/monitors

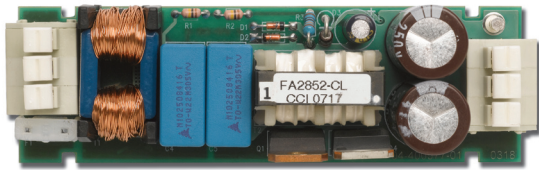


Fig 2. Front

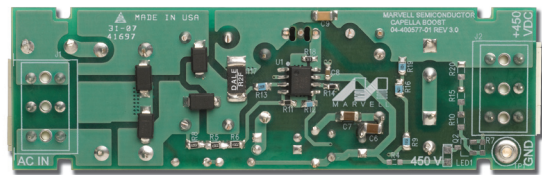


Fig 3. Back

THE MARVELL ADVANTAGE: Marvell products come with complete reference designs which include board layout designs, software, manufacturing diagnostic tools, documentation, and other items to assist customers with product evaluation and production. Marvell's worldwide field application engineers collaborate closely with end customers to develop and deliver new leading-edge products for quick time-to-market. Marvell utilizes world-leading semiconductor foundry and packaging services to reliably deliver high-volume and low-cost total solutions.

ABOUT MARVELL: Marvell is a leader in storage, communications, and consumer silicon solutions. Marvell's diverse product portfolio includes switching, transceiver, communications controller, processors, wireless, power management, and storage solutions that power the entire communications infrastructure, including enterprise, metro, home, and digital entertainment applications. For more information, visit our Web site at www.marvell.com.



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