

Marvell 88EM8041

Digital Power Factor Correction Controller – Smart Green Technology



PRODUCT OVERVIEW

The Marvell® 88EM8041 is a high performance, low-cost single stage power factor correction (PFC) controller for flyback applications. This device can be used in PFC flyback converter applications including adapters and battery chargers with output ranges up to 150W without using any external driver. The operational switching frequency of this device can be chosen from three selectable frequencies through an external resistor (RFset). The 88EM8041 also provides a soft-start feature for start-up conditions. The powerful adaptive driver self-adjusting feature allows for flexibility over a wide range of MOSFET sizes, while reducing the electromagnetic interference (EMI).

Through Marvell's innovative digital signal processing (DSP) solution, the 88EM8041 controller improves the steady state and transient performance. The combination of the adaptive loop coefficients in parallel with the DSP solution elevates industry standards for PFC controllers.

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

The 8-pin SOIC RoHS compliant package facilitates 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 88EM8041 the best choice for any flyback application with PFC.

BLOCK DIAGRAM

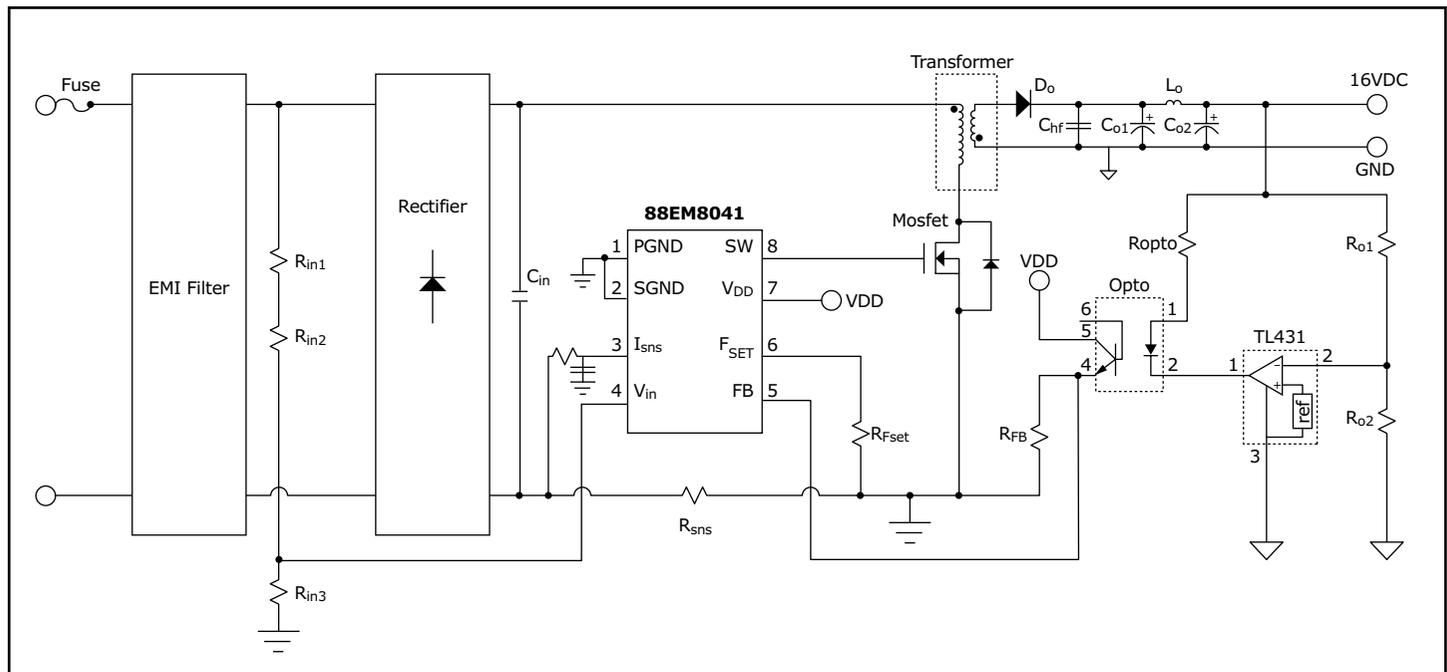


Fig 1. 88EM8041 Block Diagram

▶ **FEATURES**

- Energy savings of up to 50%
- Patented DSP control strategy
- Programmable switching frequency
- Soft-start
- High power factor and low harmonic performance for a wide range of load conditions
- Adaptive over current protection for universal voltage level
- Fast dynamic performance during input and load transient states
- Optimized total solution to reduce EMI and filter size
- Adaptive gate driver for applications between 10W-150W
- Minimal external components required
- Under Voltage Protection (UVLO)
- Over Voltage Protection (OVP)
- Thermal shutdown

▶ **APPLICATIONS**

- PFC flyback converters
- AC/DC adapters
- Battery chargers
- Lighting control

**MARVELL LAPTOP ADAPTER**

- 90W/20V
- Unity power factor
- Smallest size at 130mm x 55mm x 16mm

Fig 2. Marvell Laptop Adapter

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.

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