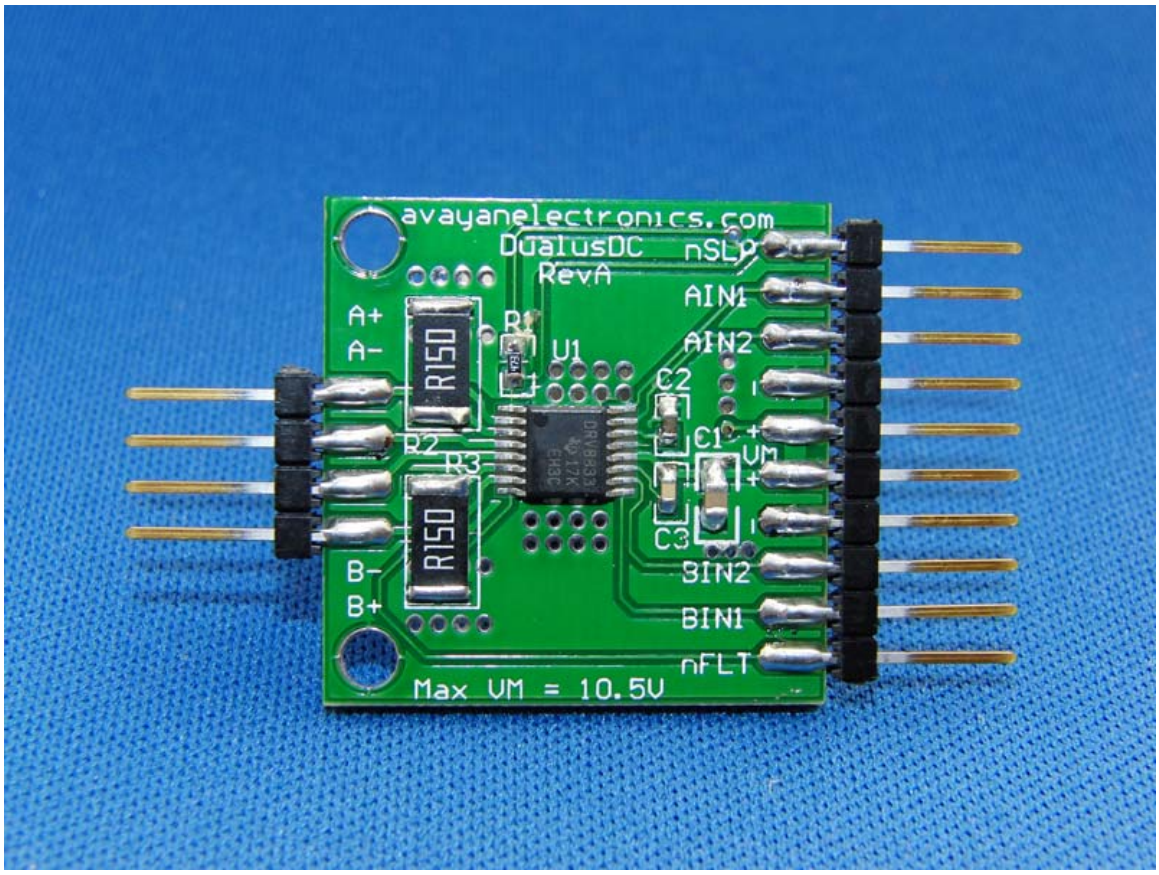
AE DualusDC Manual



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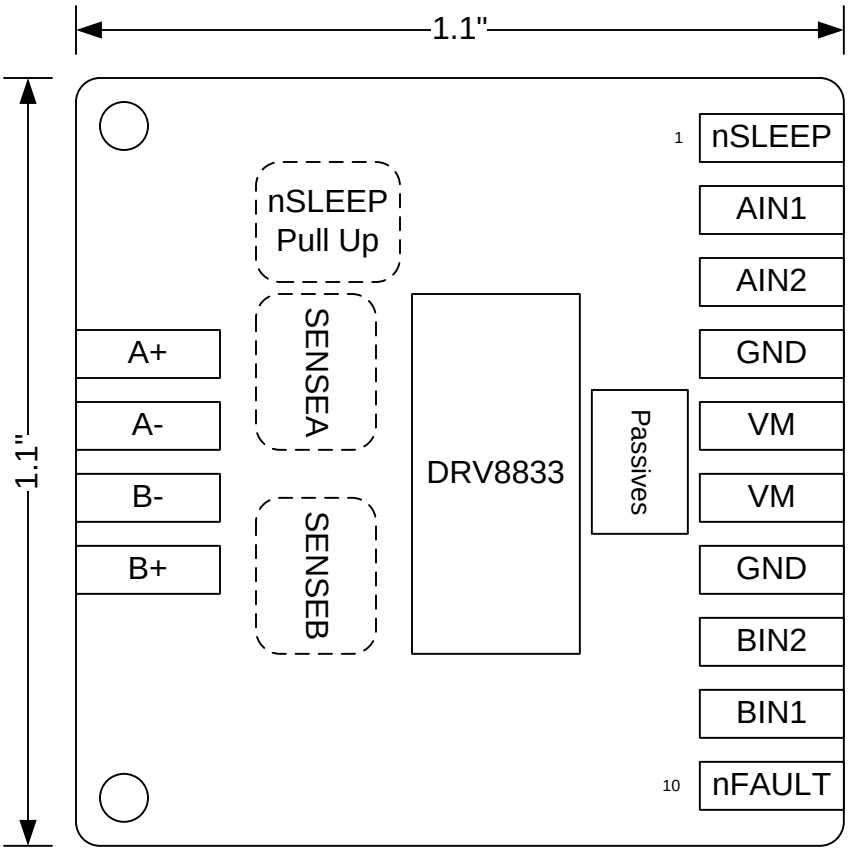
1A RMS, 2A Peak Dual H Bridge Driver for Dual DC Motor or Stepper Motor



