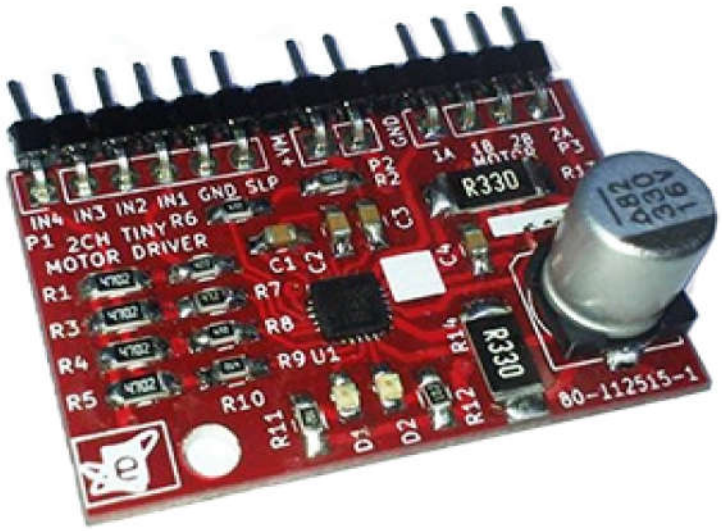
2CH Tiny Motor Driver

Technical Manual Rev 1r0



2CH Tiny Motor Driver is a simple motor driver board and small package based on A3906 Allegro's low voltage dual DC motor driver IC. It is designed for PWM control of low voltage motors. The operating voltage on board from 5 to 7VDC, with an overcurrent output flag to notifies the users when the LED is off the current in the motor winding reaches the peak current determnined by the sense resistor. Compatible in all gizDuino boards.

Features:

- *Crossover-current protection*
- *Internal PWM current limit control*
- *Undervoltage lockout*
- *Break mode for DC motors*
- *LEDs Indicators for peak current output*
- *Compatible in all gizDuino boards.*

General Specifications:

Input Supply: 5V to 7VDC
Maximum Current: 1.12A
On-board IC: A3906
Output current: up to 1A per channel
IC Dimension: 4mm x 4mm
PCB Dimensions: 38mm x 25mm

