



深圳市矽源特科技有限公司

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CST6508

Dual channel DC motor driver chip

User Manual

2022/10

V1.2



CST6508 Introduction:

CST6508 is a dual channel brushless DC motor driver chip. The maximum continuous output current can reach 1.8A, and the peak value can reach 2.5A. The chip is equipped with a power MOS full bridge driver, which can drive forward, backward, stop, and brake functions. At the same time, it is equipped with an overtemperature protection circuit to ensure the safety of chip operation.

The full bridge driving architecture and driving method can save peripheral filtering circuits, save costs, and facilitate applications. The extremely small static power consumption of the circuit (less than 1uA) can make the application range of CST6508 more extensive.

CST6508 Advantage:

Adopting a dual channel full bridge power drive structure

Working voltage range (1.5V~7V)

The maximum continuous output current can reach 1.8A

The maximum peak output current can reach 2.5A

Including forward/reverse/stop/brake functions

Extremely low static current (typ. 0.1uA)

Built in thermal protection function with hysteresis effect (TSD)

Packaging form: SOP16

CST6508 Application:

DC brush motor drive for toys

CST6508 Order Information:

Part No.	Package	Mark*	Tape/Reel
CST6508	SOP16	CST-LOGO: CST6508 TXXXX	4000/Reel

CST6508 Absolute maximum rating (TA=25°C) :

Parameter	symbol	Value	Unit
Supply voltage	VDDMAX	7.0	V
Maximum output voltage	VOUTMAX	VDD	V
Maximum input voltage	VINMAX	VDD	V
Peak output current	IOUTMAX	2.5	A
Maximum continuous output current	IOUTC	1.8	A
Operating temperature range	Topr	-20~+85	°C
thermal resistance	JA	130	°C/W
Junction temperature	TJ	150	°C
Storage temperature	Tstg	-55~150	°C
Welding temperature		260	°C

Note: 1. During use, exceeding the absolute maximum rated value specified above may cause circuit breakdown, burning, and other issues .

2. The maximum continuous output current depends on the heat dissipation conditions.



CST6508 Recommended operating conditions (TA=25°C) :

Parameter	Symbol	Mini	Typical	Mix	Unit
Supply voltage	VDD	1.5	--	7	V
Input voltage	VIN	0	--	VDD	V
Continuous output current	Iout	--	±1500	--	mA

CST6508 Pin diagram and description:

	Number		Name	input/output	Pin illustrate
	1-8	9-16			
NC	1	16	OUTA	--	Not connected
INA	2	15	GND	I	Control signal A input terminal
INB	3	14	NC	I	Control signal B input terminal
VDD	4	13	OUTB	I	Power supply
NC	5	12	OUTC	--	Not connected
INC	6	11	GND	I	Control signal C input terminal
IND	7	10	NC	I	Control signal D input terminal
VDD	8	9	OUTD	I	Power supply
				O	Drive D output
				--	Not connected
				I	Connect to board ground
				O	Drive C output
				O	Drive B output
				--	Not connected
				I	Connect to board ground
				O	Drive A output

