

Haptic Driver with Auto Resonance Tracking for Linear Resonance Actuators (LRA) and Optimized Drive for Eccentric Rotating Mass Actuators (ERM)

Check for Samples: [DRV2603](#)

FEATURES

- **Flexible Haptic/Vibra Driver**
 - LRA (Linear Resonance Actuator)
 - ERM (Eccentric Rotating Mass)
- **Auto Resonance Tracking for LRA**
 - No Frequency Calibration Required
 - Automatic Drive Commutation
 - Automatic Braking Algorithm
 - Wide Input PWM Frequency Range
- **Constant Vibration Strength Over Supply**
- **Automatic Input Level Translation**
- **0% to 100% Duty Cycle Control Range**
- **Fast Start Up Time**
- **Differential Drive from Single-Ended Input**
- **Wide Supply Voltage Range of 2.5 V to 5.2 V**
- **1.8 V Compatible, 5 V Tolerant Digital Pins**
- **Available in a 2 mm x 2 mm x 0.75 mm leadless QFN package (RUN)**

APPLICATIONS

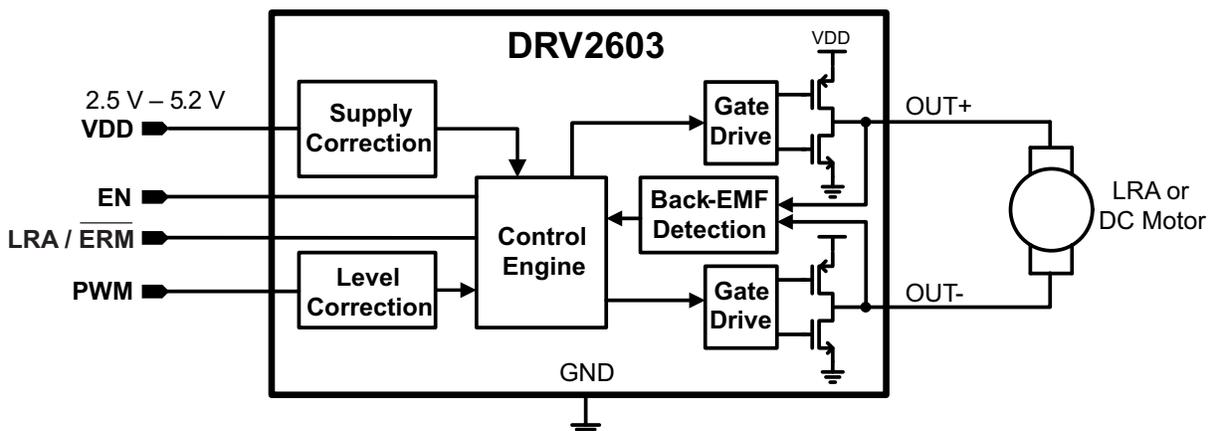
- **Mobile Phones**
- **Tablets**
- **Touch Enabled Devices**

DESCRIPTION

The DRV2603 is a haptic driver designed specifically to solve common obstacles in driving both Linear Resonance Actuator (LRA) and Eccentric Rotating Mass (ERM) haptic elements. The DRV2603 is also designed for low latency, has excellent efficiency, and plenty of drive strength for actuators commonly used in the portable market.

LRA actuators typically have a narrow frequency band over which they have an adequate haptic response. This frequency window is typically ± 2.5 Hz wide or less, so driving an LRA actuator presents a challenge. The DRV2603 solves this problem by employing auto resonance tracking, which automatically detects and tracks the optimum commutation frequency. This means that any input PWM frequency within the input range (10 kHz to 250 kHz) will automatically produce the correct resonant output frequency. As an additional benefit, the DRV2603 implements an optimal braking algorithm to stop the LRA from ringing out, leaving the user with a crisp haptic sensation.

For both ERM and LRA actuators, the DRV2603 automatic input level translation solves issues with low voltage PWM sources without adding additional external components, so if the digital I/O levels vary, the output voltage does not change. The DRV2603 also has supply correction that ensures no supply regulation is required for constant vibration strength, allowing an efficient, direct-battery connection.


PRODUCT PREVIEW


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PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/ Ball Finish	MSL Peak Temp ⁽³⁾	Samples (Requires Login)
DRV2603RUNR	PREVIEW	QFN	RUN	10		Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	
DRV2603RUNT	PREVIEW	QFN	RUN	10	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	

⁽¹⁾ The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

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PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBsolete: TI has discontinued the production of the device.

⁽²⁾ Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

TBD: The Pb-Free/Green conversion plan has not been defined.

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Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

⁽³⁾ MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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