TB6612FNG Dual Motor Driver Carrier
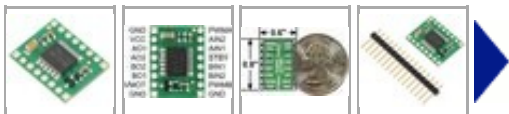

Pololu item #: 713   **1170** in stock

Price break	Unit price (US$)
1	**4.95**
5	4.25
25	3.75
100	3.49

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This tiny board is an easy way to use Toshiba's TB6612FNG dual motor driver, which can independently control two bidirectional DC motors or one bipolar stepper motor. A recommended motor voltage of 4.5 V to 13.5 V and peak current output of 3 A per channel (1 A continuous) make this a great motor driver for low-power motors.

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Description   Specs (12)   Pictures (6)   Resources (4)   FAQs (0)   On the blog (2)

Overview

The **TB6612FNG** (308k pdf) is a great dual motor driver that is perfect for interfacing two small DC motors such as our **micro metal gearmotors** to a microcontroller, and it can also be used to control a single **bipolar stepper motor**. The MOSFET-based H-bridges are much more efficient than the BJT-based H-bridges used in older drivers such as the **L298N** and Sanyo's **LB1836M**, which allows more current to be delivered to the motors and less to be drawn from the logic supply (the LB1836 still has the TB6612 beat for really low-voltage applications). Our little breakout board gives you direct access to all of the features of the TB6612FNG and adds power supply capacitors and reverse battery protection on the motor supply (note: there is no reverse protection on the Vcc connection).
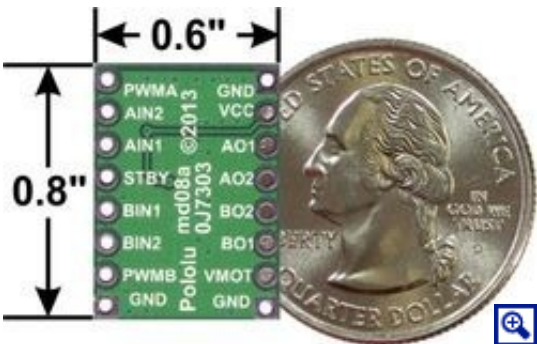
In a typical application, power connections are made on one side of the board and control connections are made on the other. All of the control inputs are internally pulled low. Each of the two motor channels has two direction control pins and a speed control pin that accepts a PWM input with a frequency of up to 100 kHz. The $\overline{\text{STBY}}$ pin must be driven high to take the driver out of standby mode.

The distance between the header rows on the PCB is 0.1" smaller than a standard 0.6" DIP package (e.g. the **Baby Orangutan**), but the pin spacing allows it to conveniently fit in 0.1" breadboards and perfboards.

For a more advanced motor controller based on this driver, please consider the **qik 2s9v1** dual serial motor controller. For a robot controller based on this driver, please consider the Baby Orangutan, **Orangutan SV-328**, **Orangutan SVP-1284**, and **3pi robot**, which connect the TB6612 to a user-programmable AVR microcontroller. For a similar motor driver that is easy to use with Arduinos,

consider our **DRV8835 dual motor driver shield**, and for a similar motor driver with a much higher maximum operating voltage, consider our **A4990 dual motor driver carrier**.

Features and specifications

- Dual-H-bridge motor driver: can drive two DC motors or one bipolar stepper motor

- Recommended motor voltage (VMOT): 4.5 V to 13.5 V (can operate down to 2.5 V with derated performance)

- Logic voltage (VCC): 2.7 V to 5.5 V

- Output current maximum: 3 A per channel

- Output current continuous: 1 A per channel (can be paralleled to deliver 2 A continuous)

