Dual-way full-bridge drive

Overview

L293 is a high current, half-step four-phase motor driver, two-way drive current up to 600mA, using a voltage of 4.5V-36V, as a relay for drive perceptual load, screw coil, DC bipole stepping motor, and high current, high voltage perceptual load in positive power applications.

Each input is compatible with the TTL. Each output consists of a Darlington tube and a pseudo Darlington tube formed to eliminate intersection distortion complementary output level, Darlington tube for pull current and pseudo Darlington tube for irrigation current. En1 controls two way output P i n 3 and P i n 6,E n 2 controls two way outputs P i n 11 and P i n14. One input controls the output corresponding to the way. When the energy end is high, the corresponding channel works and the output phase corresponds to the input; when the energy end is low, the corresponding channel shutdown is in high resistance. With signal input, each pair of channels can be applied to drive a full step solenoid or motor with versible level direction. Chip have switch driven applications up to 5KHz.

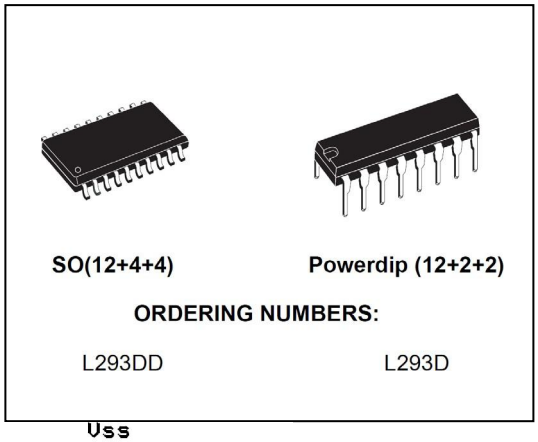
The L293D is packaged in DIP16 with 4 GND pins in the middle for heat dissipation.L293DD is SOP20.

