Small, High Efficiency Solution Drives Two Piezo Motors

By Wei Gu

Introduction
Piezoelectric motors are used in digital cameras for autofocus, zooming and optical image stabilization. They are relatively small, lightweight and efficient, but they also require a complicated driving scheme. Traditionally, this challenge has been met with the use of separate circuits, including a step-up converter and an oversized generic full bridge drive IC. The resulting high component count and large board space are especially problematic in the design of cameras for ever shrinking cell phones. The LT3572 solves these problems by combining a step-up regulator and a dual full bridge driver in a 4mm × 4mm QFN package.

A Simple Integrated Solution to Drive Two Piezo Motors
Figure 1 shows a typical LT3572 Piezo motor drive circuit. A step-up converter with a high efficiency internal switch is used to generate 30V from a low voltage power source such as a Li-Ion battery or any input power source within the part’s wide input voltage range of 2.7V to 10V. The LT3572 uses a peak current mode control architecture, which improves line and load transient response compared to other schemes. The switching frequency is adjustable from 500kHz to 2.5MHz, set either by an external resistor or synchronized to an external clock source of up to 2.5MHz. This allows selection of the optimum frequency for any given design.

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Conclusion
The LT3572 is a complete Piezo motor drive solution with a built-in high efficiency 40V, 1.2A internal switch and integrated dual 500mA full bridge drivers. It includes other features to minimize the application footprint, including fixed frequency, soft-start, and internal compensation.