- Maximum PWM frequency: 100 kHz

- Built-in thermal shutdown circuit

- Filtering capacitors on both supply lines

- Reverse-power protection on the motor supply

TB6612FNG dual motor driver carrier on a breadboard.
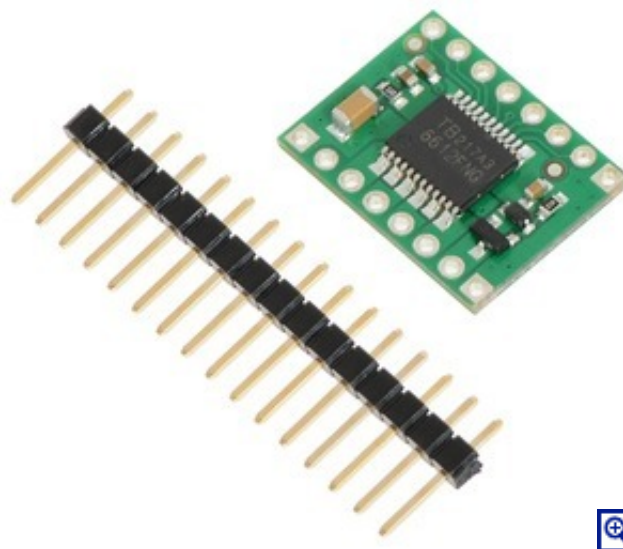
Real-world power dissipation considerations

The TB6612 motor driver used on the carrier board has a peak current rating of 3 A per channel. The peak ratings are for quick transients (e.g. when a motor is first turned on), and the continuous rating of 1 A is dependent on various conditions, such as the ambient temperature. The actual current you can deliver will depend on how well you can keep the motor driver cool. The carrier's printed circuit board is designed to draw heat out of the motor driver chip, but performance can be improved by adding a heat sink.
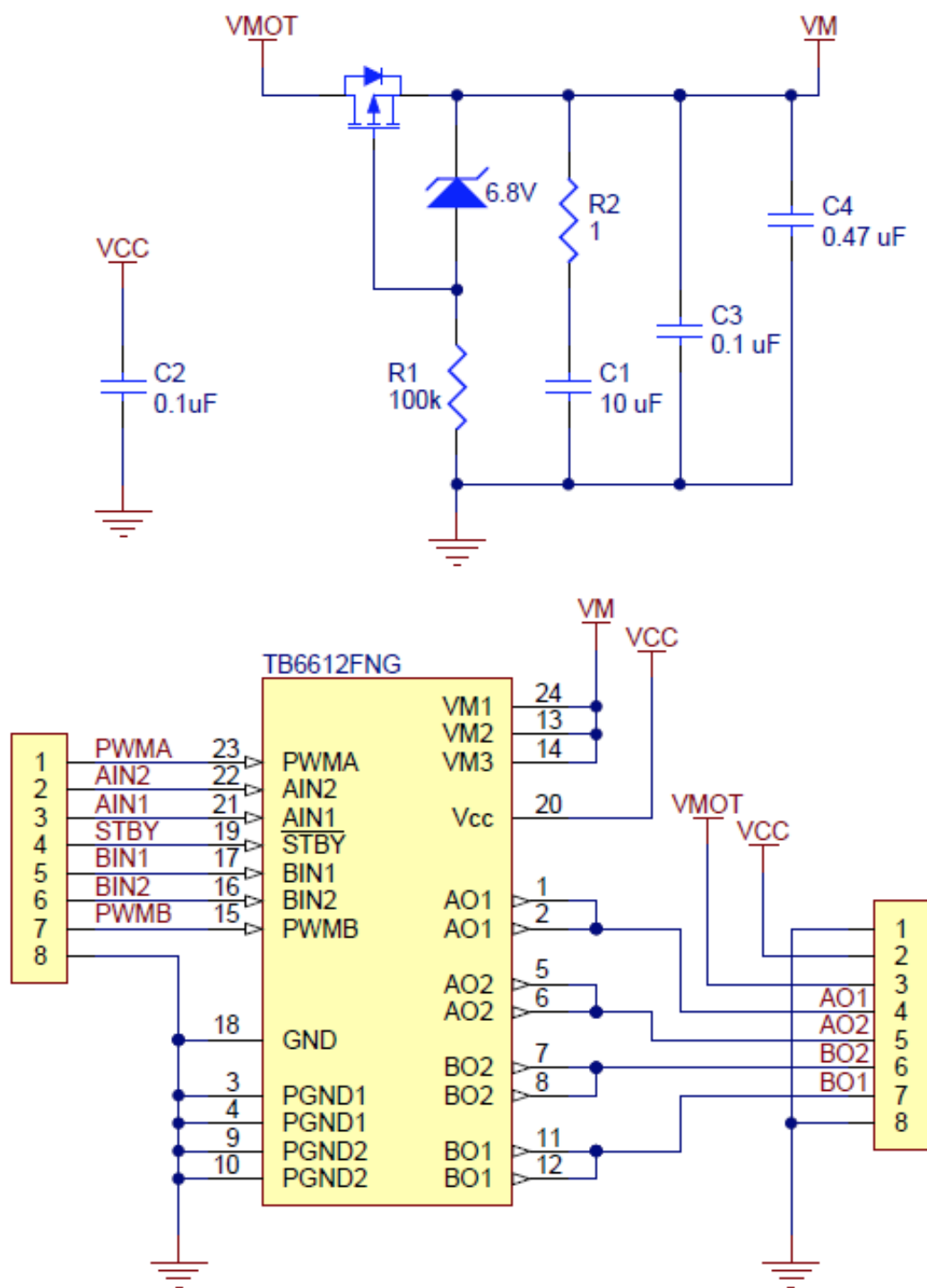
> This product can get **hot** enough to burn you long before the chip overheats. Take care when handling this product and other components connected to it.

