Click here for production status of specific part numbers.

MAX77501

110V_{PK-PK} High-Efficiency Piezo Haptic Actuator Boost Driver

General Description

The MAX77501 is a high-efficiency controller driver for piezo haptic actuators and is optimized for driving up to 2µF piezo elements. It can generate a single-ended haptic waveform of up to 110V_{PK-PK} amplitude from a 2.8V to 5.5V input power supply or a single cell Li+ battery. Memory playback and haptic waveforms real-time streaming modes are supported.

A 25MHz SPI interface provides full system access and control, including fault reporting and monitoring. This allows for a rapid 600µs playback start-up time from shutdown. The on-board memory can be dynamically allocated as multiple waveforms storage or as a FIFO buffer. The IC also implements an ultra-low power boost architecture providing the lowest power consumption solution for a haptic actuator driver.

Built-in undervoltage lockout (UVLO), cycle-by-cycle overcurrent limit, overvoltage and thermal shutdown protections ensure safe operation under abnormal operating conditions.

The MAX77501 is available in a 30-bump, 0.4mm pitch, wafer-level package (WLP).

Applications

- Smartphones, Tablets/E-readers, Game Consoles
- Keyboard, Mice, Remote Controls, and Peripherals
- Haptic/Tactile Feedback Enabled Equipment

Benefits and Features

- 110V_{PK-PK} Haptic Waveforms Generation
- Optimized for up to 2µF Haptic Piezo Actuator
- 2.8V to 5.5V Input Supply Range
- 600µs Start-Up Time to Haptic Playback
- High-Efficiency, Low I_Q Extends Battery Life
  - 75µA Standby Current/1µA Shutdown Current
  - Maxim Patented Ultra-Low Power Boost Architecture
- 12-Bit Haptic Waveform Playback DAC
- Real-Time Streaming and RAM Playback Modes
  - 9k FIFO Buffer with FIFO Ready Status Signal
  - 8k RAM Buffer for Waveforms Storage
- 25MHz SPI Interface
  - SPI Ready, Warning and Fault Conditions Interrupt
- Protection Features
  - Programmable Cycle-by-Cycle Overcurrent Limit, 130V Overvoltage, UVLO, and Thermal Protections
- Small Size and Low Profile
  - 2.45mm x 2.05mm, 30 Bump WLP

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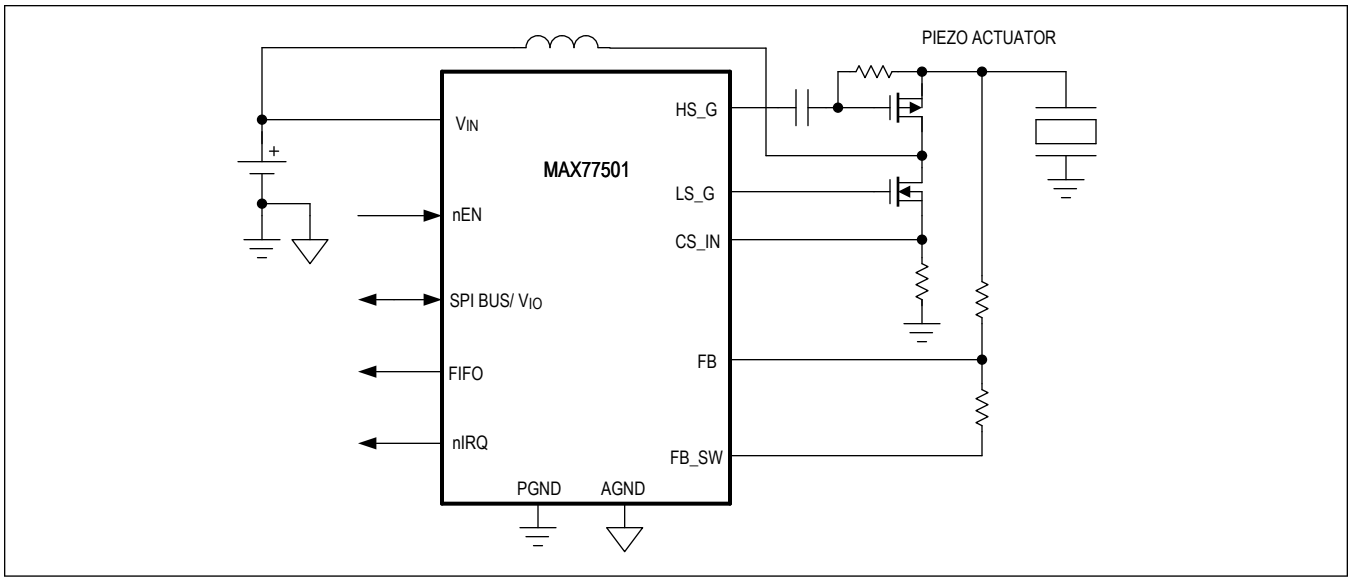
Simplified Application Circuit



19-100584; Rev 0; 6/19

Package Information

WLP

Package Code	W302M2+1
Outline Number	21-100276
Land Pattern Number	Refer to *Application Note 1891*
Thermal Resistance, Four-Layer Board:	
Junction to Ambient (θ_{JA})	49.38°C/W

For the latest package outline information and land patterns (footprints), go to *www.maximintegrated.com/packages*. Note that a "+", "#", or "-" in the package code indicates RoHS status only. Package drawings may show a different suffix character, but the drawing pertains to the package regardless of RoHS status.

Package thermal resistances were obtained using the method described in JEDEC specification JESD51-7, using a four-layer board. For detailed information on package thermal considerations, refer to *www.maximintegrated.com/thermal-tutorial*.

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For pricing, delivery, and ordering information, please visit Maxim Integrated's online storefront at https://www.maximintegrated.com/en/storefront/storefront.html.

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