

# CS40L26/CS40L26B

## Smart Haptics Driver Enables HD Haptics for Gaming, Movies and Music to Augment the User Experience

The CS40L26/B features LRA real-time control for keyless and audio-2-haptics in mobile and portable applications, including smartphones, tablets and wearables.

### Advanced closed-loop control

- Sensor-less velocity control
- Widens LRA bandwidth for consistent performance
- Long-term LRA reliability

### Low latency for real time control of the haptic motor

- Wakeup from AoH hibernate mode in 5 ms

### Haptic driver features

- 11 V amplifier supply voltage MAX for fast startup and braking
- Short circuit protection

### Programmable DSP, faster processing – 130 MHz

- Easily design new haptics effects for UI/alerts/button replacement with state-of-the-art tools
- 18 Kb storage

### Simplified tuning with advanced closed-loop automated characterization

- Algorithm dynamically handles changes in actuator characteristics to eliminate the need to fine tune for long hours

### Class H digital boost converter

- 2 MHz switching frequency

### System protection

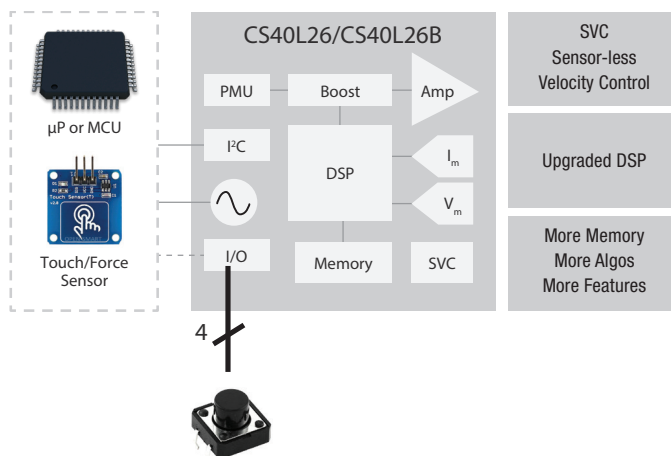
- IC thermal self-protection against over temperature
- Battery rail reactive brownout system protection

### Android 12 simplified integration

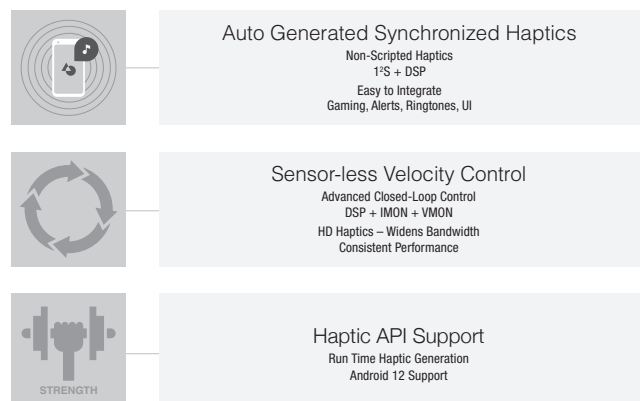
- Audio coupled haptics with I<sup>2</sup>S support
- Open wave table and chirp with scalability supports haptics APIs, with on-the-fly haptic generation