CST6508 Function Description: Input Logic Truth Table

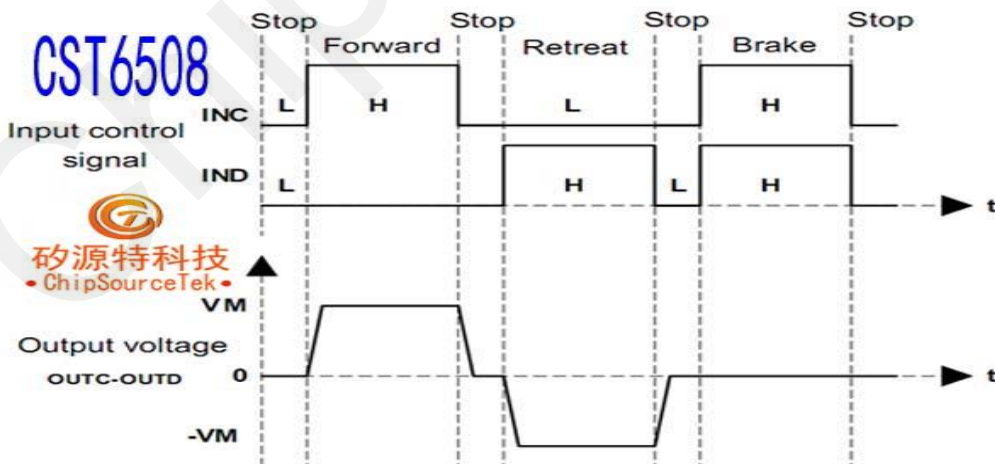
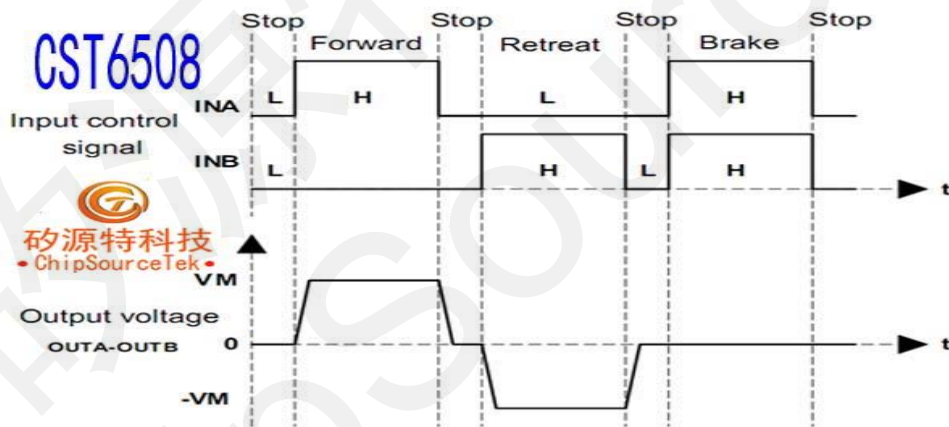
INA	INB	OUTA	OUTB	Function
L	L	Hi-Z	Hi-Z	Standby
H	L	H	L	Forward
L	H	L	H	Retreat
H	H	L	L	Brake
INC	IND	OUTC	OUTD	Function
L	L	Hi-Z	Hi-Z	Standby
H	L	H	L	Forward
L	H	L	H	Retreat
H	H	L	L	Brake



CST6508 Electrical characteristics: ($T_A=25^{\circ}\text{C}$, $V_{DD}=5\text{V}$, $R_L=15\Omega$, unless otherwise noted)

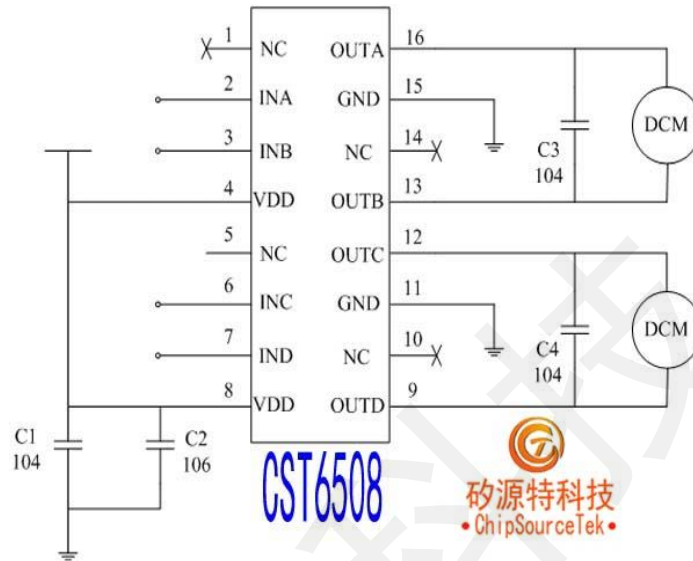
Parameter	Symbol	Test conditions	Mini	Typical	Mix	Unit
VDD standby current	IDDST	INA=INB=INC=IND =VDD=5V Output no-load	-	0	10	μA
VDD quiescent current	IVDD	INAX=H, INBX=L or INAX=L, INBX=H or INAX=H, INBX=H /VDD=5V Output no-load	-	220	400	μA
Input pull-down resistance	RIN			150		$\text{K}\Omega$
Input the lowest high-level voltage	VINH		2			V
Input the highest low-level voltage	VINL				0.8	V
Output resistance	RON	$I_O=\pm 1000\text{mA}$		0.5		Ω
OTP temperature	TSD			165		$^{\circ}\text{C}$
TSD Hysteresis	TSDH			30		$^{\circ}\text{C}$

CST6508 Typical waveform:





CST6508 Typical application circuit diagram:



CST6508 Special precautions:

It is generally recommended to add 104 capacitors when the CST6508 power supply is connected to the ground. If the power supply fluctuates greatly or the output drive current is large, it is recommended to add 10uF-330uF electrolytic capacitor, which can be selected according to the actual situation.

The general application of CST6508 can eliminate the 104 capacitors from the output end to the ground. If the power supply fluctuates significantly or the output drive current is high, it is recommended to add 104 capacitors to the ground at each output port.

C3 and C4 are generally built-in capacitors of the motor.

CST6508 is sensitive to static electricity. Anti static measures need to be taken during packaging, transportation, processing, and other processes.

CST6508 Package information:

