

Digital PWM IC Integrates an 800-V Bipolar Power Transistor



iWatt, a developer of energy-efficient digital power supply control ICs, introduced the iW1810 AC/DC digital PWM IC, which integrates an 800V bipolar power transistor as well as numerous features to save external components and ensure high efficiency. The iW1810, iWatt's first IC designed for the industrial market, protects rugged offline power supplies for household appliances, motor control, and smart meters from high-line surge voltage while maintaining better than 5% output voltage regulation and consuming less than 100mW in standby mode. With an integrated high-voltage power transistor and the high 64 kHz switching frequency to reduce the size of the transformer and capacitors, designers can fit up to 3W power supplies into compact 25mm x 25mm x 15mm form factors using only 21 components.

Based on iWatt's proprietary digital control technology, the iW1810 simplifies printed circuit board (PCB) design and significantly reduces bill-of-material (BOM) costs by reducing the number of EMI filter components, and eliminating the opto-coupler and secondary-side shunt reference commonly used for isolation. The IC is rated at up to 3W output power with universal AC input. Digital feedback and control allows better than +2% output voltage regulation in typical isolated power supply designs with primary-side regulation. The internal 800V bipolar power transistor protects power supplies from high offline voltage spikes in noisy industrial applications, and also generates less EMI compared to a power MOSFET due to slower switching slew rates.

The iW1810 operates in quasi-resonant mode for low EMI and high efficiency. iWatt's proprietary EZ-EMIR technology increases EMI margin, up to 10dB, reducing

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the number and size of EMI filter components necessary to meet regulatory standards. Adaptive multi-mode PWM/PFM control also flattens efficiency curves without causing audible noise. Comprehensive safety features include over-voltage, short-circuit, and current sense resistor short circuit protection.

iWatt's AC-DC products use digital algorithms to replace traditional analog control. The patented adaptive digital control technology delivers size, cost and efficiency improvements, and lowers standby power to previously unattainable levels.

"The iW1810 combines the performance benefits of digital power with an integrated 800V power transistor for ease-of-use and ample power supply voltage de-rating," said Zahid Rahim, vice president and general manager of iWatt's AC/DC business unit.

Power supplies designed with the iW1810 are compliant with worldwide regulatory standards such as EN55022B, CISPR22B, Energy Star, CEC, and ECC, as well as safety standards such as UL1950 and IEC950.

The chip comes in a low-cost standard SO-8 package with high creepage distance between the high-voltage power transistor collector pin and the adjacent low-voltage pin to comply with industry-wide safety requirements. It is available immediately for \$0.34 in quantities of 10,000 units.

For more information, visit www.iwatt.com [1] or call (408) 374-4200.

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