

DC MOTOR 3 click

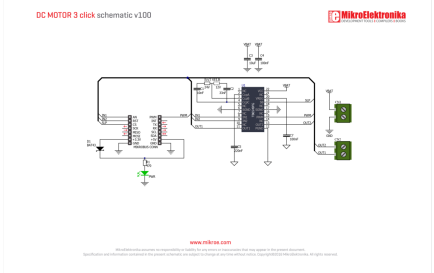
DC MOTOR 3 click



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IC/Module	TB6549FG ^[1]
Interface	PWM, IN1, IN2, SLP
Power supply	3.3V
Website	www.mikroe.com/click/dc-motor-3 ^[2]

DC Motor 3 click is a mikroBUS™ add-on board with a Toshiba **TB6549FG** full-bridge driver for direct current motors. The IC is capable of outputting currents of up to 4.5 A with 30V, making it suitable for high-power motors.

Features and usage notes



Schematic also available in PDF ^[3]

Two pairs of screw terminals are positioned on the top of the board. One is for bringing an external power supply; the other is for connecting a motor.

TB6549FG has four operating modes: clockwise, counter-clockwise, short brake and stop. The operating mode is configured through IN1 and IN2 pins. A separately controlled standby mode is also available.

For safety, the TB6549FG IC incorporates overcurrent protection and a thermal shutdown circuit.

The click communicates with the target MCU through the mikroBUS™ PWM pin, with additional functionality provided by IN1, IN2 and SLP pins (in place of default mikroBUS™ AN, RST and CS pins). Designed to use a 3.3 power supply only.

Summary of TB6549FG specifications:

- Power supply voltage: 30 V (max)
- Output current: 3.5 A (max) (FG,PG type)
- Low ON-resistance: 1.0 Ω (up + low/typ.)
- PWM control capability

- Standby system
- Function modes: CW/CCW/short brake/stop
- Built-in overcurrent protection
- Built-in thermal shutdown circuit

Programming

This example shows how to setup the DC Motor 3 on ARM, and use buttons to turn the motor, as well as speed up or slow down the motor.

```
#include "dc_motor3.h"

unsigned int current_duty;
unsigned int pwm_period;

sbit SLP at GPIOD_ODR.B14;
sbit IN2 at GPIOC_ODR.B3;
sbit IN1 at GPIOA_ODR.B5;

void main()
{
    GPIO_Digital_Input (&GPIOE_BASE, _GPIO_PINMASK_8 | _GPIO_PINMASK_9 |
    _GPIO_PINMASK_10 | _GPIO_PINMASK_11 | _GPIO_PINMASK_12); // configure
    PORTE pins as input

    GPIO_Digital_Output (&GPIOD_BASE, _GPIO_PINMASK_14 );
    GPIO_Digital_Output (&GPIOC_BASE, _GPIO_PINMASK_3 );
    GPIO_Digital_Output (&GPIOA_BASE, _GPIO_PINMASK_5 );

    current_duty = 40000; // initial value for
    current_duty
    pwm_period = PWM_TIM4_Init(5000);

    PWM_TIM4_Set_Duty(current_duty, _PWM_NON_INVERTED, _PWM_CHANNEL1);
    // Set current duty for PWM_TIM1
    PWM_TIM4_Start(_PWM_CHANNEL1, &_GPIO_MODULE_TIM4_CH1_PD12);

    while(1)
    {
        if (Button(&GPIOE_IDR, 8, 50, 1))
        {
            dc_motor3_clockwise();
        }

        if (Button(&GPIOE_IDR, 9, 50, 1))
        {
```

```
        dc_motor3_counter_clockwise();
    }

    if (Button(&GPIOE_IDR, 10, 50, 1))
    {
        Delay_ms(1);
        current_duty *= 2;
        PWM_TIM4_Set_Duty(current_duty, _PWM_NON_INVERTED,
_PWM_CHANNEL1);
    }

    if (Button(&GPIOE_IDR, 11, 50, 1))
    {
        Delay_ms(1);
        current_duty /= 2;
        PWM_TIM4_Set_Duty(current_duty, _PWM_NON_INVERTED,
_PWM_CHANNEL1);
    }

    if (Button(&GPIOE_IDR, 12, 50, 1))
    {
        dc_motor3_stop();
    }
    Delay_ms(1);
}

}
```

Code examples for DC MOTOR 3 click are available for ARM and AVR compilers. Download them from Libstock [4].

Resources

- DC Motor 3 click Libstock example [4]
- Vendor's data sheet [1]
- mikroBUS™ standard specifications [5]

References

- [1] <http://toshiba.semicon-storage.com/ap-en/product/linear/motordriver/detail.TB6549FG.html>
- [2] <http://www.mikroe.com/click/dc-motor-3>
- [3] <http://cdn-docs.mikroe.com/images/9/98/Dc-motor-3-click-schematic.pdf>
- [4] <http://libstock.mikroe.com/projects/view/1904/dc-motor-3-click>
- [5] <http://download.mikroe.com/documents/standards/mikrobus/mikrobus-standard-specification-v200.pdf>

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