Application Brief

Haptic Steering Wheel Module

DRIVING TOUCH INNOVATION FOR SAFER JOURNEYS

At Boréas we're transforming how drivers engage with their vehicles by replacing traditional mechanical buttons with responsive haptic touch controls on the steering wheel. Our BOS1921-Q1 delivers precise, customizable feedback for safer and more intuitive interaction. While you may have experienced haptics in your steering wheel before, the current generation of LRA-based solutions lack response speed and make interactions feel sluggish. LRAs are also limited to a narrow frequency range and cannot offer unique branding with customizable waveforms.

BOS1921-Q1 delivers the third generation of haptic feedback to modern vehicles with ultra-low latency (<5mS)

HAPTIC PRECISION AT YOUR FINGERTIPS

BOS1921-Q1 delivers the third generation of haptic feedback to modern vehicles with ultra-low latency (<5mS), high-definition haptics and fully customizable profiles for enhanced driver experience and safety. The integration of force sensing also enables multi-function control. For example, a single solid-state button can be used for multiple infotainment menu controls. A small, compact footprint is enabled by our QFN package with wettable flanks for industry-standard reliability. The BOS1921-Q1 is designed to meet the rigorous demands of automotive environments, ensuring long-lasting performance and consistent haptic feedback even under harsh conditions.

INTUITIVE INTERACTION

BOS1921-Q1 replaces traditional mechanical buttons and slow LRA-based solutions with ultra-low latency

OEM BRANDING AND MULTI-FUNCTIONALITY

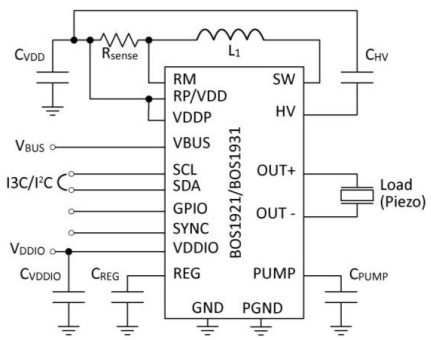
Fully programmable waveforms and force-sensing capabilities enable multi-purpose buttons

DURABILITY WITH SLEEK DESIGN

With a compact form factor, BOS1921-Q1 integrates seamlessly into sleek interior surfaces

POWERED BY OUR CAPDRIVE® TECHNOLOGY: BOS1921

- High-Voltage Low Power Piezo Driver
  - Drives 100 nF at 190 Vpk-pk and 300 Hz while consuming only 350 mW
  - Drives Capacitive Load up to 820 nF
  - Energy Recovery
  - Differential Output
  - Miniature Solution Footprint, WLCSP 2.1x1.7 mm
  - Small Solution Footprint, QFN 4x4 mm
  - Low BOM cost
- Advanced Piezo Sensing Capabilities
  - 7 mV Sensing Resolution
  - Interrupt Generation
  - Automatic Triggering of Haptic Feedback
- Integrated Digital Front End with I3C/I2C
  - 1024 sample Internal FIFO Interface
  - 1.8V to 5.0V Digital I/O Supply
  - Waveform Synthesizer (WFS)
  - Supports Continuous Waveforms Playback
  - State Retention in SLEEP Mode
- Fast Start Up Time of Less Than 300 µs
- Multi-Actuator Synchronization
- Wide Supply Voltage Range of 3V to 5.5V



Published by Boréas Technologies - Bromont, Québec, Canada.

Date: 09 / 2024

Additional information

For further information on technologies, our products, the application of our products, terms and conditions, or prices please contact the Boréas Technologies office by visiting our website at www.boreas.ca.