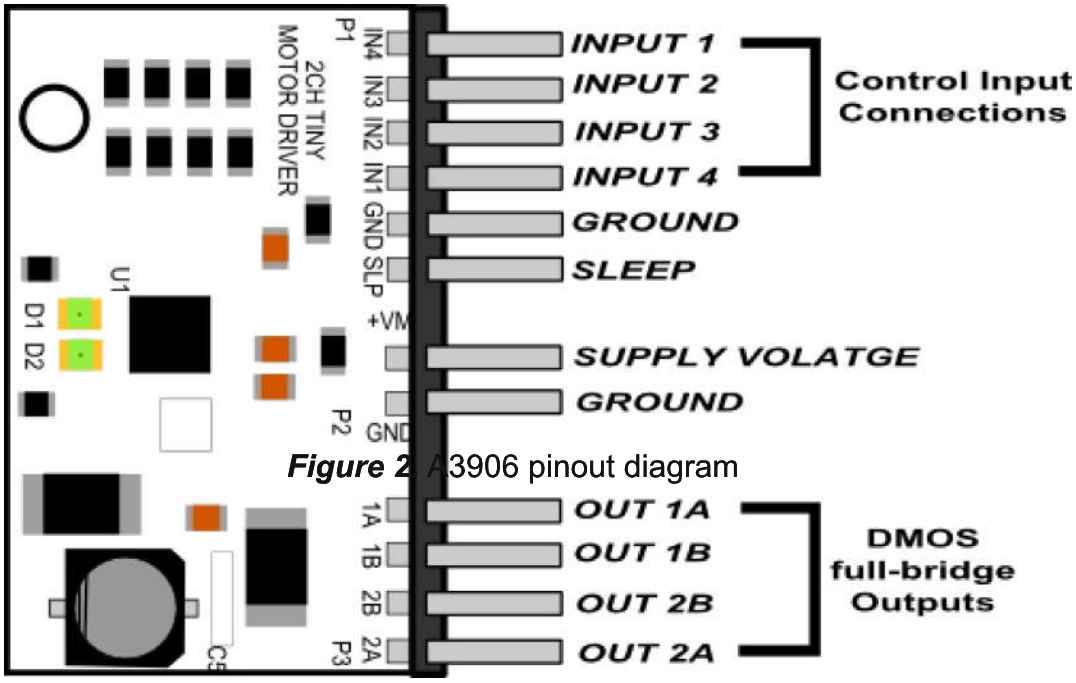


Figure 2 A3906 pinout diagram

Figure 1. Major parts presentation of 2-Channel Tiny Motor Driver

Table 1: P1 Connection

NAME	PIN DESCRIPTIONS
INT4	Control Input
INT3	Control Input
INT2	Control Input
INT1	Control Input
GND	Ground
SLP	Sleep logic input, Active-Low

Table 2: P2 Connection

NAME	PIN DESCRIPTIONS
+VM	Supply Voltage
GND	Ground

Table 3: P3 Connection

NAME	PIN DESCRIPTIONS
1A	DMOS full-bridge 1, Output A
1B	DMOS full-bridge 1, Outout B
2B	DMOS full-bridge 2, Output B
2A	DMOS full-bridge 2, Output A

Pin-out Diagram

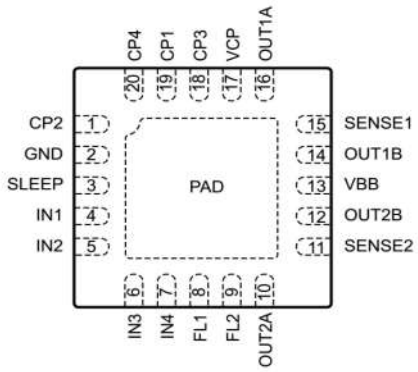


Figure 2. A3906 pinout diagram

Table 4. A3906 pin descriptions

Terminal List Table

Number	Name	Function
1	CP2	Charge pump capacitor terminal 2
2	GND	Ground
3	SLEEP	Sleep logic input, active low
4	IN1	Control input
5	IN2	Control input
6	IN3	Control input
7	IN4	Control input
8	FL1	Current limit flag, bridge 1
9	FL2	Current limit flag bridge 2
10	OUT2A	DMOS full-bridge 2, output A
11	SENSE2	Current sense resistor terminal, bridge 2
12	OUT2B	DMOS full-bridge 2, output B
13	VBB	Supply Voltage
14	OUT1B	DMOS full-bridge 1, output B
15	SENSE1	Current sense resistor terminal, bridge 1
16	OUT1A	DMOS full-bridge 1, output A
17	VCP	Reservoir capacitor terminal
18	CP3	Charge pump capacitor terminal 3
19	CP1	Charge pump capacitor terminal 1
20	CP4	Charge pump capacitor terminal 4
–	PAD	Exposed pad for enhanced thermal performance

Disclaimer : This 2CH Tiny Motor driver can also be used to control a bipolar stepper motor but control logic for ***STEPPER IS FOR ADVANCED USER ONLY.*** (***PLEASE DO NOT ATTEMPT TO USE STEPPER MOTOR*** or place a bipolar stepper motor on board if you do not know how to use it. Wrong sequence may cause broke/short the IC.)

