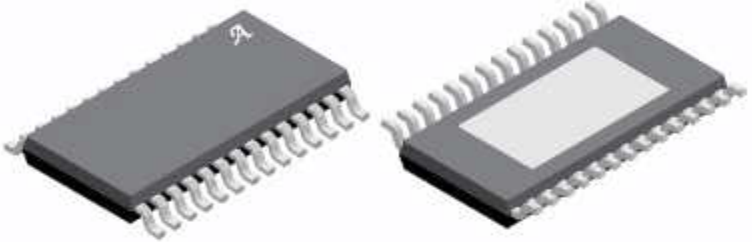
Microstepping DMOS Driver with Translator

FEATURES AND BENEFITS

- ±2.5 A, 35 V output rating
- Low $R_{DS(on)}$ outputs, 0.28 Ω source, 0.22 Ω sink typical
- Automatic current decay mode detection/selection
- 3.0 to 5.5 V logic supply voltage range
- Mixed, fast, and slow current decay modes
- Home output
- Synchronous rectification for low power dissipation
- Internal UVLO and thermal shutdown circuitry
- Crossover-current protection

Package: 28-pin TSSOP (suffix LP) with Exposed Thermal Pad



Not to scale

DESCRIPTION

The A3977 is a complete microstepping motor driver, with built-in translator. It is designed to operate bipolar stepper motors in full-, half-, quarter-, and eighth-step modes, with output drive capability of 35 V and ±2.5 A. The A3977 includes a fixed off-time current regulator that has the ability to operate in slow-, fast-, or mixed-decay modes. This current-decay control scheme results in reduced audible motor noise, increased step accuracy, and reduced power dissipation.

The translator is the key to the easy implementation of the A3977. Simply inputting one pulse on the STEP input drives the motor one step (two logic inputs determine if it is a full-, half-, quarter-, or eighth-step). There are no phase-sequence tables, high-frequency control lines, or complex interfaces to program. The A3977 interface is an ideal fit for applications where a complex microprocessor is unavailable or over-burdened.

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

Internal circuit protection includes thermal shutdown with hysteresis, undervoltage lockout (UVLO) and crossover-current protection. Special power-up sequencing is not required.

The A3977 is supplied in a thin (<1.2 mm), 28-pin TSSOP with an exposed thermal pad (suffix LP). The A3977 is a lead (Pb) free, with 100% matte tin leadframe plating.