General Description

The Device is a monolithic integrated high volt-age,high current four channel driver designed to accept standard DTL or TTL logic levels and driveinductive loads(such as relays solenoides,DC and stepping motors)and switching power tran-sistors.

To simplify use as two bridges each pair of chan-nels is equipped with an enable input.A separate supply input is provided for the logic,allowing op-eration at a lower voltage and internal clamp di-odes are included.

This device is suitable for use in switching appli-cations at frequencies up to 5 kHz.

The L293D is assembled in a 16 lead plastic packaage which has 4 center pins connected to-gether and used for heatsinking

The L293DD is assembled in a 20 lead surface mount which has 8 center pins connected to-gether and used for heatsinking.

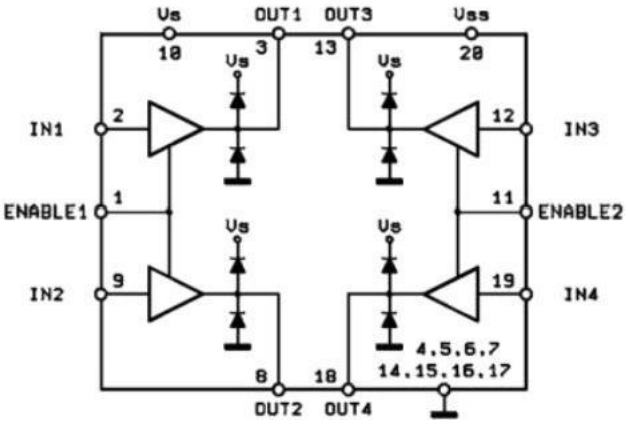
FEATURES

- 600ma Output Current Capability Per Channel
- 1.2A Peak Output Current(Non Repeti-Tive)Per Channel
- Enable Facility Overtemperature Protection
- Logical“0”Input Voltage Up To 1.5 V (High Noise Immunity)
- I nternal Clamp Diodes

ORDERING INFORMATION

DEVICE	Package Type	MARKING	Packing	Packing Qty
L293DN	DIP-16	L293D	TUBE	1000pcs/box
L293DDM/TR	SOP-20	L293D	REEL	2000pcs/reel

BLOCK DIAGRAM

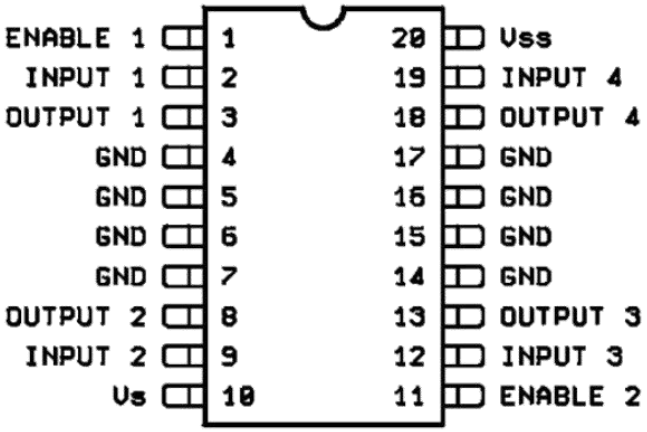


ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
Vs	Supply Voltage	36	V
Vss	Logic Supply Voltage	36	V
Vi	Input Voltage	7	V
Ven	Enable Voltage	7	V
I_o	Peak Output Curent (100 s non repetitive)	1.2	A
Ptot	Total Power Dissipation at Tpins=90℃	4	W
TL	Lead Temperature(Soldering,10 seconds)	245	℃
Tstg,Tj	Storage and Junction Temperature	-40～150	℃
TA	Operating Temperature Range	-20～85	℃

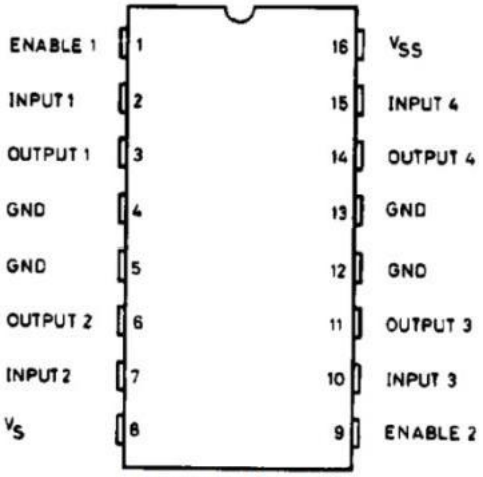
Note: Absolute Maximum Ratings indicate limits beyond which damage to the device may occur.Operating Ratings indicate conditions for which the device is intended to be functional,but specific performance is not ensured.

PIN CONNECTIONS (Top view)



SOP(12+4+4)

L293DD



Powerdip(12+2+2)

L293D

THERMAL DATA

Symbol	Decription		DIP	SOP	Unit
Rthj-pins	Thermal Resistance Junction-pins	max.	—	14	℃/W
Rthi-amb	Thermal Resistance junction-ambient	max.	80	50(*)	℃/W
Rthi-case	Thermal Resistance Junction-case	max.	14	—	

(*)With 6sq.cm on board heatsink.

