



ANALOG DEVICES

Smart Linear Resonant Actuator Controller

Data Sheet

ADUX1001i

FEATURES

- ARC enabled LRA automatic resonance detection and magnitude control
- Agile pattern generator enabling HD haptic effects
- Fast start and sharp braking
- PWM and I²C drive modes
- Low latency response (LLR) drive mode
- Compatible with Immersion TS3000 and Immersion TS4000
- 8-bit DAC with programmable, bidirectional output current source capability
- 2-wire (I²C-compatible) 1.8 V serial interface
- Short-circuit protection
- Undervoltage protection
- Pin-selectable I²C address feature
- Available in a 5 × 3 array WLCSP package

APPLICATIONS

- Haptics applications
- Linear resonant actuators
- Eccentric rotating mass actuators
- Mobile phones
- Portable media players
- Portable navigation devices
- Tablet PCs

GENERAL DESCRIPTION

The **ADUX1001i** is a high efficiency linear resonant actuator (LRA) controller that uses the Analog Devices, Inc., proprietary Actuator Response Control™ (ARC™) technology. The **ADUX1001i** control algorithm detects LRA resonant frequency and provides closed-loop control of drive frequency and magnitude, ensuring compelling, reliable, and repeatable haptic effects for all portable, gaming, and handheld applications. The **ADUX1001i** features an 8-bit digital-to-analog converter (DAC) that has programmable, bi-directional output current capability. The hardware shutdown mode ensures low power operation over a full 2.3 V to 4.8 V supply range, making it ideally suited for portable mobile device haptic applications.

The **ADUX1001i** is compatible with Immersion TS3000 and Immersion TS4000 engines.

The **ADUX1001i** features three interface options ensuring that the **ADUX1001i** can be used in existing haptic implementations as well as in new low latency haptic implementations. The operating modes of the controller are invoked by the **ADUX1001i** using a PWM- and/or an I²C-compatible interface. The I²C 7-bit address for the **ADUX1001i** is programmable using two external pins.

FUNCTIONAL BLOCK DIAGRAM

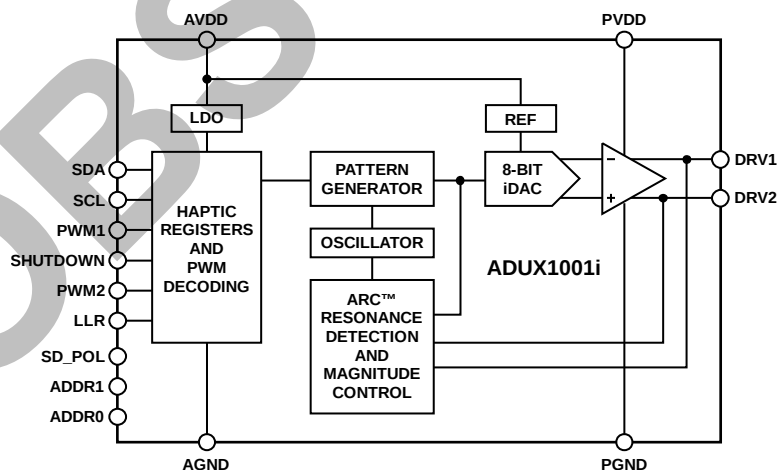


Figure 1.

For more information about the **ADUX1001i**, email: haptics@analog.com.

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