

DRV8847x EVM User's Guide

The DRV8847x EVM user's guide is provided with the DRV8847 and DRV8847S customer evaluation modules (EVM) as a supplement to the [DRV8847 Dual H-Bridge Motor Driver data sheet](#). This document describes the hardware implementation, operation, and configuration options of the EVM.

CAUTION



Hot surface. Contact may cause burns. Do not Touch.

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1 Overview

The DRV8847 evaluation module (EVM) is an application board design to allow easy evaluation of the DRV8847 device. The DRV8847 device is an integrated low voltage dual H-bridge driver and highly-configurable power stage for industrial brushed DC, stepper motor, and solenoid applications. This device has been optimized to control one or two brushed DC motors, a stepper motor, or solenoid loads. The DRV8847 device can also be configured to drive a single brushed DC motor using both output stages in parallel mode to increase the driving current. Use the DRV8847SEVM to evaluate the I²C device variant, DRV8847S.

The EVM has an MSP430™ microcontroller and an USB interface chip to communicate with the application GUI provided with the EVM. The maximum operating voltage for this board is 18 V with a maximum current of 2 A (if set to parallel mode).

The microcontroller firmware outputs the control signals and PWM signals to move the motor. The firmware also monitors the nFAULT signal to alert the GUI if a fault has occurred.

Figure 1 shows the top 3D view of the printed circuit board of the DRV8847EVM.

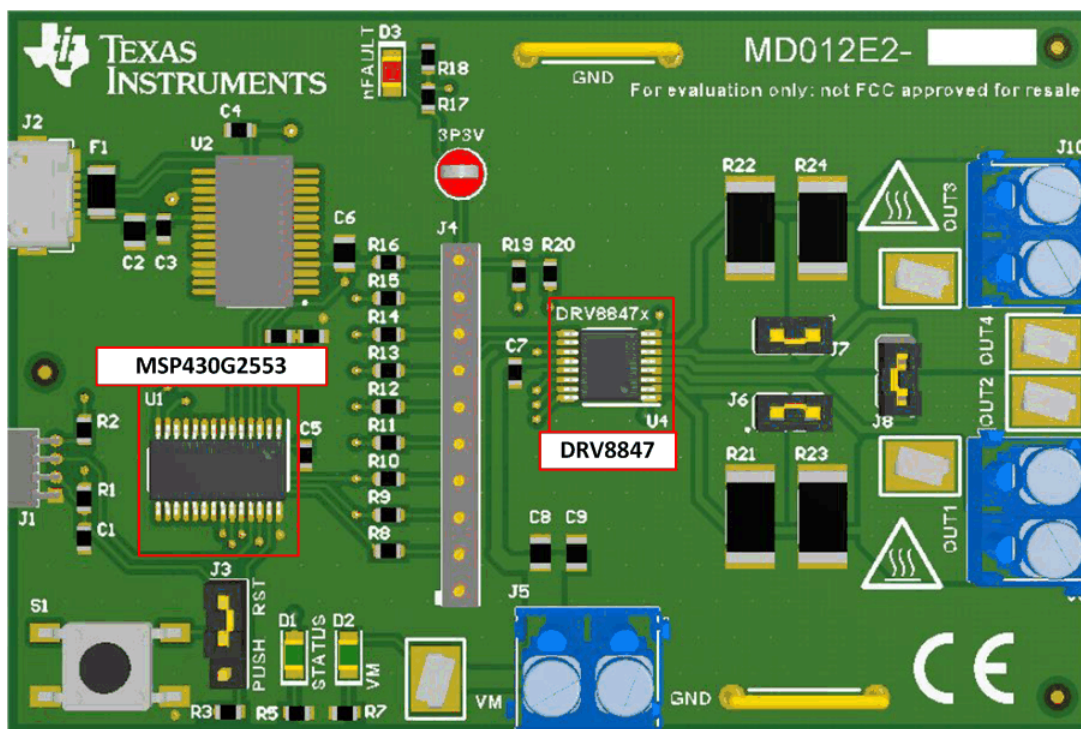


Figure 1. DRV8847EVM Top 3D Overview

2 Hardware Overview

2.1 Features

The DRV8847EVM and DRV8847SEVM have these features:

- An operating supply voltage range from 2.7 V to 18 V
- Hardware set up to drive steppers, brushed motors, or up to 4 solenoid loads
- A board rated to drive up to 2-A parallel load current.

2.2 Board Overview

The DRV8847EVM and DRV8847SEVM let the user access the VM (motor voltage) power rail through a terminal block (J5). A set of test clips in parallel with the terminal block lets the user monitor the input power rail.

The VM voltage must be applied according to the recommended parameters in the [DRV8847 Dual H-Bridge Motor Driver data sheet](#).

Figure 2 shows the primary blocks of the hardware on the DRV8847EVM or DRV8847SEVM.

NOTE: The VDD voltage for the microcontroller comes from the microUSB connector.

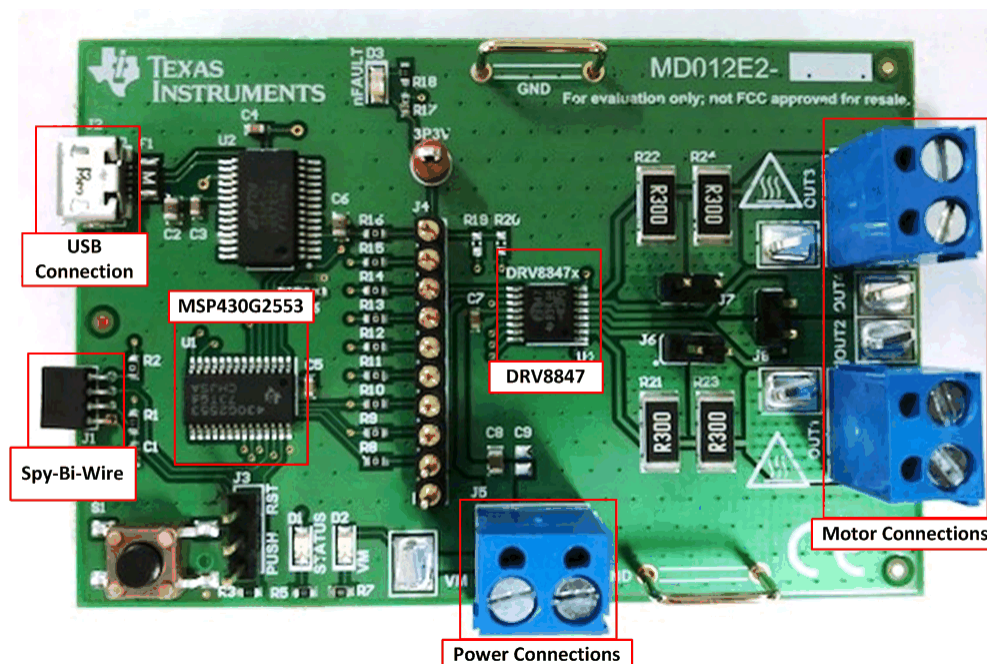


Figure 2. DRV8847EVM Board Overview

The primary components of the EVM board are:

- The DRV8847 device (U4) which is a 2.8-V to 18-V dual H-bridge motor driver
- The MSP430G2553 MCU (U1) which is an ultra-low power mixed signal microcontroller
- The power connection (J5)
- The motor Connections (J9, J10)
- The test point (J4)

2.3 Test Points

The DRV8847EVM has multiple test points for easy evaluation of the device. These test points are connected in series to the microcontroller through 0-Ω resistors and can be depopulated easily in the case an external microcontroller is used. Table 1 shows the J4 header connections as shown in Figure 3.

Table 1. J4 Header Connections

Header Label	Description
—	Ground
R8	nSLEEP
R9	IN1 input
R10	IN2 input
R11	SDA/MODE
R12	SCL/TRQ
R13	IN3 input
R14	IN4 input
R15	nFault
R16	3P3V

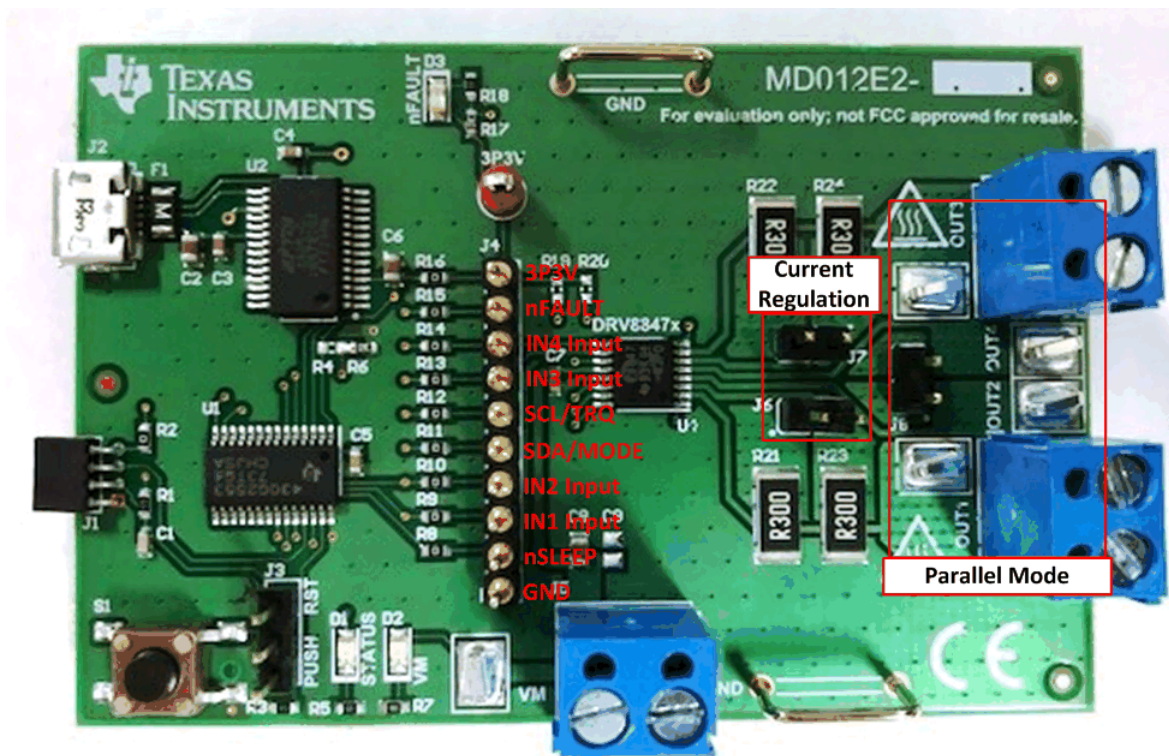


Figure 3. Test Points and Jumper Configuration

2.4 Jumpers

The DRV8847EVM and DRV8847SEVM boards have three jumpers, J6, J7 and J8. The J6 and J7 jumpers set the output current. The parallel resistors provide twice the current for each H-bridge when the shunt connectors are installed (see [Figure 3](#)).

The J8 jumper is used when the device is set in parallel mode. In this mode, the DRV8847EVM or DRV8847SEVM can drive a brushed motor up to 2 A of current by installing a shunt across the J8 jumper.

The short test points, OUT1-OUT3 and OUT2-OUT4, must be paired together respectively for parallel mode.

2.5 Motor Outputs

The J3 and J4 connectors are available as shown in [Figure 1](#) to connect the desired output load. The outputs change depending on the type of load to be driven (either stepper, BDCs, or solenoids).

2.6 Operation of the EVM

Do these steps to operate the EVM:

- Step 1. Download and install the drivers and GUI from the tool folder for the [DRV8847EVM](#) or [DRV8847SEVM](#). Refer to the [DRV8847EVM and DRV8847SEVM Software User's Guide](#) for detailed steps.
- Step 2. Connect the wires of the load to the AOUT1, AOUT2, BOUT1, and BOUT2 terminals as required.
- Step 3. Connect the VM power supply but do not apply power at this step.
- Step 4. Connect the USB cable between the PC and the EVM.
- Step 5. Apply 12 V to the VM and GND connections.
- Step 6. Open the GUI by from the desktop or from the start menu to start the GUI.
- Step 7. Select the device variant to be used in the launch page.
- Step 8. Refer [DRV8847EVM and DRV8847SEVM Software User's Guide](#) for detailed GUI configuration of the modes according to the driving load.

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