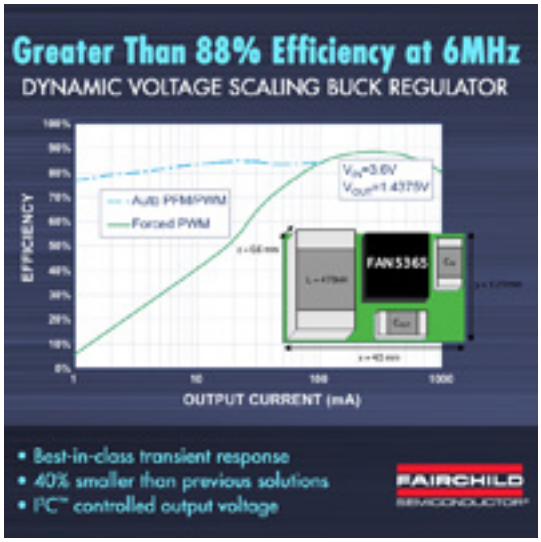
Dynamic Voltage Scaling Buck Regulator Saves Power in Lithium Ion Battery Devices



Consumer demand is driving the need for cell phone designers and chipset reference design firms to offer more multimedia functionality in their devices, resulting in heavy core processor demands, which in turn pushes the need for power reduction techniques such as dynamic voltage scaling (DVS).

Fairchild Semiconductor’s FAN5365, a 6 MHz, 800 mA/1A, digitally programmable Buck regulator, provides excellent dynamics, high efficiency and a small footprint, making it an ideal complimentary piece to the PMIC in a system engineer’s design.

The FAN5365, available in a 1.27 mm 3 1.29 mm, 9-bump WLCSP package is the smallest 6 MHz DVS buck regulator currently available and is up to 40 percent smaller than previous solutions, making it the best choice for powering core processors in single cell lithium ion (Li-Ion) battery devices such as smartphones, ultra-mobile PCs, tablets and wireless broadband hot spots.

The device offers excellent transient response while consuming low 40µA quiescent current in light-load efficiency enhancing PFM mode. For heavier loads, the regulator will automatically switch to a fixed frequency 6MHz PWM mode, allowing designers to use low cost and compact chip inductors and capacitors.

The FAN5365 supports up to 800 mA or 1A load currents and also offers a pin-selectable or I2C Bus® interface programmable output voltage, adjustable from 0.75V to 1.975V in 12.5 mV increments.

Additionally, the FAN5365 supports an extended Li-Ion battery range from 2.3V to 5.5V and offers advanced protection features including short-circuit current limit protection, thermal protection and under voltage lock out.

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