深圳市富满电子集团股份有限公司
SHEN ZHEN FINE MADE ELECTRONICS GROUP CO., LTD.

TC118S (Document No.: S&CIC1795) Single Channel DC Motor Driver

1. Features

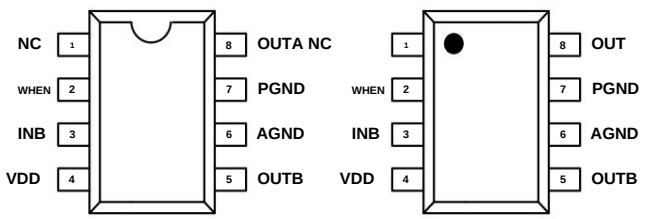
- Single channel built-in power MOS full bridge driver
- Drive forward, reverse, stop and brake functions
- Built-in hysteresis thermal effect overheat protection function
- Low on-resistance (1.6ÿ)
- The maximum continuous output current can reach 1.8A, the peak value is 2.5A
- No external large filter capacitors are required, only small chip capacitors are needed
- Adopt DIP-8, SOP-8 packaging

2. Product Application

- Toy Motor Driver
- Electronic lock
- Electric toothbrush
- Electric tea set

3. Pin diagram and pin description

Pin Diagram



DIP-8 SOP-8

TC118D TC118S

Serial number	symbol	I/O	Functional Description
1	NC	—	Floating
2	WHEN	I	Engage INB Determine Status
3	INB	I	Engage INA Determines the status
4	VDD	P	Power positive
5	OUTB	O	Full bridge output B terminal
6	AGND	G	Ground
7	PGND	G	Ground
8	OUTA	O	Full bridge output A terminal

4. Absolute Maximum Ratings (Note: The maximum continuous output current depends on the heat dissipation conditions.)

Parameters	symbol		Rating	unit
Power supply voltage	VCC		7.2	V
Power consumption	Pd	DIP-8	1	IN
		SOP-8	0.96	IN
Thermal resistance	ÿJA	DIP-8	125	ÿ/W
		SOP-8	130	ÿ/W
Operating Temperature	Topr		-20~85	ÿ
Junction	Tj		150	ÿ
Temperature Storage Temperature	Tstg		-55~150	ÿ
Manual welding			350~370	ÿ
temperature Output	Iop		2.5	A
current peak Maximum continuous output current	Ioc		1.8	A
INA, INB built-in pull-down resistor			1	Mÿ

5. Recommended working conditions (Ta=25ÿ)

parameter	symbol	Parameter Value	unit
Supply voltage	VCC	2.4~7.2	V
Control input voltage	COME	0~VCC	V
Forward and reverse output current	Iout	-1500~1500	mA

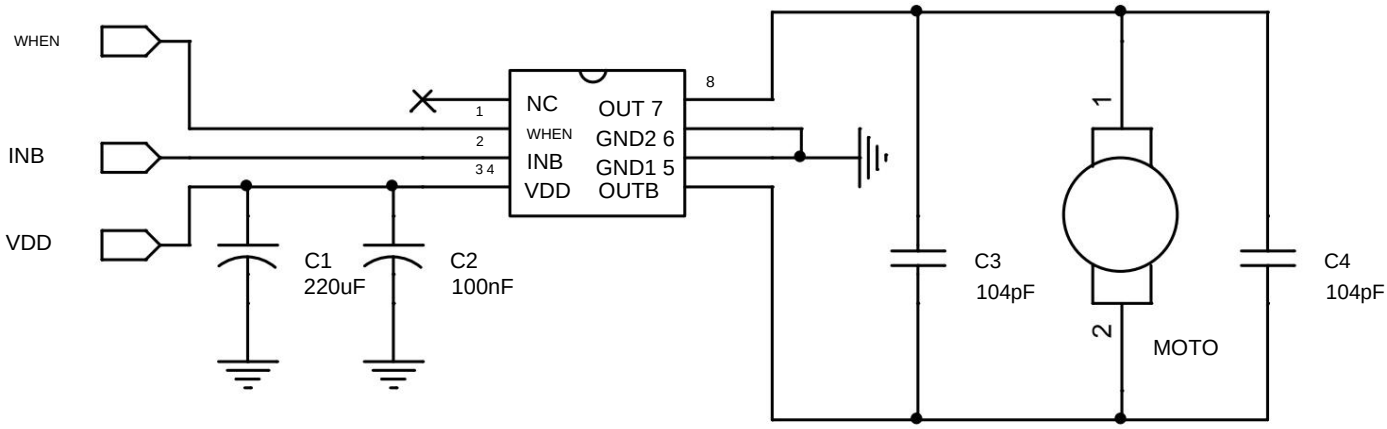
6. Electrical Characteristics (Ta=25ÿ, VCC=3V, RL=15ÿ, unless otherwise specified.)

