



DC MOTOR 10 CLICK

PID: MIKROE-3879

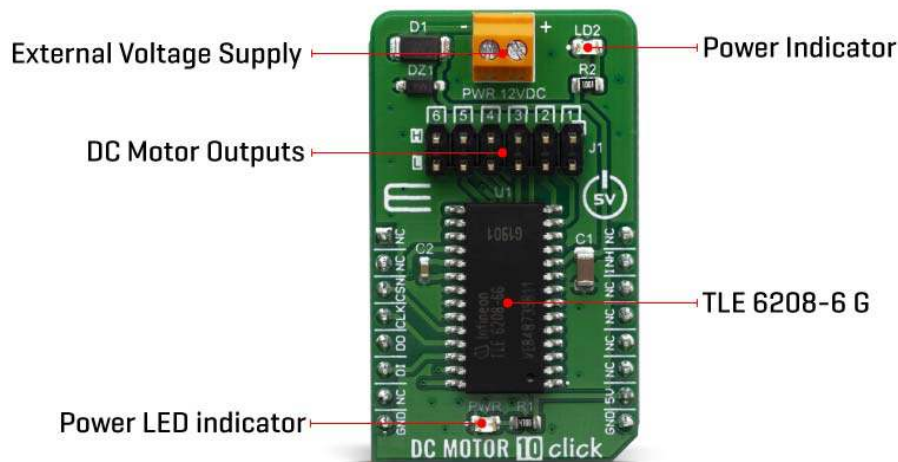
Weight: 20 g

DC Motor 10 Click is a brushed DC motor driver with the current limiting and current sensing. It is based on the TLE 6208-6 G, an Hex-Half-Bridge / Double Six-Driver IC, optimized for motor driving applications. It can be operated SPI communication interface, allowing to drive the connected motors in three different ways: it can be used as a free configurable as switch, half-bridge or H-bridge, offering an additional speed control and direction options. The TLE 6208-6 G also contains a set of protection features, offering a very high level of reliability. Besides driving capabilities, DC Motor 10 click can also sense current consumption at its output.

DC Motor 10 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?

This Click board™ is optimized for driving brushed DC motors. It integrates an efficient H-Bridge with very low ON resistance of approximately 0.8Ω through each branch. Furthermore, the build-in features like Over- and Undervoltage-Lockout, Over-Temperature-Protection and the very low quiescent current in stand-by mode opens a wide range of automotive- and industrial-applications. DC Motor 10 click is perfectly suited for rapid development of various DC motor driving applications, including home appliances, printers, industrial equipment, mechatronic applications, etc.



DC Motor 10 click is based on the TLE 6208-6 G, which is a fully protected Hex-Half-Bridge-Driver designed specifically for automotive and industrial motion control applications, from Infineon Technologies AG. The part is based on Infineons Smart Power Technology SPT® which allows bipolar and CMOS control circuitry in accordance with DMOS power devices existing on the same monolithic circuitry. The six low and high side drivers are freely configurable and can be controlled separately. Therefore all kind of loads can be combined. In motion control up to 5 actuators (DCMotors) can be connected to the 6 halfbridge-outputs (cascade configuration). Operation modes forward (cw), reverse (ccw), brake and high impedance are controlled from a standard SPI-Interface. The possibility to control the outputs via software from a central logic, allows limiting the power dissipation.

The internal logic of TLE 6208-6 G is supplied by the VCC voltage, typ. with 5 V. The VCC voltage uses an internally generated Power-On Reset (POR) to initialize the module at power-on. The advantage of this system is that information stored in the logic remains intact in the event of short term failures in the supply voltage VS. The system can therefore continue to operate following VS undervoltage, without having to be reprogrammed. The “undervoltage” information is stored, and can be read out via the interface.


The Click board™ can operate with 5V MCUs only, it is set to work over the I2C by default, and it is already equipped with the pull-up resistors. It is ready to be used as soon as it is inserted into a mikroBUS™ socket of the development system.

SPECIFICATIONS

Type	Brushed
Applications	DC Motor 10 click is perfectly suited for rapid development of various DC motor driving applications, including home appliances, printers, industrial equipment, mechatronic applications, etc.
On-board modules	TLE 6208-6 G - a fully protected Hex-Half-Bridge-Driver designed specifically for automotive and industrial motion control applications, from Infineon Technologies AG
Key Features	Very low ON resistance of approximately 0.8Ω through each branch, build-in Over- and Undervoltage-Lockout, Over-Temperature-Protection and the very low quiescent current in stand-by mode
Interface	GPIO,SPI
Compatibility	mikroBUS
Click board size	M (42.9 x 25.4 mm)
Input Voltage	5V

PINOUT DIAGRAM

This table shows how the pinout on DC Motor 10 click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin					Pin	Notes
	NC	1	AN	PWM	16	NC	
	NC	2	RST	INT	15	INH	Inhibit Input
Chip Select	CS	3	CS	RX	14	NC	
Serial Clock	SCK	4	SCK	TX	13	NC	
Serial Data OUT	SDO	5	MISO	SCL	12	NC	
SPI Data IN	SDI	6	MOSI	SDA	11	NC	
	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
LD2	LD2	-	External supply LED Indicator
J1	-	-	Motor connection outputs
TB1	PWR	-	External power supply connector

DC MOTOR 10 CLICK ELECTRICAL SPECIFICATIONS

Description	Min	Typ	Max	Unit
Input voltage	7	12	40	V
Current through the load (continuous)	0		0.6	A

SOFTWARE SUPPORT

We provide a library for the DC Motor 10 Click on our LibStock page, as well as a demo application (example), developed using MikroElektronika compilers. The demo can run on all the main MikroElektronika development boards.

Library Description

The library covers all the necessary functions that enables the usage of the DC Motor 10 Click board. It initializes and defines the SPI bus driver and drivers that allow full control of the device to the user. It is possible to enable up to 6 dc motors in hlaf bridge, or 5 with full bridge.

Key functions:

- `void dcmotor10_resetStatusReg();` - Function is used to reset status register.
- `void dcmotor10_enableChann1();` - Function is used to enable channel 1.
- `void dcmotor10_sendCommand(uint16_t wrData);` - Function is used to send command.

Examples description

The application is composed of three sections :

- System Initialization - Initializes SPI module, LOG and GPIO structures, sets INT and CS pins as output.
- Application Initialization - Initalizes SPI driver and uninhibits the device.
- Application Task - (code snippet) This example demonstrates the use of DC MOTOR 10 click by running dc motors on channels 1 through 3, first all 3 together and then separately.

```
void applicationTask()
{
    dcmotor10_sendCommand( _DCMOTOR10_ENABLE_1 | _DCMOTOR10_ENABLE_2 | _DCMOTOR10_ENABLE_3 );
    Delay_ms( 5000 );
    dcmotor10_enableChann1();
    Delay_ms( 5000 );
    dcmotor10_enableChann2();
    Delay_ms( 5000 );
    dcmotor10_enableChann3();
    Delay_ms( 5000 );
    dcmotor10_resetStatusReg();
    Delay_ms( 1000 );
}
```

The full application code, and ready to use projects can be found on our LibStock page. Other mikroE Libraries used in the example:

- SPI
- UART
- Conversions

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.

<https://www.mikroe.com/dc-motor-10-click/1-2-20>