Figure 3. **Functional Block Diagram**

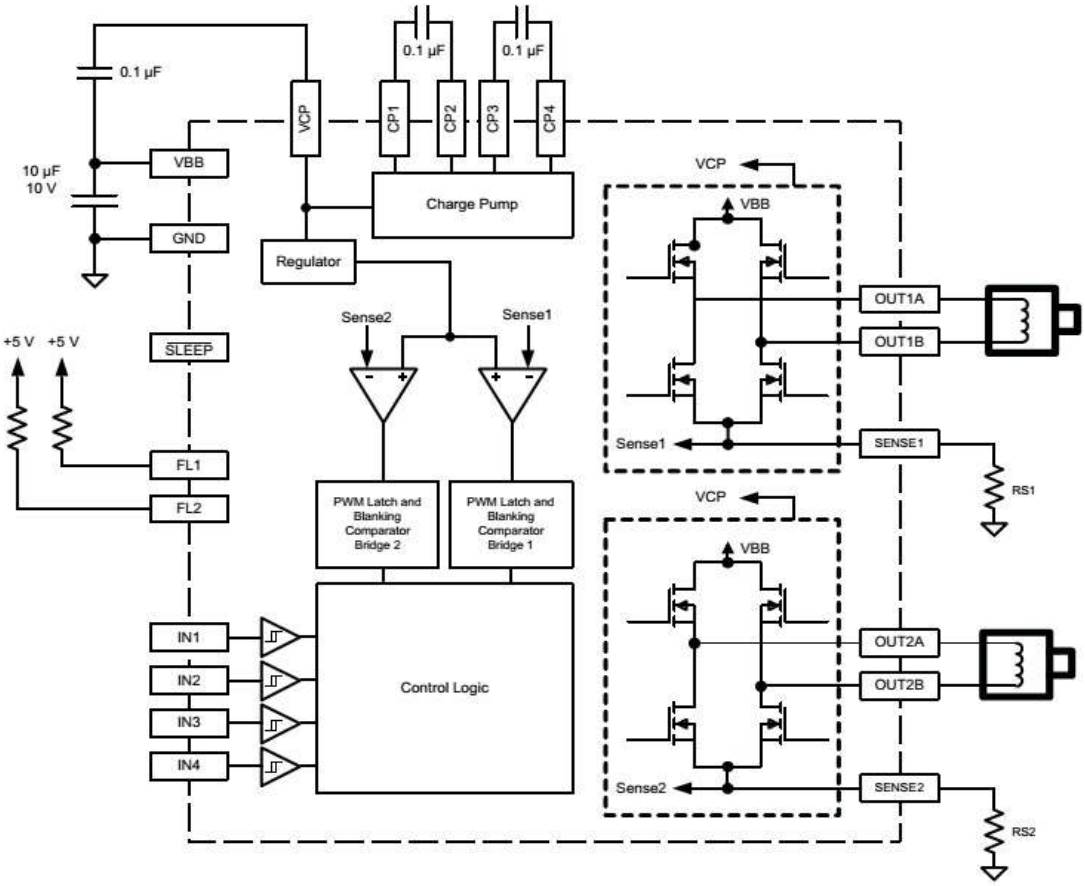


Table 5. Control Logic

DC Motor Operation

IN1	IN2	IN3	IN4	OUT1A	OUT1B	OUT2A	OUT2B	Function
0	0	0	0	Off	Off	Off	Off	Disabled
1	0	1	0	High	Low	High	Low	Forward
0	1	0	1	Low	High	Low	High	Reverse
1	1	1	1	Low	Low	Low	Low	Brake

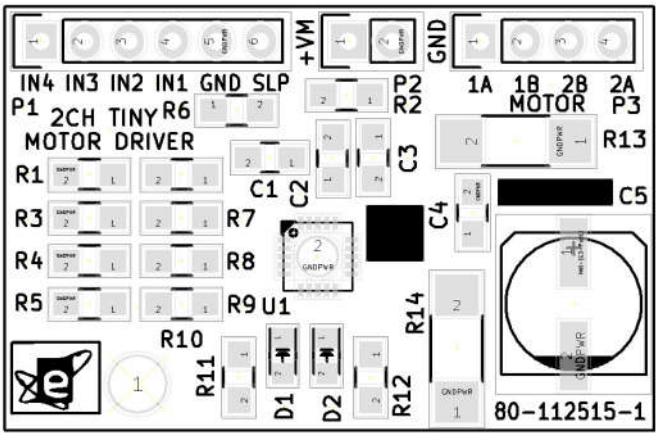


Figure 4. Silkscreen Guide

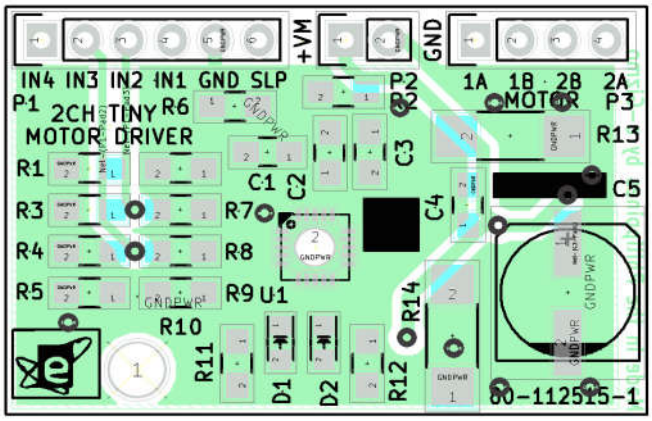


Figure 5. Bottom Copper Guide

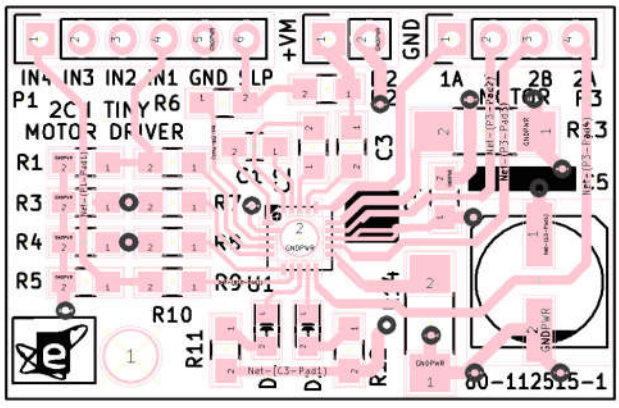


Figure 6. Top Copper Guide

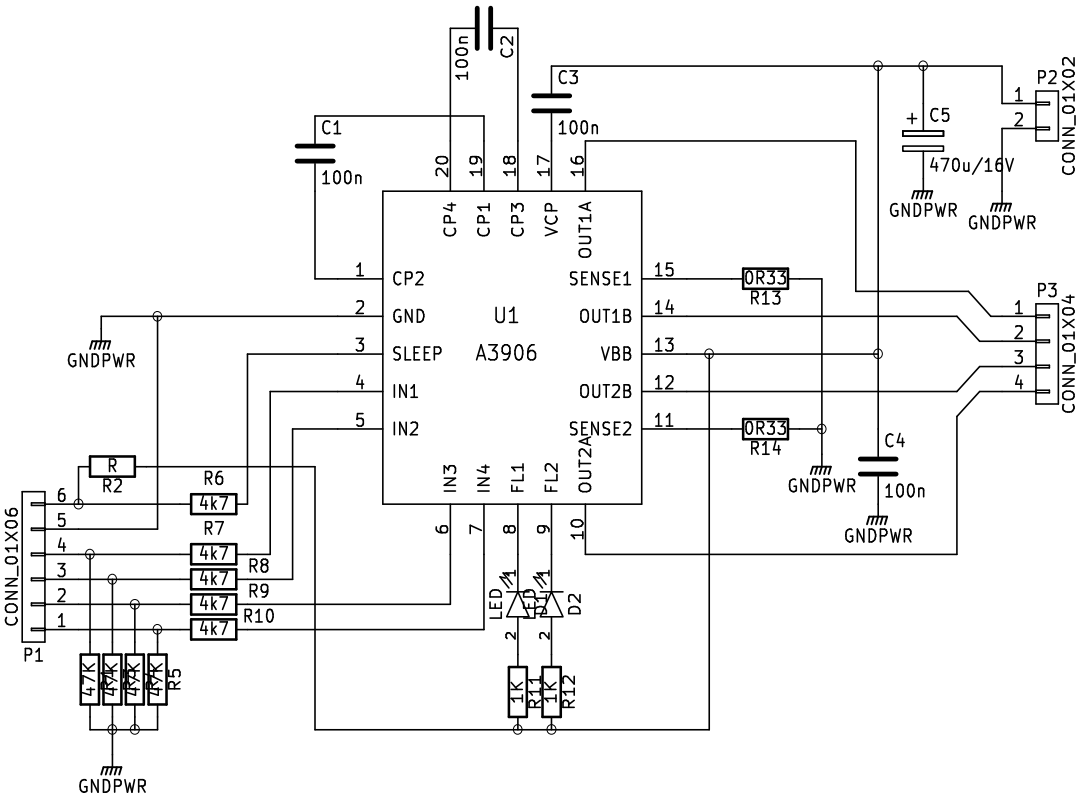


Figure 7. Schematic Diagram of e-Gizmo 2-Channel Tiny Motor Driver

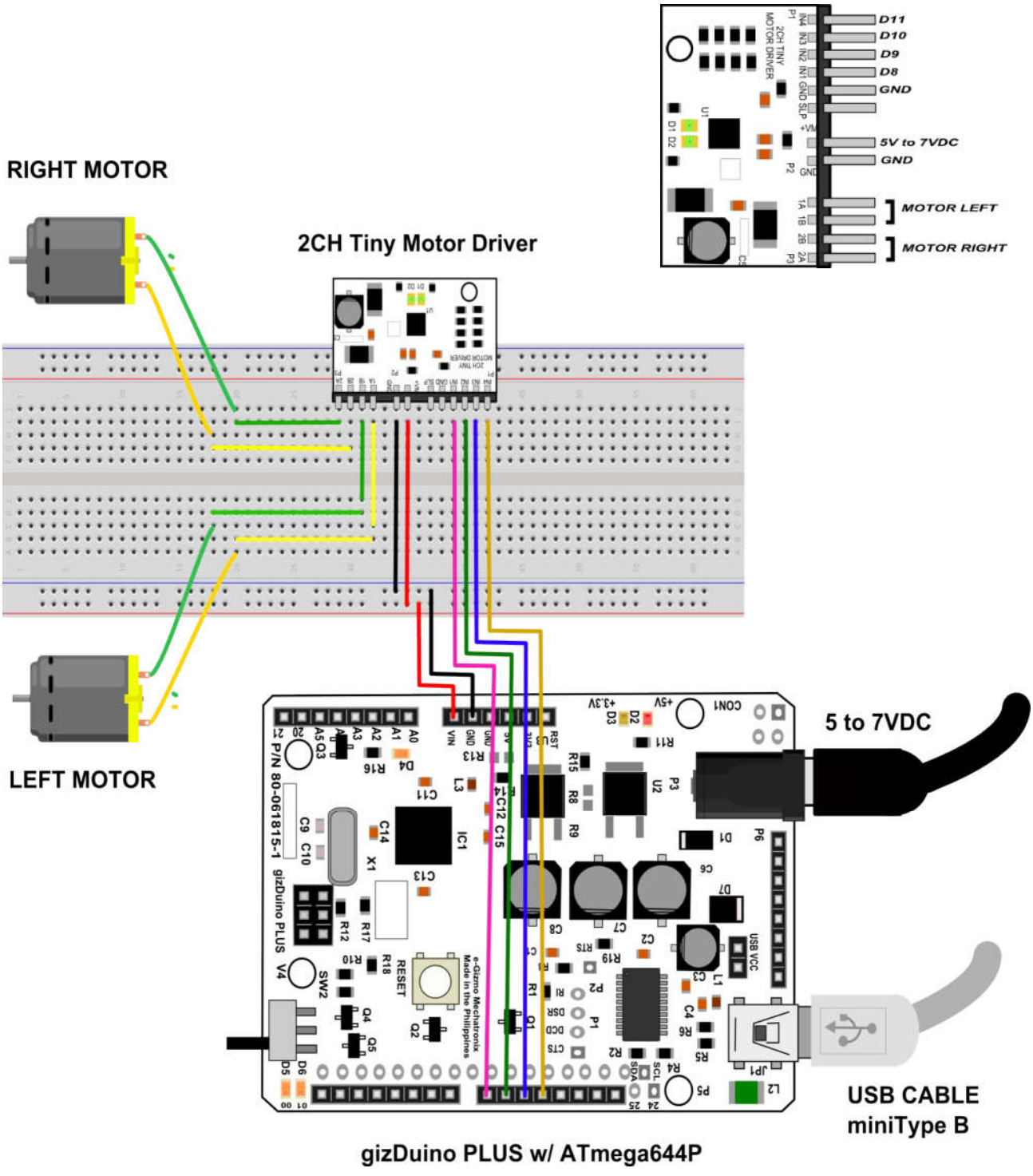


Figure 8. Sample Application of e-Gizmo 2-Channel Tiny Motor Driver