parameter	symbol	Test Conditions	Min.	Typ.	Max.	Unit
Overall line						
Circuit standby current	ICCST	INA=INB=GND — 0			10	uA
Working current	ICC	INA=H, INB=L or INA=L, INB=H or INA=H, INB=H		— 0.3	1	mA
Control Input						
High level input voltage	VINH		2.0	—	—	V
Low level input voltage	VINL		—	—	0.8	V
High level input current	IINH	VIN=3V	—	5	20	uA
Low level input current	IINL	VIN=0V	-1	0	- uA	
Pull-down resistor	ALSO		—	1.5	— Mÿ	
drive						
Output on-resistance	RON	Io=±200mA	—	1	1.6	Oh
INA, INB built-in pull-down resistor			0.8	0.9	1	Mÿ

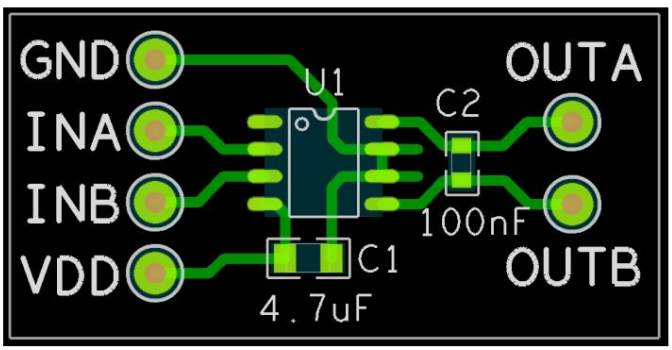
7. Input/Output Logic Table

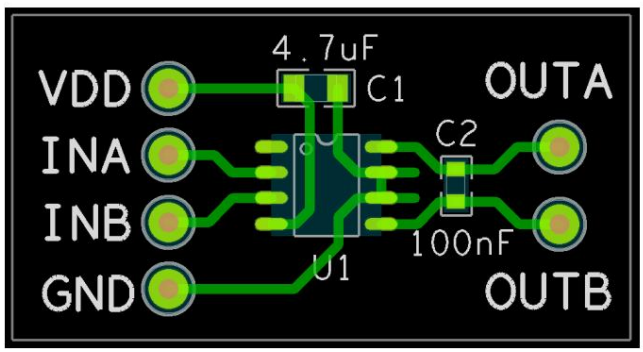
enter		Output		Way
WHEN	**INB**	**OUT**	**OUTB**	
L	L	Hi-Z	Hi-Z	Standby
H	L	H	L	go ahead
L	H	L	H	Back
H	H	L	L	brake

