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THB6032S

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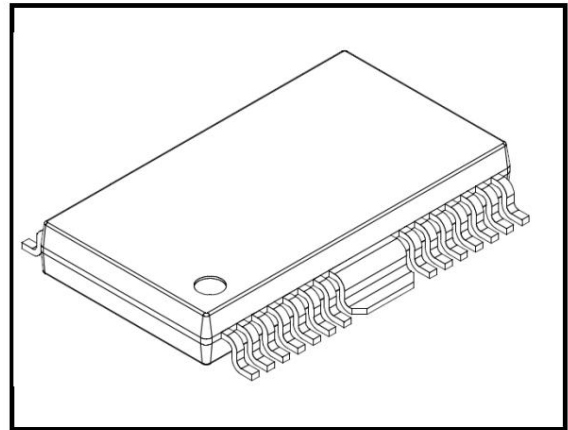
Two-phase hybrid stepping motor driver chip

1. Features:

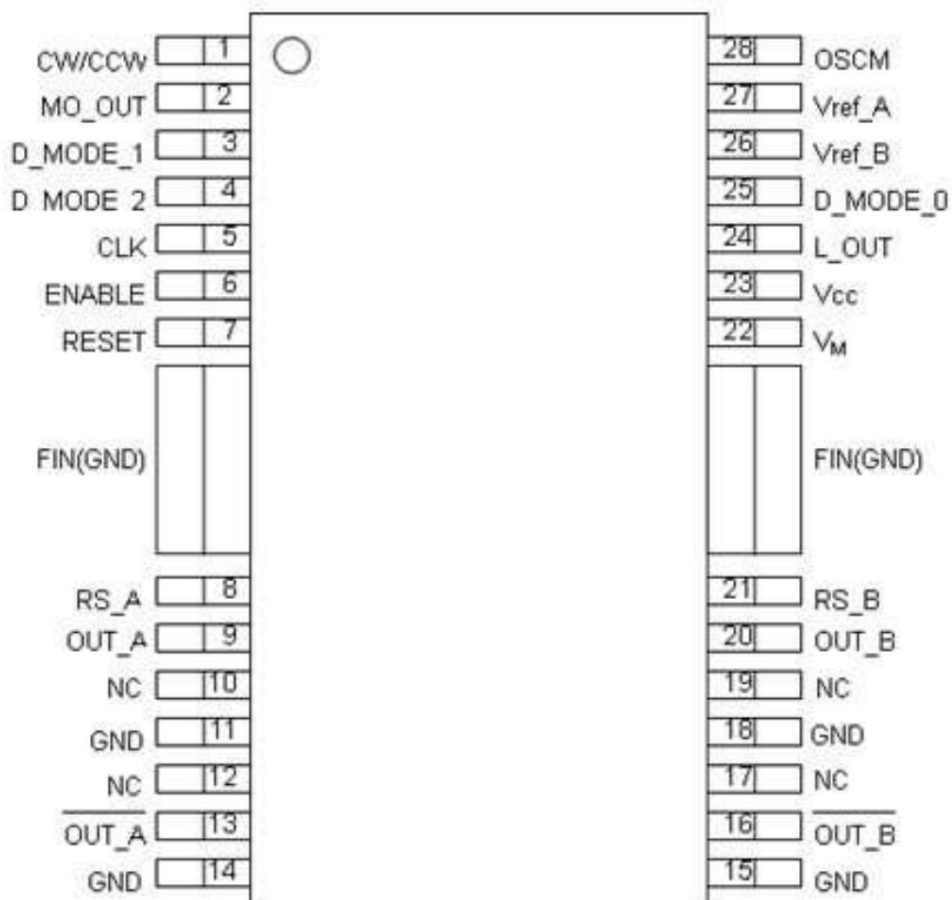
- Dual full-bridge MOSFET driver
- High withstand voltage 50VDC, high current 2.5A (peak value) • Various subdivision options (1, 1/2, 1/4, 1/8, 1/16, 1/32) •

Automatic attenuation method

- Built-in temperature protection and overcurrent protection



Second, the pin diagram:



3. Pin description:

pin Numbering	symbol	Function description
1	CW/CCW motor forward and reverse control terminal	
2	MO_OUT Position detection Monitor output	
3	D_MODE_1 Subdivision selection terminal (see attached table for details)	
4	D_MODE_2 Subdivision selection terminal (see attached table for details)	
5	CLK	Pulse input terminal
6	ENABLE enable terminal	
7	RESET	reset terminal
8	RS_A	A-phase current detection terminal (should be connected to a high-power detection resistor)
9	OUT_A	A-phase power bridge output terminal
11	GND	1 Power ground wire
13	OUT_A	A-phase power bridge output terminal
14	GND	2 Power ground wire
15	GND	Power ground wire
16	OUT_B	B-phase power bridge output terminal
18	GND	1 Power ground wire
20	OUT_B	B-phase power bridge output terminal 2
21	RS_B	B-phase current detection terminal (should be connected to a high-power
22	VM	detection resistor) Motor drive power input terminal
23	VCC	5V power output
24	L_OUT	Temperature protection and overcurrent protection output
25	D_MODE_0 Subdivision selection terminal (see attached table for details)	
26	Vref_B	B-phase current setting terminal
27	Vref_A	A-phase current setting terminal
28	OSCM	Chopping frequency control terminal

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Fourth, electrical parameters:

Absolute Maximum Ratings (Ta =25°C)

Characteristics Maximum	Symbol Rating		Unit
power input voltage value	VM 50		IN
Maximum output value	VOUT	50	IN
Maximum current output value	IOUT	2.5	A
Maximum logic input voltage	VIN	6.0	IN
Vref Maximum Input Voltage Power	Vref	5.0	IN
Consumption Operating Ambient	PD	1.3	In
Temperature Save Ambient Temperature	Topr -20 to 85	±5 Tstg Tj	°C
Maximum Junction Temperature		(max) 150	°C
			°C

Operating Range (Ta =-30 to 85°C) 30 to 85°C) 30 to 85°C)

Characteristics Power	Symbol	Min	Type	Max	Unit
Input Voltage Current	VM	10	24	47	IN
Output Logic Input	IOUT		1.5	2.5	A
Voltage	VINH	2.0		5.5	IN
	VIL	-0.4		0.8	IN
Vref current setting	Vref	0		3.6	IN
CLK maximum identification	Fclk			100	KHz
frequency chopping frequency range	Fchop	40.0	100.0 150		KHz

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Electrical Characteristics (Ta =25°C, V 25°C, VDD =5 V, VM =24 V)

parameter	symbol	Test Conditions	Minimum	Typical	Maximum	unit
Logic input voltage	High VIN (H) Low	Logic signal input level	2.0	5.5	0.2	IN
	VIN (L)				0.8	
Input Current	IIN (H)	VIN = 3.3 V IIN	33			μA
	(L)	VIN = 0 V	1			
Static power	IM1 output open circuit, standby		2	3.5		
	IM2 output open circuit, ENABLE: L	3.5 5.5 mA				
	ENABLE: H	5.5 7				
On resistance	RonH + RonL		0.49	0.6		

5. Instructions for use

1. Segment settings

D_MODE0	D_MODE1	D_MODE2 option	
L	L	L	STANDBY
L	L	H	FULL STEP
L	H	L	1/2 STEP (A)
L	H	H	1/4 STEP
H	L	L	1/2 STEP (B)
H	L	H	1/8 STEP
H	H	L	1/16 STEP
H	H	H	1/32 STEP

2. Vref: current setting terminal

The drive current value can be set by adjusting the voltage of this terminal. The calculation formula is as follows:

$$I_{OUT} = V_{ref}/5 \div R_S (\mu A)$$

When Vref is 3V and Rs is 0.5Ω (2W),

$$I_{OUT}=3/5 \div 0.5 = 1.2A$$

3. Chopping frequency calculation formula 3 Chopping frequency calculation formula

$$F_{OSCM} = 1 / \{ 0.56 \times C \times R1 + 500 \}$$

$$F_{chop} = F_{OSCM} / 16$$

When C = 270PF, R1 = 5.1K

$$F_{OSCM} = 1 / \{ 0.56 \times 270 \times 10^{-12} \times (5100 + 500) \} \approx 1.18 \text{ MHz}$$

$$F_{chop} = 1.18 / 16 \approx \text{approximately } 70 \text{ KHz}$$

4. CLK: Pulse input terminal (see the table below)

-0.2V—VDD square wave, pulse frequency up to 100KHz

5.CW/CCW: Motor forward and reverse control terminal (see the table below)

When CW/CCW is low level, the motor rotates forward



When CW/CCW is high, the motor reverses

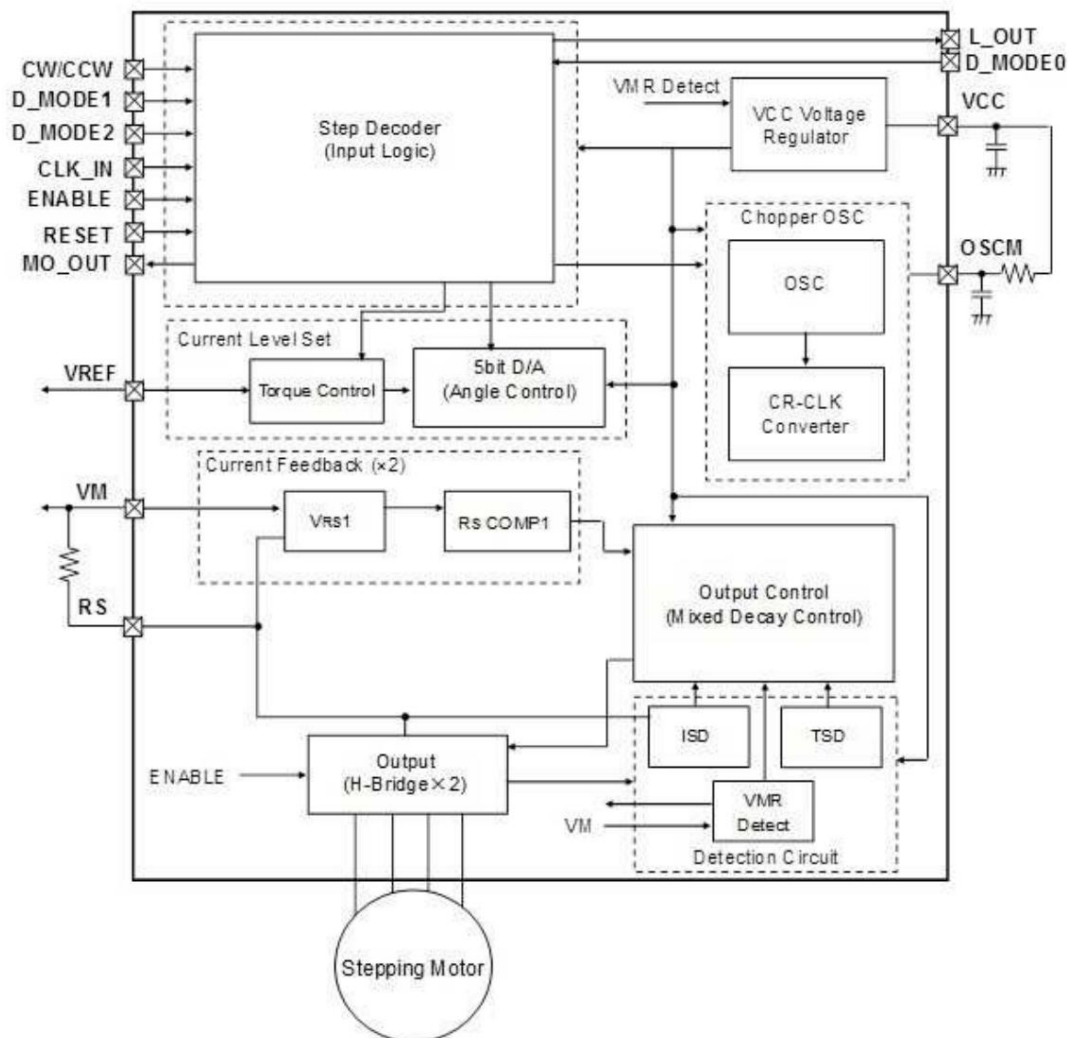
6.RESTER 6.RESTER .RESTER: reset terminal (see table below)