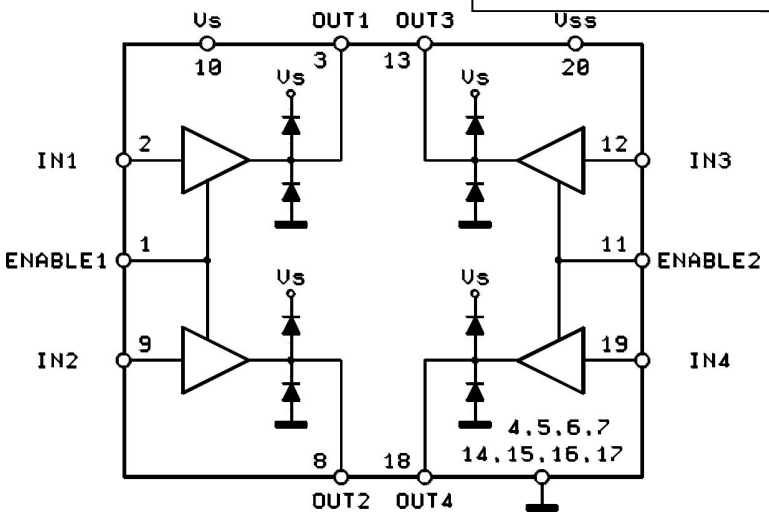
Internal block diagram

L293D/L293DD

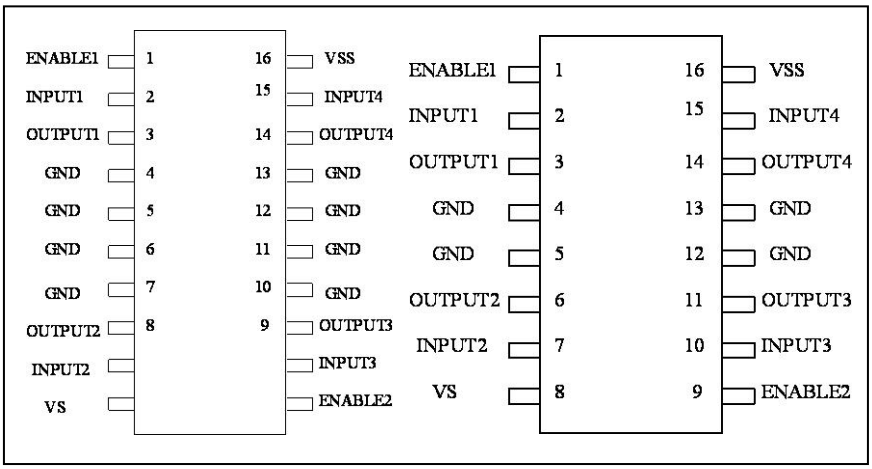
Main features

- Use the voltage range wide (4.5V-36V).
- Output capability of 600mA per channel.
- With EN-end enable control.
- Overheat protection.
- Peak peak output current per channel is 1A(non-persistent).
- Logic low level up to 1.5V, has high interference resistance.
- Internal clamp diode.





Pchart



Function table

Enter it	EN.	Output
H.	H.	H.
L.	H.	L.
H.	L.	Z.
L.	L.	Z.
Z = output off		

Limit parameters

Symbol	Description	Reference value	Unit No
Vs.	Supply voltage	36	V.
Vss.	Logic power supply voltage	7	V.
Vi.	Input the voltage	6	V.
Ven.	Enterminal voltage	6	V.
Io (MAX)	Maximum output current (unsustainable, duration of <5ms)	1	A.
Io.	Maximum continuous output current	600	mA.
P.	Max. power	4	W.
TJ.	Maximum temperature	150	℃

Recommended ested conditions:

		Minimum value	Maximum value	Unit No
Supply voltage	Vs.	Vss.	36	V.
	Vss.	4.5	7	
High electrical level	Vss ≤ 6V.	2.3	Vss.	V.
	Ven ≥ 6V.	2.3	6	

Electrical Parameters: (unless specifically stated in V s =24V;V ss =5V,T j =25℃)

Symbol	Parameters	Test conditions	Minimum value	Typical values	Maximum value	Unit No
Vs.	Supply voltage (Pin 8)	Working conditions	Vss.	-	36	V.
Vss.	Logic power supply voltage (P i n 16)		4.5	5	7	V.
Is.	Static working current (P i n8)	V e n =H;I L =0, V i =L. V e n =H;I L =0, V i =H.	-- --		6 24	mA.
		Ven=L,. Vi=X.	--		4	mA.
Iss.	Vs s-end static operating current (P i n 16)	V e n =H;I L =0, V i =L. V e n =H;I L =0, V i =H.	-- --		60 22	mA.
		Ven=L. Vi=X.	--		24	mA.
ViL.	Input a low voltage (p i n 2,7,10,15)		-0.3	--	1.5	V.
ViH.	Input a high voltage (p i n 2,7,10,15)		2.3	--	Vss.	V.
I i L.	Low-voltage input current (pin2,7,10,15)	VIL = 1.5 V.	--	--	-10	uA.
I i H.	High voltage input current (pin2,7,10,15)	2.3 V ≤ Ven H ≤ VSS -. 0.6 V.	--	30	100	uA.
VenL.	Low voltage (pins 1,9)		-0.3	--	1.5	V.
VenH.	High voltage (pins 1,9)		2.3	--	Vss.	V.
Ien=L.	Low-voltage enabling current (pins 1,9)	Ven L = 1.5 V.	--	-30	-100	uA.
I e n =H.	High-voltage enabling current (pins 1,9)	2.3 V ≤ Ven H ≤ VSS -. 0.6 V.	--	--	±10	uA.

Application Information:

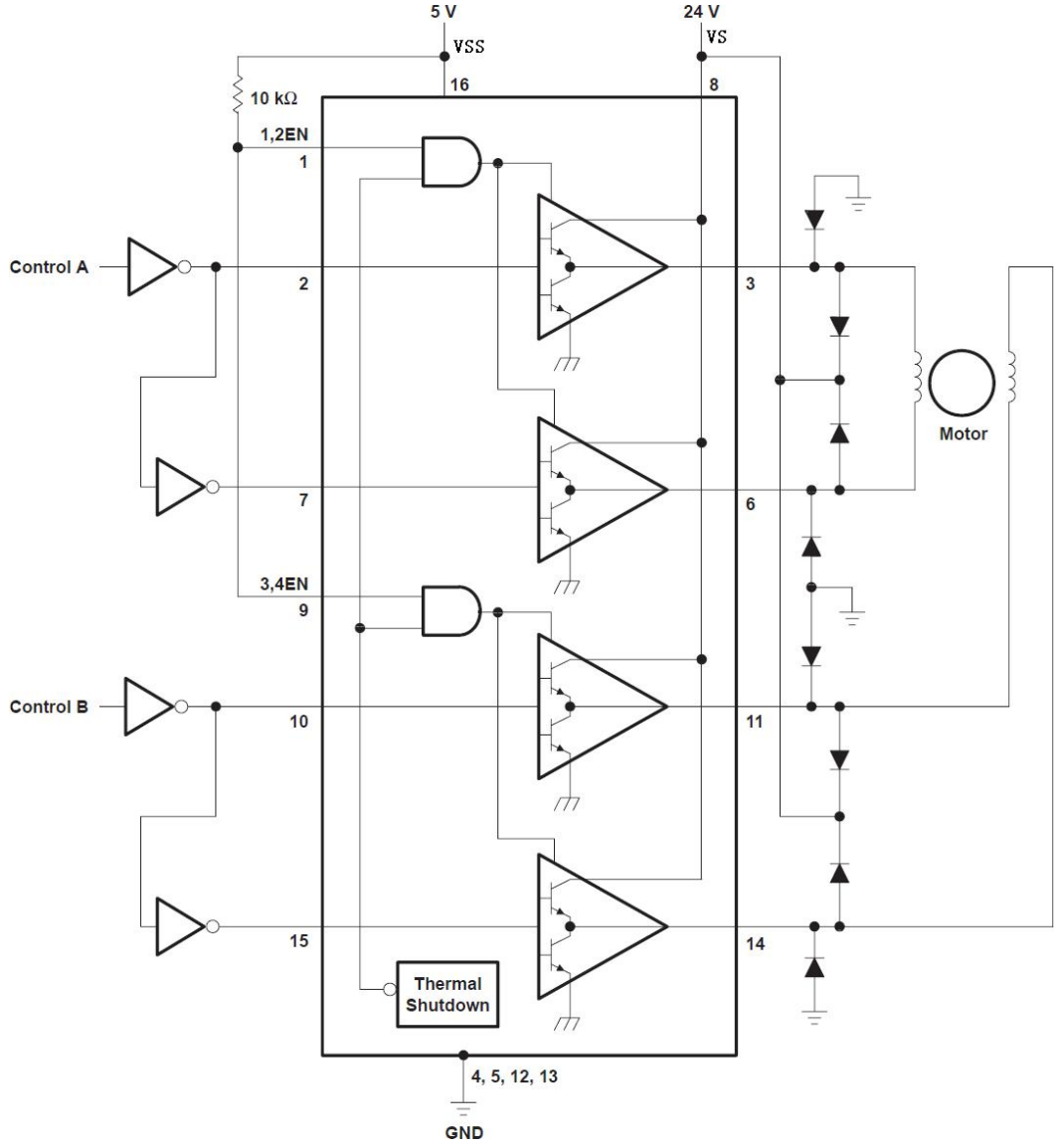
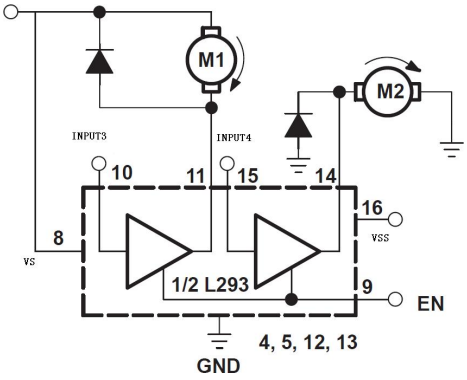
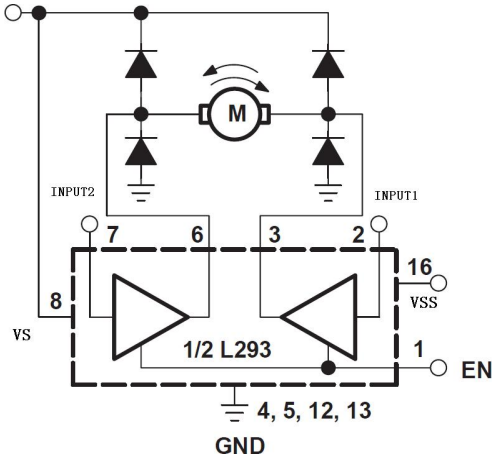


