

A3989: Bipolar Stepper and High Current DC Motor Driver

The A3989 is designed to operate at voltages up to 36 V while driving one bipolar stepper motor, at currents up to 1.2 A, and one dc motor, at currents up to 2.4 A. The A3989 includes a fixed off-time pulse width modulation (PWM) regulator for current control. The stepper motor driver features dual 2-bit nonlinear DACs (digital-to-analog converters) that enable control in full, half, and quarter steps. The dc motor is controlled using standard PHASE and ENABLE signals. Fast or slow current decay is selected via the MODE pin. The PWM current regulator uses the Allegro® patented mixed decay mode for reduced audible motor noise, increased step accuracy, and reduced power dissipation.

Internal synchronous rectification control circuitry is provided to improve power dissipation during PWM operation.

Protection features include thermal shutdown with hysteresis, undervoltage lockout (UVLO) and crossover current protection. Special power up sequencing is not required.

The A3989 is supplied in a leadless 6 mm × 6 mm × 0.9 mm, 36 pin QFN package with exposed power tab for enhanced thermal performance. The package is lead (Pb) free, with 100% matte tin leadframe plating.