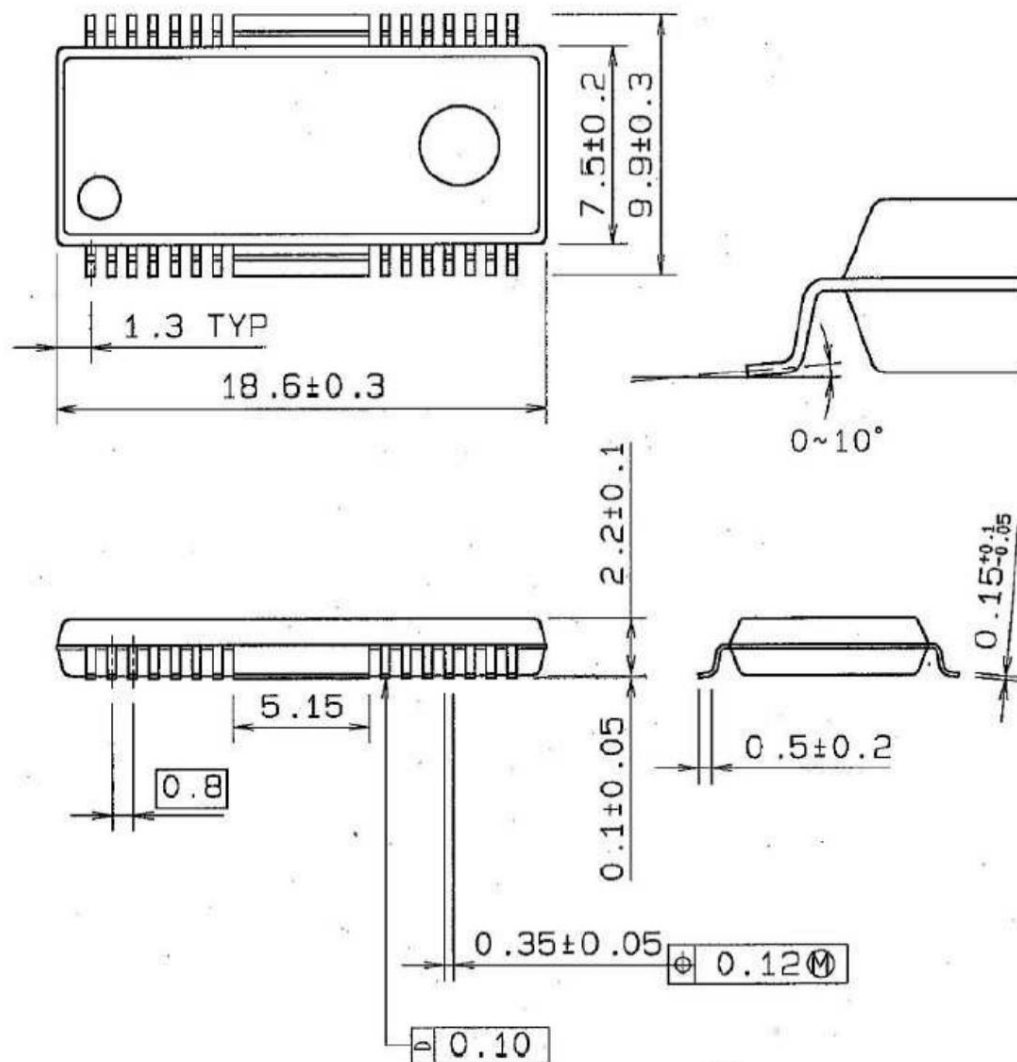
When RESTER is high, the chip is reset, and when it is low, the chip works

7.ENABLE 7.ENABLE .ENABLE: enable terminal (see table below)

When ENABLE is high level, the chip works, when it is low level, the chip output is all 0

input				output mode
CLK CW/	CCW RESET	ENABLE		
	L	L	H Forward	
	H	L	H reverse	
X	X	H	H initial mode	
X	X	X	L	FROM

6. Reference circuit diagram

7. Package Dimensions Package Dimensions**Weight: 0.79 g (typ.)**