AE-DualusDC:

- Controls either two DC motors (up to 1A continuous per channel) or 1 bipolar stepper motor (Up to 1A per phase).
- Easy access to all Control and Power signals.
- Measures 1.1” by 1.1”

Ease of Use Features:

- Solder tabs for 100 mil pitch headers or your own wires.
- Use a pull up resistor to disable nSLEEP mode and save on a control line.
- nFAULT line accessible.
- Control Speed and Direction by applying your own PWM signals into the two H Bridge control inputs, or use conventional GPIO to enable/disable on both directions.

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Description:

The AE DualusDC is a tiny module housing a DRV8833PWP device. The DRV8833 is a dual H Bridge driver which can be used to either drive two small DC motors or a single bipolar stepper motor. The device will work with voltages as high as 10.8V and will supply currents as large as 2A peak, or 1A continuous.

The AE-Dualus DC module has been designed with a thermal impedance low enough to guarantee extended operation while operating under the aforementioned parameters. Hence, measuring 1.1” by 1.1” it is still capable of driving the great majority of motors a battery operated application of this size would require.

Using the module requires the usage of very simple signals, the great majority of commercially available microcontrollers will be able to provide. The board will allow the usage or automation of the SLEEP mode and offers access to the nFAULT pin. Header connectors with a 0.1” pitch, or wires, can be soldered into the solder tabs.

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Control Signals Description:

Control Signal	Direction	Pin	Description
nSLEEP	Input	1	A LO on this pins enters ultra low power mode.
AIN1	Input	2	H Bridge A Half Side 1 control
AIN2	Input	3	H Bridge A Half Side 2 control
GND	Power	4	Battery / Power Source negative terminal
VM	Power	5	Battery / Power Source positive terminal
VM	Power	6	Battery / Power Source positive terminal
GND	Power	7	Battery / Power Source negative terminal
BIN2	Input	8	H Bridge B Half Side 2 control
BIN1	Input	9	H Bridge B Half Side 1 control
nFAULT	Output	10	Open Drain output signaling a fault such as OCP or TSD

Jumper Configurations:

This board does not require any jumper configuration.

Pull Up Resistor R1

The R1 resistor is an optional component and it can be ignored if the nSLEEP featured will be controlled by an external source such as a microcontroller of your choice. If the user prefers the device to be enabled at all times, placing this resistor ensures the device is operational at all times once VM is applied.

Refer to datasheet for further information on current consumption penalty if not using the Power Saving SLEEP mode nSLEEP offers.

NOTE: It may be crucial for some battery operated applications to directly control nSLEEP with the controller and save power during non running times.

SENSE Resistors R2 and R3

The SENSE resistors are used to enable and contribute towards current regulation. Current regulation may be skipped when operating DC motors, but is of crucial importance when driving steppers with internal winding resistance such that the resulting winding current is large enough to approach or surpass the 2A mark.

If simply driving a DC motor without a need to regulate current (as to limit torque at certain current value), then the SENSE resistors can be shunted with a zero ohm source. A fair size conductor is often the best choice to perform as a zero ohm resistor.

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When current regulation is disabled, the only stopping point for an always increasing current is the internal Over Current Protection which is set at the 2A mark.

Each H Bridge is independent so it is possible to operate one H Bridge with current regulation while the second one does not utilize this feature.

If using current regulation, the H Bridge will be disabled and enter slow decay mode when the current reaches the I Trip point which is equal to 0.200 V / R SENSE. For example, if the sense resistor is 150 milli ohms, shortly after the current becomes (0.200/0.150)A = 1.333A, the H Bridge will be disabled. This disablement is periodic and results in the current being maintained as close to 1.33A as possible.

For More Information:

www.avayanelectronics.com contains all the files pertinent to assembling this board, such as schematic and Bill Of Materials.

www.eBLDC.com continuously offers treatises on the usage of all Avayan Electronics modules.

www.robot-talk.com is a public forum where users can post their questions.

www.DriverDudes.com carries an assortment of modules in a variety of forms ranging from bare boards to fully assembled modules.

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