



BOS1901 Piezo Haptic Driver

QFN 20L 4x4x0.8 0.5P

The BOS1901 is a single-chip piezo actuator driver with energy recovery, based on a patent pending [CapDrive™ technology](#). It can drive actuators with up to 190 Vpk-pk waveforms while operating from a 3-5.5 V supply voltage. The input digital stream is written in the internal FIFO over the digital interface to generate the desired output waveform. Low power and small size make it suitable in a variety of applications where power consumption and heat dissipation must be minimized.

The BOS1901 uses a high-speed SPI in its Digital Front End. It enables the device to share a common communication bus for multi-actuator systems and the user to query various data such as the actuator voltage for sensing applications.

The differential driver achieves low distortion waveforms and quiet actuator operation. All settings are adjustable through the digital front end to reduce the BOM. Only 7 passive discrete components are required. The BOS1901 can be operated with a wide selection of commercial off-the-shelf inductors.

In systems that can't handle reverse current flow in the power delivery network, the BOS1901 features a unidirectional power input (UPI). When the UPI mode is activated, the driver behaves as a resistive load without reducing power efficiency.

Typical start-up time of less than 300 μ s makes the BOS1901 latency insignificant in most systems. Safety systems protect the device from damage in case of a fault.

Applications



Smartphones
and Tablets



Laptop
Computers



Keyboards
and Mice



Electronic
Gaming



Wearables



Cooling
Fans

Features

- High-Voltage Low Power Piezo Driver
 - Drives 100 nF at 190 V_{pk-pk} and 300 Hz with only 350 mW
 - Drives Capacitive Load up to 820 nF
 - Energy Recovery
 - Differential Output
 - Small Solution Footprint, QFN4x4mm
 - Low BOM cost
- Integrated Digital Front End with SPI
 - 64 samples Internal FIFO Interface
 - 1.8 V to 5.0 V Digital I/O Supply
- Piezo Sensing
- Fast Start Up Time, < 300 μ s
- Unidirectional Power Input option
- Wide Supply Voltage Range, 3 to 5.5 V

Specifications

Description	BOS1901
Supply Voltage Min	3.0 V
Supply Voltage Max	5.5 V
I/O Supply Voltage Min	1.62 V
I/O Supply Voltage Max	5.5 V
Full-Scale Output Voltage	190 Vpp
Quiescent Current (Sleep)	1 μ A
Total Harmonic Distortion + Noise	0.5 %