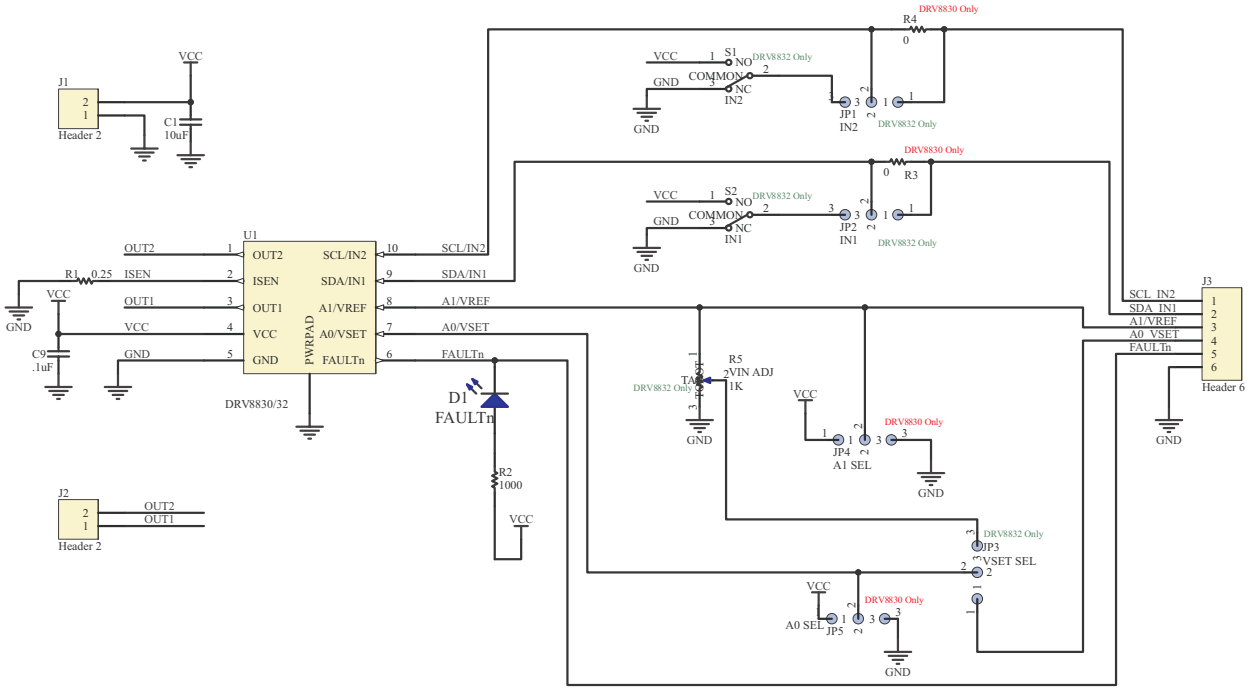
User's Guide
SLVU472–June 2011

DRV8830/DRV8832 Evaluation Module

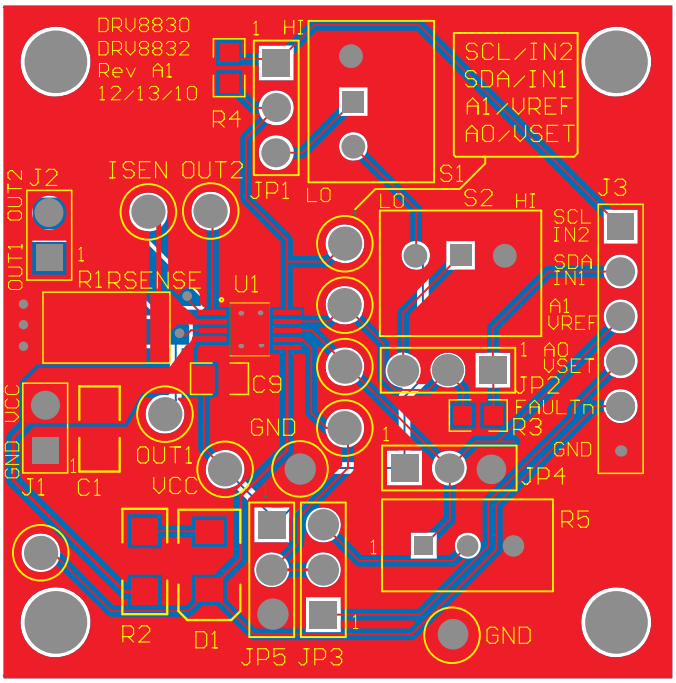
This document is provided with the DRV8830 and DRV8832 customer evaluation module (EVM) as a supplement to the DRV8830 (SLVSAB2) and DRV8832 (SLVSAB3) datasheets. It details the hardware implementation of the EVM.

Contents

1 Schematic



2 PCB layout



3 Connectors

3.1 Control (J3)

The control connections to the DRV8830 or DRV8832 are made through the header J3. Connections are clearly labeled on the PCB.

Note that pins 1, 2, 3 and 4 have different meanings depending on whether a DRV8830 or DRV8832 device is mounted to the board. If using a DRV8830 with I^2C interface, pin 1 is SCL (serial clock) and pin 2 is SDA (serial data); if using a DRV8832, pin 2 is IN1 and pin 1 is IN2.

Note that depending on the location of jumpers JP1, JP2 and JP4, the control pins, can either be routed from the J3 header to the device, or be generated from the on-board switches and voltage set trimpot. Refer to the schematic and the jumper descriptions below.

3.2 Motor Output (J2)

The motor is connected to the module through header J2, labeled OUT1 and OUT2. The polarity will affect the direction that the motor turns – refer to the datasheet for details.

3.3 Power Connector (J1)

Power is applied to the module through header J1, labeled VCC and GND. Apply a voltage between 2.75 V and 6 V to this connector. Be sure to observe the correct polarity (VCC is positive, GND is negative).

4 Jumpers and Controls

4.1 DRV8830 EVM Jumpers and Controls

4.1.1 JP4 and JP5 – I^2C Slave Address Select

JP4 and JP5 are used to select the base I^2C address of the DRV8830. There are three possible states for each of the jumpers: installing a jumper between pins 2 and 3 sets the corresponding input pin to 0, placing a jumper between pins 1 and 2 sets the pin to 1, and leaving the jumper off sets the pin to Z (open). The resulting base address is set as follows:

Table 1. I^2C Slave Address Select

JP2	JP3	ADDRESS (WRITE)	ADDRESS (READ)
pin 2-3	pin 2-3	0xC0h	0xC1h
pin 2-3	open	0xC2h	0xC3h
pin 2-3	pin 1-2	0xC4h	0xC5h
open	pin 2-3	0xC6h	0xC7h
open	open	0xC8h	0xC9h
open	pin 1-2	0xCAh	0xCBh
pin 1-2	pin 2-3	0xCCh	0xCDh
pin 1-2	open	0xCEh	0xCFh
pin 1-2	pin 1-2	0xD0h	0xD1h

4.2 DRV8832 EVM Jumpers and Controls

4.2.1 JP3 – VSET Source Select

JP3 is used to select the signal source for the VSET pin of the DRV8832. If a jumper is placed between pins 1 and 2, the pin is connected to the J3 header, so a signal can be supplied externally. If a jumper is placed between pins 2 and 3, the signal comes from the on-board trimpot R5 (fed by the VREF output of the DRV8832), so you can set the motor voltage (speed) by adjusting R5.

4.2.2 JP1 – IN2 Source Select

JP1 is used to select the signal source for the IN2 pin of the DRV8832. If a jumper is placed between pins 1 and 2, the pin is connected to the J3 header, so a signal can be supplied externally. If a jumper is placed between pins 2 and 3 (as shipped), the signal comes from the toggle switch S1, which allows you to control the motor directly.

4.2.3 JP2 – IN1 Source Select

JP2 is used to select the signal source for the IN1 pin of the DRV8832. If a jumper is placed between pins 1 and 2, the pin is connected to the J3 header, so a signal can be supplied externally. If a jumper is placed between pins 2 and 3 (as shipped), the signal comes from the toggle switch S2, which allows you to control the motor directly.

4.2.4 R5 – VSET Adjust

R5 allows for the generation and adjustment of the VSET voltage directly on the EVM. The VSET voltage is derived from the VREF output of the DRV8832, divided down by the trimpot. To use R5, JP1 has to have pins 2 and 3 connected by a jumper.

4.2.5 S1 and S2 – IN2 and IN1

As noted above, if JP1 and JP2 have jumpers placed between pins 2 and 3, the toggle switches S1 and S2 can be used to directly control the IN2 and IN1 inputs of the DRV8832. Refer to the DRV8832 datasheet (SLVSAB3) for details. Note that the switches are labeled on the DRV8830/32 PCB – S1 controls IN2, and S2 controls IN1.

5 LED

A red LED is installed on the FAULTn output that will illuminate when the FAULTn pin goes active low. Refer to the datasheet for details on the FAULTn output.

6 Test Points

Test points are provided on all signals that connect to the pins of the DRV8830 or DRV8832. Refer to the schematic and PCB drawings above.

7 Current Limit Sense Resistor (R1)

Resistor R5 on the PCB is the current limit sense resistor. A 0.25-Ω resistor is installed at the factory, which corresponds to a current limit of 0.8 A. You may want to change this resistor if you wish to adjust the current limit, or short it to defeat the current limit entirely. Refer to the datasheet for more information.

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EVM Warnings and Restrictions

It is important to operate this EVM within the input voltage range of 0 V to 6 V and the output voltage range of 0 V to 6 V.

Exceeding the specified input range may cause unexpected operation and/or irreversible damage to the EVM. If there are questions concerning the input range, please contact a TI field representative prior to connecting the input power.

Applying loads outside of the specified output range may result in unintended operation and/or possible permanent damage to the EVM. Please consult the EVM User's Guide prior to connecting any load to the EVM output. If there is uncertainty as to the load specification, please contact a TI field representative.

During normal operation, some circuit components may have case temperatures greater than 60°C. The EVM is designed to operate properly with certain components above 60°C as long as the input and output ranges are maintained. These components include but are not limited to linear regulators, switching transistors, pass transistors, and current sense resistors. These types of devices can be identified using the EVM schematic located in the EVM User's Guide. When placing measurement probes near these devices during operation, please be aware that these devices may be very warm to the touch.

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