Figure 1 Biphase motor driver



EN.	INPUT3.	M1.	INPUT4.	M2.
H.	H.	FAST STOP.	H.	RUN.
H.	L.	RUN.	L.	FAST STOP.
L.	X.	FREE RUNNING.	X.	FREE RUNNING.

Figure 2 DC Motor Control (Grounding and connected supply voltage)



EN.	INPUT1.	INPUT2.	Motor function.
H.	L.	H.	Turn right.
H.	H.	L.	Turn left.
H.	L.	L.	Fast stop.
H.	H.	H.	Fast stop.

Figure 3 Dual-phase DC motor control

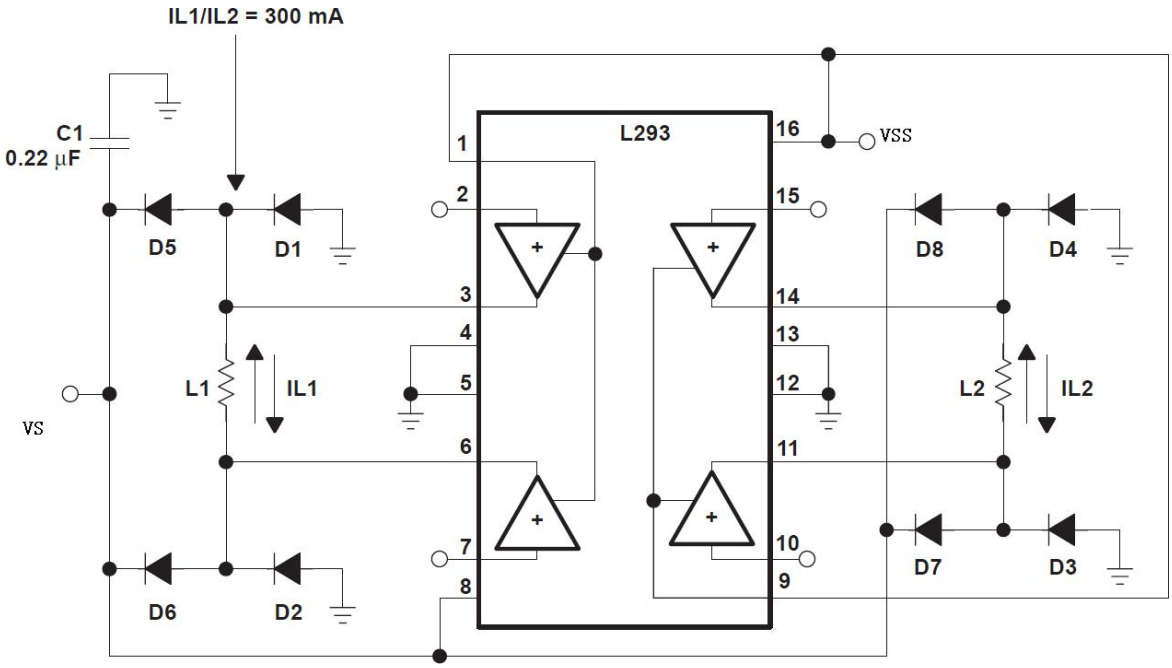
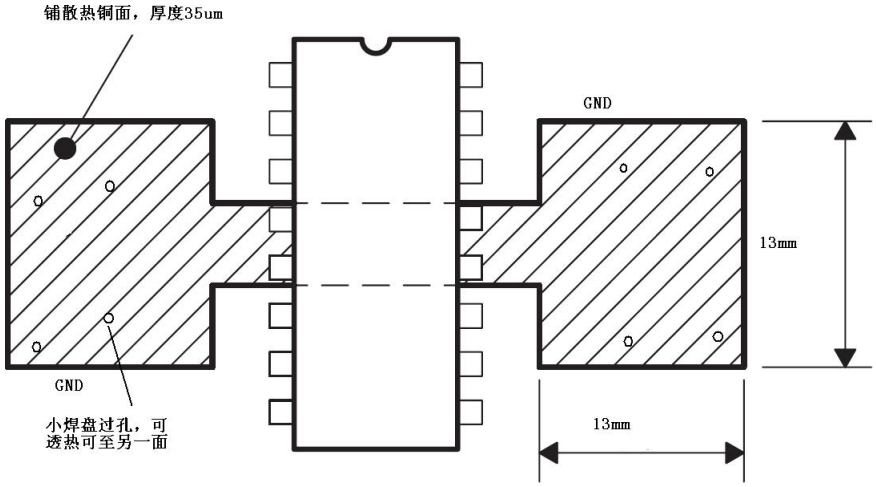
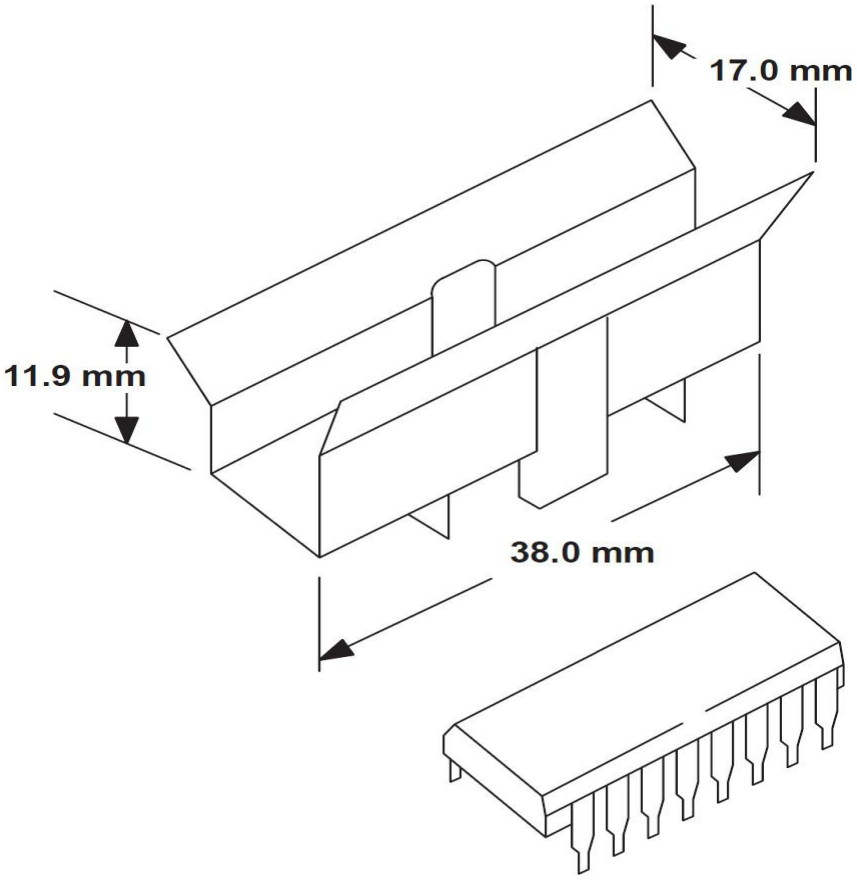