8. Application reference circuit diagram and **PCB** wiring guidance:

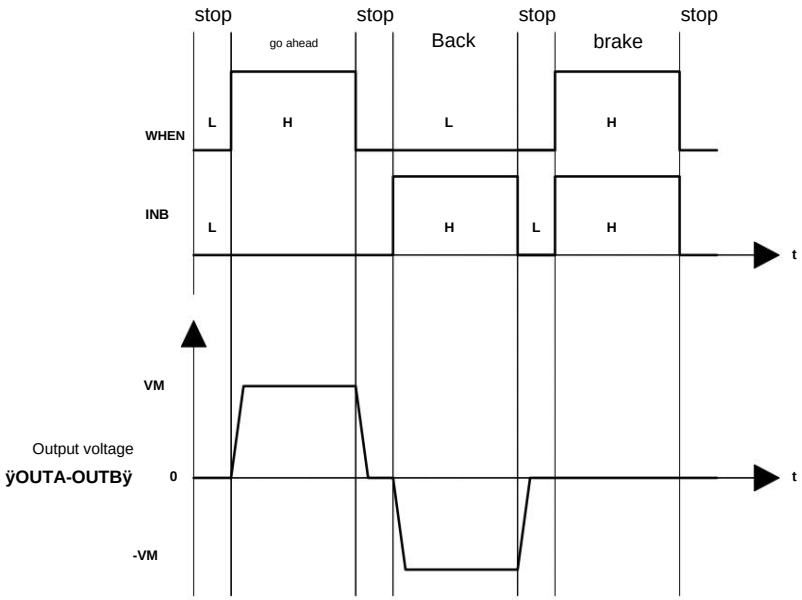


Note: In different applications, only one of C1 and C2 can be considered: in 3V applications, it is recommended to use a 1uF or above; in 4.5V applications, it is recommended to use a 4.7uF or above, both of which are chip capacitors; in 6V applications, it is recommended to use a large capacitor 220uF+100nF chip capacitor; C2 is placed close to the VDD pin of the IC and the connection between the negative pole of the capacitor and the GND end of the IC should be as short as possible. That is, although the capacitor is close, the wiring and routing should not be very far (refer to the figure below). When there is a large capacitor on the application board to filter other chips and it is far away from TC118S, it is also necessary to place a small capacitor on the VDD pin of TC118S as required above. In the figure, the C4 (100nF) capacitor is preferably connected to the motor. When it is not convenient to solder this capacitor on the motor, it is placed on the PCB.





IX. Input/Output Waveform



10. Notes on chip use

1. The recommended circuit and parameters are only applicable to ordinary toy motor drives. For other applications, please use them according to actual conditions.

2. The continuous current driving capability is affected by factors such as packaging form, VDD voltage, chip tolerance, ambient temperature, PCB material thickness and size.

   The parameters given in the specification book are for reference only. In actual use, please consider a certain margin according to the product.

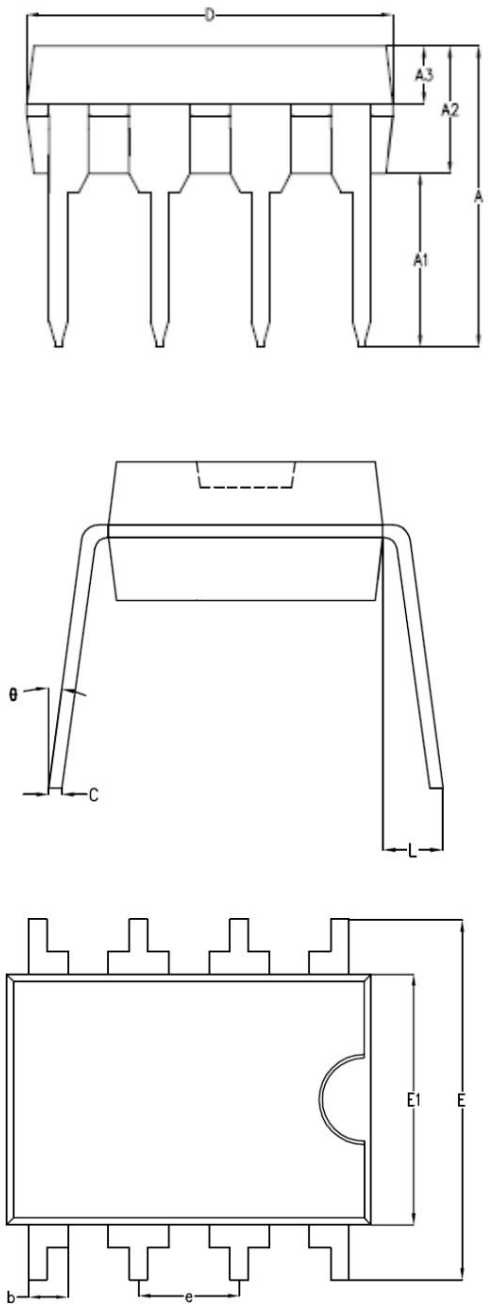
3. TC118S is designed and manufactured using MOS technology and is sensitive to static electricity. It is required to take precautions against static electricity during the entire process of packaging, transportation, processing, etc.

