SURESTEPR DRIVERS SD8825

Description:

The SureStepr SD8825 is a stepper driver board based on the Ti DRV8825 chip. It is simple to use and operate using an indexer (DIR/STEP) interface to move the stepper motors. The SD8825 is a drop-in replacement for Pololu style footprint drivers including the A4988, A4983 and Stepsticks.

One distinct feature of the SD8825 is that the parts are located on the bottom side of the PCB. The driver chip has a heat pad at the bottom of case that allows heat to be drawn away from it. By having the parts at the bottom you can now attach a heat sink that is thermally connected to the heat pad thereby cooling the chip better compared to attaching the heat sink on top of the IC,

The SD8825 comes pre-soldered with special 0.1" pitch headers that are taller than what is commonly available. This gives more space at the bottom to protect the parts from shorting into something and allows air to flow more freely on the underside of the board(see FIG. 2).

⚠ CAUTION: SENSITIVE DEVICES

- Static sensitive - Handle with care, remove from packaging only when ready to mount.
- Check mounting orientation before inserting. Drivers will be damaged when improperly inserted, can potentially damage host controller too.
- Turn off power when connecting/disconnecting motors, Do not insert driver when main board is powered.
- Chip, heat pad and heat sink can get really hot, avoid touching while in operation.
- Install heatsink with adhesive thermal pad, ensure that it does not come in contact with pins or any other conductive part of the board.
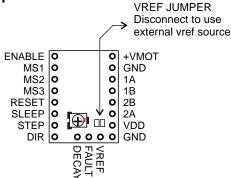
Features and specs:

- Made with 2 Layer 2oz copper RoHS PCB
- 1, ½ , 1/4, 1/8, 1/16 and 1/32 Microstepping
- Up to 2.5A peak drive current
- Bottom mounted parts for better heat dissipation
- Larger heat sink mounting area
- Easy to use DIR/Step interface
- Output pins for Decay, Fault and external Vref.

Driver Chip: Ti DRV8825 with over current and over temp protection.
Current Motor Supply : 2.5A max
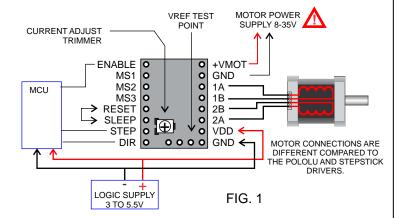Motor Voltage: 35V max

Pin Descriptions:

VREF JUMPER
Disconnect to use external vref source

ENABLE / +VMOT
MS1 / GND
MS2 / 1A
MS3 / 1B
RESET / 2B
SLEEP / 2A
STEP / VDD
DIR / GND

VREF FAULT DECAY

Decay PIN
High: Fast
Low: Slow
Unconnected(Default): Mixed

Fault PIN
Goes Low on Fault condition.
Requires pull-up to use.

External Vref
3.3V input max
Current Limit = Vref x 2

CURRENT ADJUST TRIMMER
VREF TEST POINT
MOTOR POWER SUPPLY 8-35V ⚠

ENABLE / +VMOT
MS1 / GND
MS2 / 1A
MS3 / 1B
RESET / 2B
SLEEP / 2A
STEP / VDD
DIR / GND

MCU

MOTOR CONNECTIONS ARE DIFFERENT COMPARED TO THE POLOLU AND STEPSTICK DRIVERS.

LOGIC SUPPLY 3 TO 5.5V

FIG. 1

Micro-stepping:

Table shows how you can change the micro-stepping settings of the driver. On most controllers "H"(high) corresponds to a jumper in place and "L"(low) means no jumper installed.

SD8825 Microstepping jumper							
	1	1/2	1/4	1/8	1/16	1/32	1/32
MS1(M0)	OFF	ON	OFF	ON	OFF	ON	ON
MS2(M1)	OFF	OFF	ON	ON	OFF	OFF	ON
MS3(M2)	OFF	OFF	OFF	OFF	ON	ON	ON

Current limit:

The current limit can be adjusted by measuring VREF and turning the trimmer (see FIG.1). Connect the + of the voltmeter to VREF and the [-] lead to GND and read the value. The SD8825 uses a 0.10 ohm current sense resistor so current limit can be computed as follows:

Current Limit = VREF x 2

You can also approximate the current limit by the position of the middle point on the trimmer. Pointing to the center as shown on FIG. 1 with get you 1.2 Amps, counter clockwise to reduce and clockwise to increase. DO NOT EXCEED YOUR MOTOR'S CURRENT RATING.

FIG. 2