TEXAS INSTRUMENTS

Haptic Solutions for Mobile Devices

Enhance your mobile device with advanced haptic feedback

Mobile Device Design Challenges

The mobile market is extremely competitive and constantly changing. The ability to create a differentiated product is becoming more and more difficult. Key features that once separated your smartphone or tablet from its competitors have now become industry standards. Consumers are looking for cool and new innovative products that use cutting edge technology. For this reason, mobile manufacturers need to find a way to enhance the user experience and provide the consumer with something they've never seen before.

Where does TI come in?

Texas Instruments offers a complete line of haptic drivers which have the ability to drive eccentric rotating mass (ERM), linear resonant actuator (LRA), and piezoelectric actuators. TI's haptic drivers have the ability to intelligently amplify the haptic waveform to achieve the maximum voltage an actuator can operate at. This allows for maximum impact to the user. Within TI's haptic drivers is the ability to store software that can generate the waveform as well.

By adding haptic effects, mobile manufacturers can differentiate their product by giving the user a tactile feedback rather than just an audible feedback. The tactile feedback in these mobile devices will give the user a "real feel" to typing, clicking, scrolling, and swiping, on the capacitive touch display on their smartphone or tablet. In addition, with the audio-to-haptics feature that is available in TI's DRV2605, mobile manufacturers can create more immersive multimedia and gaming, adding even more to the user experience.

With the global mobile device market looking for a way to differentiate itself from its predecessors, adding haptics to your device will be a technology that will be a "must-have" in your next smartphone or tablet.

Visit www.ti.com/haptics for more information.

Applications

TI's haptic drivers are used in more than 20 different mass-production smartphones and tablets in markets across the world. A sample of the solutions used in these applications include:

DRV8601 with ERM

DRV2603 with LRA

DRV2604 with LRA

DRV2605 with ERM or LRA

DRV2665 with piezo
(high-definition haptics)

Haptic Drivers

Device	Description	V_{OUT} (Max) (V)	Input Signal	I_Q (Typ) (mA)	Startup Time (ms)	Haptic Actuator Type	V_S (Max) (V)	V_S (Min) (V)	Operating Temp Range (°C)	Package	Price*
DRV2667	Piezo Haptic Driver with Boost, Digital Front End, and Internal Waveform Memory	200	I²C, PWM, Analog	0.13	2	Piezo	5.5	3	−40 to 85	QFN-20	2.95
DRV2604	Haptic Driver for ERM/LRA with Waveform Memory and Smart Loop Architecture	5.5	I²C, PWM, Analog	0.6	0.7	ERM, LRA	5.5	2.5	−40 to 85	9DSBGA	1.15
DRV2605	Haptic Driver for ERM/LRA with Built-In Library and Smart Loop Architecture	5.5	I²C, PWM, Analog	—	0.7	ERM, LRA	5.5	2.5	−40 to 85	9DSBGA	1.60
DRV2603	Haptic Driver with Auto Resonance Tracking for LRA and Optimized Drive for ERM	—	PWM, Analog	1.5	1.3	ERM, LRA	5.2	2.5	−40 to 85	QFN-10	0.70
DRV2665	Piezo Haptic Driver with Integrated Boost Converter and Digital Front End	200	I²C, PWM, Analog	5	2	Piezo	5.5	3	−40 to 70	QFN-20	2.50
DRV8662	Piezo Haptic Driver with Integrated Boost Converter	100	PWM, Analog	5	1.5	Piezo	5.5	3	−40 to 70	QFN-20	1.75
DRV8601	400 mA Fully Differential Motor Driver with 1.8-V Input Logic Thresholds	5.5	PWM, Analog	1.7	0.1	ERM, LRA	5.5	2.5	−40 to 85	BGA-8 MICROSTAR JUNIOR™, SON-8	0.48

*Suggested resale price in U.S. dollars in quantities of 1,000.

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IMPORTANT NOTICE

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Amplifiers	amplifier.ti.com	Communications and Telecom	www.ti.com/communications
Data Converters	dataconverter.ti.com	Computers and Peripherals	www.ti.com/computers
DLP® Products	www.dlp.com	Consumer Electronics	www.ti.com/consumer-apps
DSP	dsp.ti.com	Energy and Lighting	www.ti.com/energy
Clocks and Timers	www.ti.com/clocks	Industrial	www.ti.com/industrial
Interface	interface.ti.com	Medical	www.ti.com/medical
Logic	logic.ti.com	Security	www.ti.com/security
Power Mgmt	power.ti.com	Space, Avionics and Defense	www.ti.com/space-avionics-defense
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