## Visual Block Diagram



## CS40L26B Enhances Smartphone UX

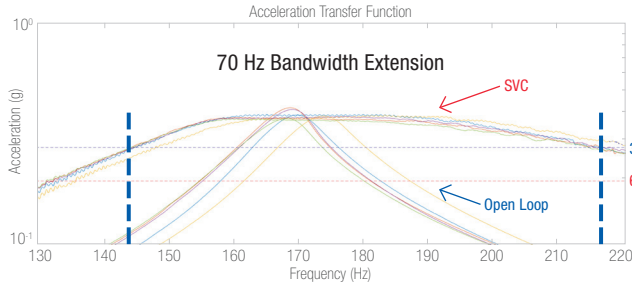


# Sensor-Less Velocity Control (SVC) Delivers Dynamic Haptic Performance

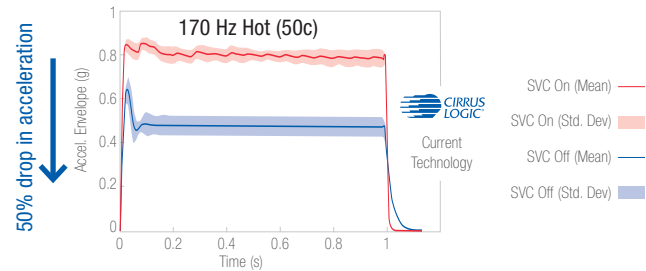
## Why SVC Matters – Closed-Loop Feedback Ensures Gaming Consistency

- Dynamically adapts to the LRA in real time – a key performance enhancement for gaming and streamed haptics
- Widens the LRA bandwidth for consistent acceleration, as well as crisp performance when in overdrive and braking

SVC Widens the LRA Bandwidth, Enabling HD Haptic Effects

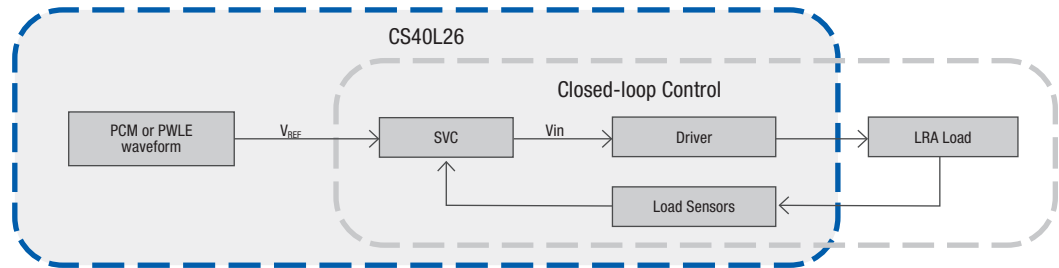


SVC Generates Consistent Acceleration



## How SVC Works

- SVC senses the load condition and adapts the signal  $V_{in}$  to drive the back-emf to follow  $V_{REF}$



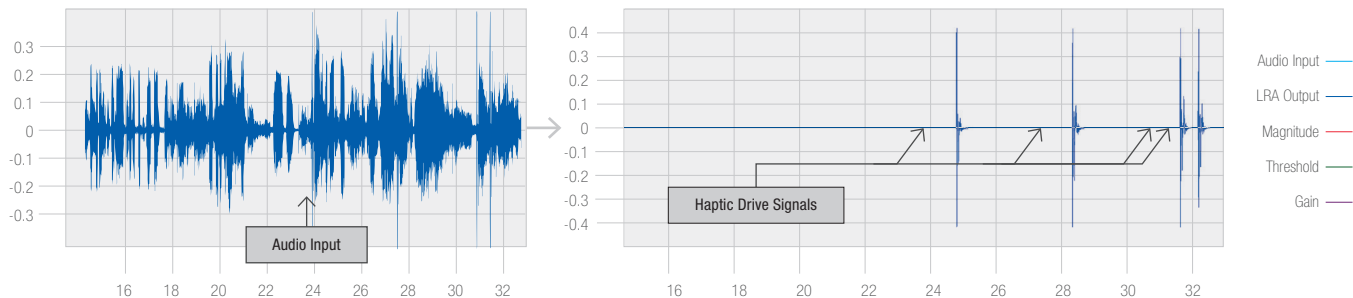
## Real-time, Automated Audio-2-Haptics

### Feel What You Hear with “On-the-Fly” Audio-2-Haptics

**Audio Generated Haptics — Complex Signal Processing Generates Textured HD Haptic Effects for Gaming, Videos and Music**

- Generates haptic drive signals from the audio stream for ringtones, YouTube videos and games tuned for the LRA

Audio Input, LRA Output, Magnitude, Threshold, Gain



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