PWM controller delivers better than 90% efficiency

Maxim Integrated Products introduces the MAX5974, a high-frequency, current-mode PWM controller with an active-clamp architecture and spread-spectrum operation. The device's active-clamp topology delivers better than 90% efficiency, thus reducing power consumption in synchronous forward/flyback power supplies targeting IEEE(R) 802.3af/at power devices (PDs). The MAX5974A/MAX5974C versions are well suited for universal rectified offline (85V to 265V) or telecom (36V to 72V) input voltages. The MAX5974B*/MAX5974D* also accommodate input voltages as low as 10.5V (e.g., wall adapters). Targeted applications include PoE PDs such as IP phones, IP cameras, and wireless LAN access nodes. The MAX5974 is also well-suited for universal and telecom input ranges.

The MAX5974A/MAX5974B contain an internal sample-and-hold error amplifier that regulates the output voltage through a coupled inductor. This feedback configuration saves space and cost by eliminating the need for a shunt regulator, optocoupler, and tertiary winding for the bias circuit. Applications requiring optocoupler feedback can use the MAX5974C/MAX5974D, which have a continuously connected feedback input.

The device's switching frequency is adjustable from 100kHz to 600kHz and is trimmed to provide ±8% accuracy. This allows designers to optimize the magnetics and filter elements used in the circuit to meet EMI requirements. The duty cycle can be programmed up to 80% of the maximum duty-cycle limit.

Additional features include an enable input to shutdown the device and programmable soft-start to eliminate output-voltage overshoot. The

MAX5974A/MAX5974C have an internal bootstrap ULVO with high hysteresis that requires 20V for startup; the MAX5974B/MAX5947D require 10V for startup.

Rated for operation over the -40 degrees Celsius to +85 degrees Celsius extended temperature range, the MAX5974 is available in a 3mm x 3mm, 16-pin TQFN package. Prices start at $1.07 (1000-up, FOB USA).

For more information, go to www.maxim-ic.com [1].

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