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Vibro Motor 4 Click

PID: MIKROE-4825

Vibro Motor 4 Click is a compact add-on board that makes an ideal solution for adding simple haptic feedback in any design. This board features the G1040003D, a coin-sized linear resonant actuator (LRA) that generates vibration/haptic feedback from Jinlong Machinery & Electronics, Inc. Driven by a flexible Haptic/Vibra driver, the DRV2605, G1040003D vibrates in the Z-axis, which is perpendicular to the face of the vibration motor. It draws a maximum of 170mA while producing the highest G force/vibration energy of 2 GRMS. This Click board™ makes an excellent choice for devices with limited battery capacity and for users who require crisp haptic feedback and low power consumption.

Vibro Motor 4 Click is supported by a mikroSDK compliant library, which includes functions that simplify software development. This Click board™ comes as a fully tested product, ready to be used on a system equipped with the mikroBUS™ socket.

How does it work?

Vibro Motor 4 Click as its foundation uses the VG1040003D, coin-sized linear resonant actuator that generates vibration/haptic feedback in the Z plane perpendicular to the motor's surface from Vybronics. The VG1040003D draws a typical 145mA while producing a G force of 2 GRMS and makes an excellent choice for applications requiring crisp haptic feedback and low power consumption. For haptic feedback applications, fast rise and fall times are critical for achieving the optimal user experience. That's why the rise time (50% power) of the G1040003D, which is 10ms, and its fall time (10% power) of 50ms makes it one of the best choices for haptic feedback applications.

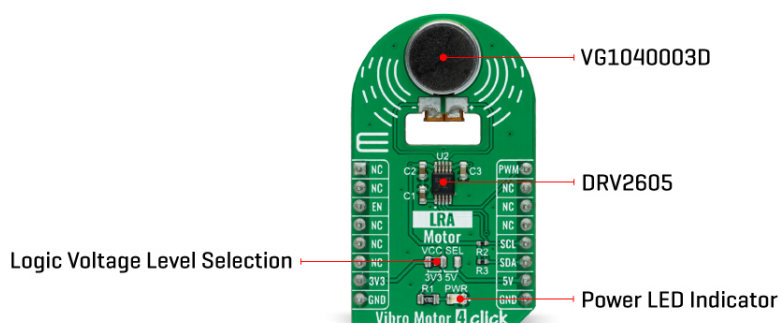Mikroe produces entire development toolchains for all major microcontroller architectures.
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Driven by the DRV2605, a flexible Haptic/Vibra driver from Texas Instruments, this Click board™ is designed to provide highly flexible haptic control over a standard I2C 2-Wire interface with a maximum clock frequency of 400kHz. It possesses enabling function, routed on the CS pin of the mikroBUS™ socket labeled as the EN, and comes up with an extensive integrated library of over 100 licensed effects that eliminates the need to design haptics waveforms. It also contains a smart-loop architecture and provides automatic overdrive and braking, creating a simplified input waveform paradigm, reliable motor control, and consistent motor performance.

Additionally, the DRV2605 can also operate in the PWM Mode and accept the PWM signal from the PWM pin of the mikroBUS™ socket. In this mode, the DRV2605 device drives the actuator continuously until the user sets the DRV2605 to a Standby Mode or enters another interface mode. More information about the operating modes of the DRV2605 can be found in the attached datasheet.

This Click board™ can operate with both 3.3V and 5V logic voltage levels selected via the VCC SEL jumper. This way, it is allowed for both 3.3V and 5V capable MCUs to use the I2C communication lines properly. However, the Click board™ comes equipped with a library containing easy-to-use functions and an example code that can be used, as a reference, for further development.

Specifications

Type	Haptic
Applications	Can be used for devices with limited battery capacity and for users who require crisp haptic feedback and low power consumption
On-board modules	VG1040003D - coin-sized linear resonant actuator that generates vibration/haptic feedback in the Z plane perpendicular to the motor's surface from Vybronics
Key Features	Low power consumption, vibration force in Z-axis, high reliability, excellent choice for devices with limited battery capacity, and more
Interface	I2C,PWM

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Feature	No ClickID
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V or 5V

Pinout diagram

This table shows how the pinout on Vibro Motor 4 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikro™ BUS		Pin	Notes
	NC	1	AN	PWM	16	**PWM**	PWM Signal
	NC	2	RST	INT	15	NC	
Enable	**EN**	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	NC	5	MISO	SCL	12	**SCL**	I2C Clock
	NC	6	MOSI	SDA	11	**SDA**	I2C Data
Power Supply	**3.3V**	7	3.3V	5V	10	**5V**	Power Supply
Ground	**GND**	8	GND	GND	9	**GND**	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
JP1	VCC SEL	Left	Logic Level Voltage Selection 3V3/5V: Left position 3V3, Right position 5V

Vibro Motor 4 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Maximum Output Current	-	145	170	mA
Vibration G Force	-	-	2	GRMS
Operating Temperature Range	-25	+25	+70	°C

Software Support

We provide a library for the Vibro Motor4 Click as well as a demo application (example), developed using MikroElektronika compilers. The demo can run on all the main MikroElektronika development boards.

Package can be downloaded/installed directly from NECTO Studio Package Manager(recommended way), downloaded from our LibStock™ or found on Mikroe github account.

Library Description

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This library contains API for Vibro Motor 4 Click driver.

Key functions:

- vibromotor4_cfg_setup - Config Object Initialization function.
- vibromotor4_init - Initialization function.
- vibromotor4_default_cfg - Click Default Configuration function.

Example description

This library contains API for Vibro Motor 4 Click driver. The library initializes and defines the I2C bus drivers to write and read data from registers and PWM module.

The full application code, and ready to use projects can be installed directly from NECTO Studio Package Manager(recommended way), downloaded from our LibStock™ or found on Mikroe github account.

Other Mikroe Libraries used in the example:

- MikroSDK.Board
- MikroSDK.Log
- Click.VibroMotor4

Additional notes and informations

Depending on the development board you are using, you may need USB UART click, USB UART 2 click or RS232 click to connect to your PC, for development systems with no UART to USB interface available on the board. The terminal available in all MikroElektronika compilers, or any other terminal application of your choice, can be used to read the message.

mikroSDK

This Click board™ is supported with mikroSDK - MikroElektronika Software Development Kit. To ensure proper operation of mikroSDK compliant Click board™ demo applications, mikroSDK should be downloaded from the LibStock and installed for the compiler you are using.

For more information about mikroSDK, visit the official page.

Resources

mikroBUS™

mikroSDK

Click board™ Catalog

Click Boards™

Downloads

Vibro Motor 4 click example on Libstock

Vibro Motor 4 click 2D and 3D files

[DRV2605 datasheet](#)

[Vibro Motor 4 click schematic](#)

[VG1040003D datasheet](#)

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