Included hardware

A 1×16-pin breakaway **0.1″ male header strip** is included with the TB6612FNG motor driver carrier. This strip can optionally be soldered to the carrier board so that it can be used with perfboards, **solderless breadboards**, or **0.1″ female connectors**. (The headers might ship as two 1×8 pieces or as a single 1×16 piece that can be broken in half.)

Schematic diagram

VMOT

VM

6.8V

R2
1

C4
0.47 uF

VCC

C3
0.1 uF

C2
0.1uF

R1
100k

C1
10 uF

VM
VCC

TB6612FNG

1	PWMA	23	PWMA	VM1	24
2	AIN2	22	AIN2	VM2	13
3	AIN1	21	AIN1	VM3	14
4	STBY	19	STBY	Vcc	20
5	BIN1	17	BIN1		
6	BIN2	16	BIN2	AO1	1
7	PWMB	15	PWMB	AO1	2
8				AO2	5

VMOT
VCC

GND 18

PGND1 3
PGND1 4
PGND2 9
PGND2 10

AO2 6
BO2 7
BO2 8
BO1 11
BO1 12

1
2
3 AO1
4 AO2
5 BO2
6 BO1
7
8

This schematic is also available as a **downloadable pdf** (156k pdf).

July 9, 2013 Update: We have changed this carrier board slightly by replacing the tall electrolytic capacitor with a much smaller ceramic capacitor. The two versions are functionally identical. The two versions are pictured below, with the left one showing the new version and the right showing the original version.

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[Pololu Micro Metal Gearmotor Bracket Extended Pair](#)

[Pololu Micro Metal Gearmotor Bracket Pair - Black](#)

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[Pololu DRV8835 Dual Motor Driver Shield for Arduino](#)

[DRV8835 Dual Motor Driver Carrier](#)

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[BD65496MUV Single Brushed DC Motor Driver Carrier](#)

[Pololu Qik 2s9v1 Dual Serial Motor Controller](#)

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Baby Orangutan B-328 Robot Controller

100:1 Micro Metal Gearmotor

115:1 Metal Gearmotor 15.5Dx30L mm

228:1 Plastic Gearmotor, Offset Output

120:1 Plastic Gearmotor, 90° Output

Pololu 3pi Robot

120:1 Mini Plastic Gearmotor, Offset 3mm D-Shaft Output

ACS714 Current Sensor Carrier -5A to +5A

Stepper Motor: Bipolar, 200 Steps/Rev, 35×26mm, 7.4V, 0.28 A/Phase

0.100" (2.54 mm) Breakaway Male Header: 1×40-Pin, Straight, Black

Related categories

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