Figure 4 The bipolar stepping motor control

Several ways to help dissipate heat



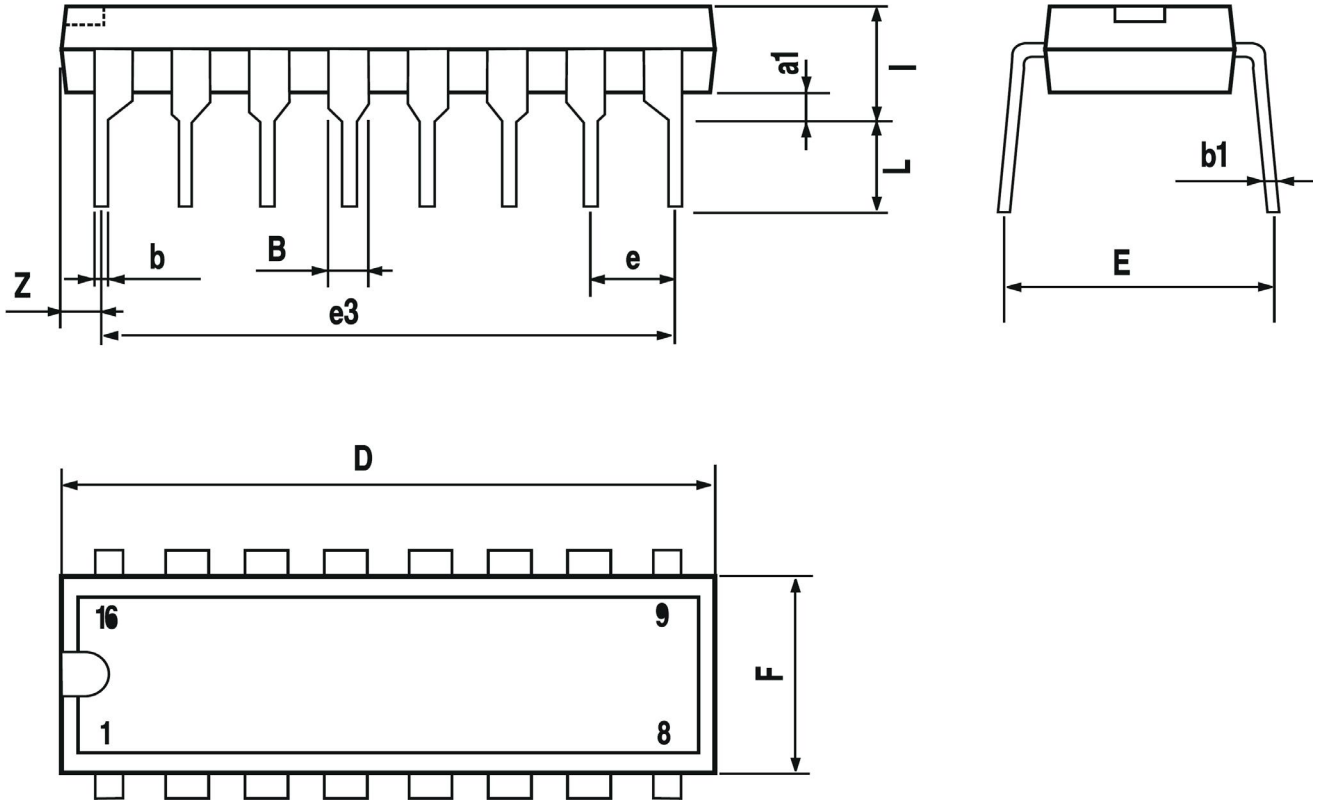
PCB shop cooling copper surface



External radiator plate

Enclosure form and data:

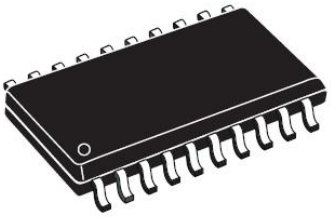
DIP16.



Mark number	MM			Inch		
	MIN..	TYP..	MAX..	MIN..	TYP..	MAX..
a1.	0.51			0.02		
B.	0.85	1.4	1.4	0.033		0.055
b.	0.5	0.5			0.02	
b1.	0.38	0.5	0.5	0.015		0.02
D.			20			0.787
E.	8.8	8.8			0.346	
e.	2.54	2.54			0.1	
e3.	17.78	17.78			0.7	
F.	7.1	0.28	7.1			0.28
I.	5.1	0.201	5.1			0.201
L.	3.3	3.3			0.13	
Z.			1.27			0.05

SOP20.

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	2.35		2.65	0.093		0.104
A1	0.1		0.3	0.004		0.012
B	0.33		0.51	0.013		0.020
C	0.23		0.32	0.009		0.013
D	12.6		13	0.496		0.512
E	7.4		7.6	0.291		0.299
e		1.27			0.050	
H	10		10.65	0.394		0.419
h	0.25		0.75	0.010		0.030
L	0.4		1.27	0.016		0.050
K	0° (min.)8° (max.)					



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