   Electrical measures.

4. It is recommended that the current value at the moment of motor startup should not exceed the chip's peak value of 2.5A.

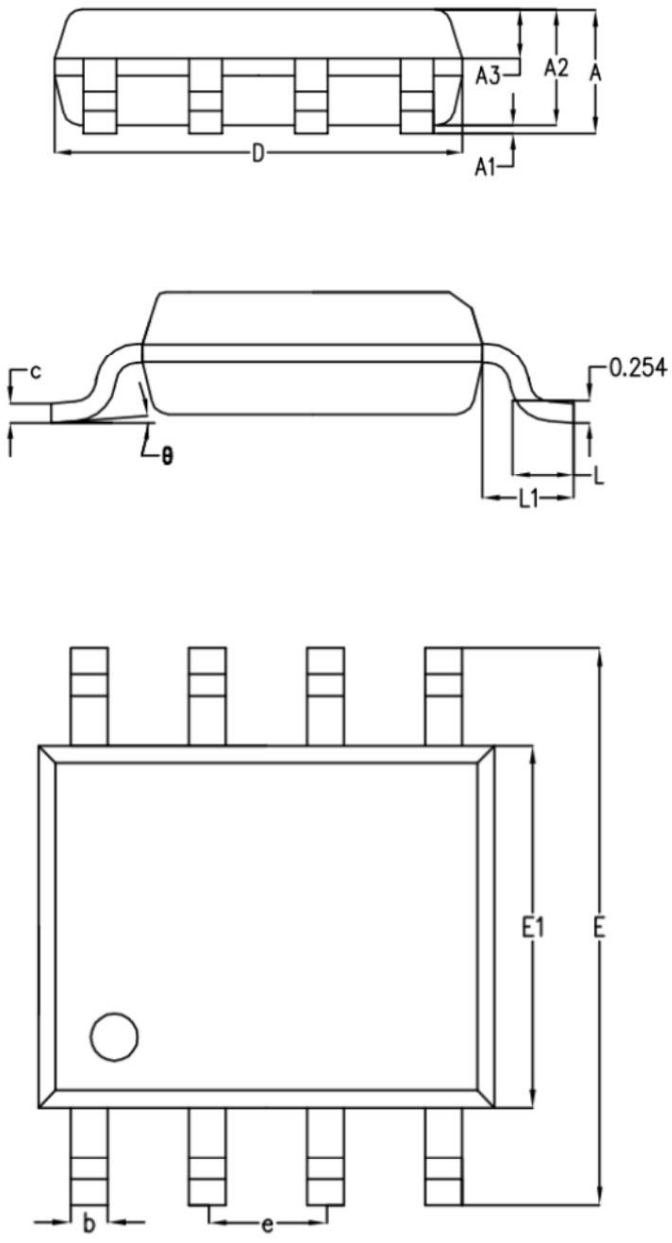
11. Package Dimensions

DIP-8



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	-	7.20	7.40
A1	-	3.90	4.00
A2	3.25	3.30	3.35
A3	1.45	1.50	1.55
b	1.47	1.52	1.57
c	0.12	0.17	0.22
D	9.14	9.24	9.34
E	8.65	8.75	8.85
E1	6.30	6.35	6.40
e	2.54BSC		
L	1.15	1.20	1.25
θ	0°	4°	8°
-	-	-	-

SOP-8



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	-	1.50	1.55
A1	-	0.10	0.15
A2	1.35	1.40	1.45
A3	0.55	0.60	0.65
b	0.35	0.40	0.45
c	0.17	0.22	0.25
D	4.85	4.90	4.95
E	5.90	6.00	6.10
E1	3.80	3.90	4.00
e	1.27BSC		
L	0.60	0.65	0.70
L1	1.05BSC		
θ	0°	4°	6°