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Power Control Reference Design Enables a Secondary Side Microcontroller to Control Primary Power

New AC-DC controller plus Inde-Flux™ transformer technology licensed to Würth Elektronik eiSos simplifies design, reducing size and cost

CHANDLER, Ariz., Jan. 06, 2021 (GLOBE NEWSWIRE) -- In modern offline AC-DC power solutions, programmability and adaptive control offer the flexibility and intelligence needed by smart home devices to better interface with their power systems. In these systems, a secondary side microcontroller (MCU) is typically not capable of starting a system without the use of a separate bias power supply. A new reference design from Microchip Technology Inc. **(Nasdaq: MCHP)** solves this problem using the MCP1012 high voltage auxiliary AC-DC controller, demonstrating the ability to remove the independent bias power supply in many applications. The MCP1012 offline auxiliary device enables the system to transfer control of the power and duty cycle to a secondary MCU. The control between the system and the load can be more precise and purposefully coupled, through a design that can be simplified, reducing size and cost.

The reference design uses a patented isolation technique for isolated feedback. This patented isolation technique called Inde-Flux transformer technology is being licensed to Würth Elektronik eiSos. Inde-Flux technology is used in the Inde-Flux Transformer (Part Number 750318659), the first transformer made by Würth Elektronik eiSos using this IP and sold as part of Microchip's 15W MCP1012 offline reference design. This transformer combines the signal power and signal communication into one device, eliminating the need for optical feedback or an independent signal transformer. The option is also available to use more traditional approaches with a planar pulse transformer on the reference design, as well as the ability of the design to work with more traditional optocouplers and signal transformers. The secondary-side control is then enabled through a combination of the transformer and Microchip's newly released MCP1012 AC-DC controller along with the SAM D20 series 32-bit MCU.

The MPC1012 primary-side auxiliary controller provides for system start up, gating and protecting an offline flyback converter for the secondary MCU. The device enables a range of benefits such as direct measurement and active regulation of voltage and/or current, high loop bandwidth by direct loop closure and simplified communication for load-referenced systems.

The 15W MCP1012 offline reference design provides the principal working elements for a 15W offline power design with the necessary firmware to enable the elimination of the auxiliary power supply on the primary side. This can reduce the complexity of the system including eliminating the need for optocouplers in many applications such as appliances and smart speakers. This Inde-Flux transformer technology, in cooperation with Würth Elektronik

eiSos, can be scaled to standard and custom transformer designs for different voltages and power levels as needed.

“The combination of our Inde-Flux technology in a Würth Elektronik eiSos transformer, our MCP1012 AC-DC controller and our SAM D20 series 32-bit MCU creates a unique solution to offline power management,” said Rich Simoncic, senior vice president of Microchip’s analog, power and interface business unit. “These devices enable a simpler, more reliable implementation of complex bi-directional communication between the primary and secondary elements used in many isolated applications utilizing offline power. Where this solution is used in systems with a secondary MCU, customers can realize up to 60% savings of the bias supply area and reduce the bias supply bill of materials costs by $3 or more.”

Development Tools
The 15W MCP1012 offline reference design includes a user guide and comes with schematics and bill of materials, design files, firmware, and a demonstration unit. Microchip also offers a fundamental 1W evaluation board, the DT100118, for the MCP1012 AC-DC controller.

Pricing and Availability
The 15W MCP1012 offline reference design, part number EV37F82A, is available now for $225.00 each. The DT100118 1W reference design is available now for $115.00 each. The MCP1012-V/EKA is available now starting at $.40 each in 5,000-unit quantities.

For additional information, contact a Microchip sales representative, authorized worldwide distributor or visit Microchip’s website. To purchase products mentioned here visit our **purchasing portal** or contact a Microchip authorized distributor.

Resources
High-res images available through Flickr or editorial contact (feel free to publish):

- Application image: **www.flickr.com/photos/microchiptechnology/50668703087/sizes/l/**

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