ELECTRICAL CHARACTERISTICS(for each channel,VS=24V,VSS=5V,Tamb=25 ℃,unlessotherwise specified

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Vs	Supply Voltage (pin 10)		Vss		36	V
Vss	Logic Supply Voltage (pin 20)		4.5		36	V
Is	Total Quiescent Supply Current	Vi=L;Io=0;Ven=H		2	6	mA
	(pin 10)	V_1=H;Io=0; Ven=H		16	24	mA
		Ven=L			4	mA
Iss	Total Quiescent Logic Supply	V_1=L;Io=0;Ven=H		44	60	mA
	Current (pin 20)	Vi=H;Io=0;Ven=H		16	22	mA
		Ven =L		16	24	mA
VL	Input Low Voltage(pin2,9,12 19)		-0.3		1.5	V
ViH	Input High Voltage (pin 2,9,	Vss 7 V	2.3		Vss	V
	12,19)	Vss>7V	2.3		7	V
Iμ	Low Voltage Input Current (pin2,9, 12.19	VL=1.5 V			-10	μA
IH	High Voltage Input Current (pin2,9, 12.19	2.3V VH Vss -0.6 V		30	100	μA
VenL	Enable Low Voltage(pin 1,11)		-0.3		1.5	V
VenH	Enable High Voltage	Vss 7V	2.3		Vss	V
	(pin 1,11)	Vss>7 V	2.3		7	V
len L	Low Voltage Enable Current(pin 1, 11)	VenL=1.5 V		-30	-100	μA
lenH	High Voltage Enable Curent(pin 1, 11)	2.3 V VenH Vss -0.6V			±10	μA
VcE(saDH	Source Output Saturation Voltage (pins 3,8,13,18)	Io =-0.6A		1.4	1.8	V
VcE(sat)L	Sink Output Saturation Voltage(pins 3,8,13,18)	Io =+0.6 A		1.2	1.8	V
VF	Clamp Diode Forward Voltage	Io =600nA		1.3		V
t-	Rise Time()	0.1 to 0.9 Vo		250		ns
t	Fall Time(*)	0.9 to 0.1 Vo		250		ns
ton	Turn-on Delay(*)	0.5 Vito 0.5 Vo		750		ns
toff	Turn-off Delay()	0.5 V;to 0.5 Vo		200		ns

(*)See fig.1.

TRUTH TABLE(one channel)

Input	Enable (*)	Output
H	H	H
L	H	L
H	L	Z
L	L	Z

Z=High output impedance

()Relative to the considered channe

Figure 1:Switching Times

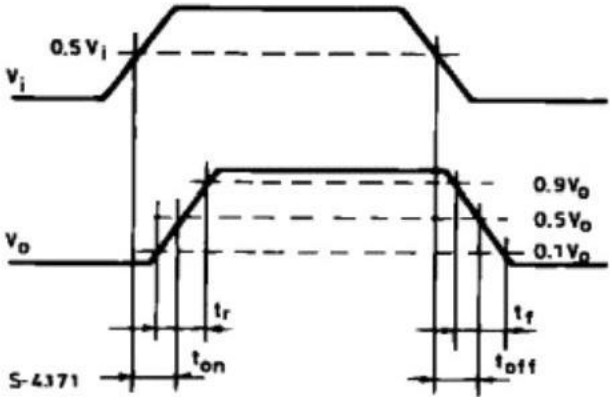
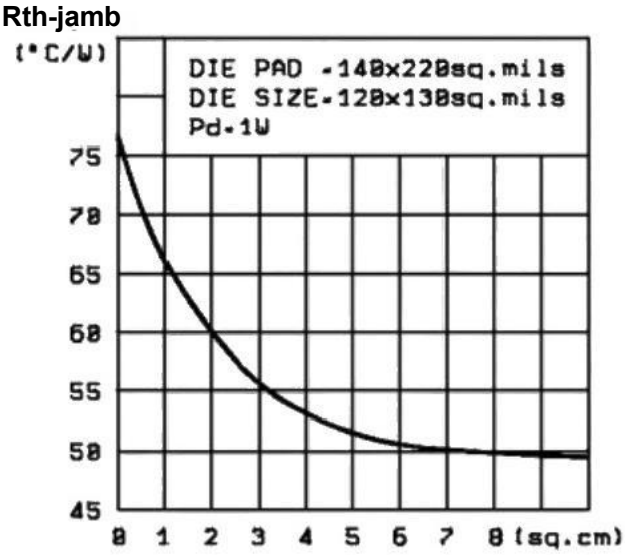
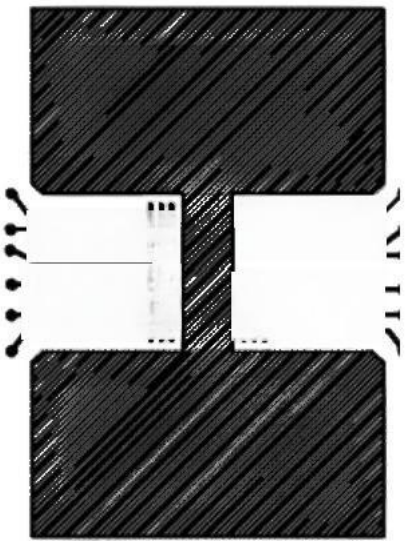


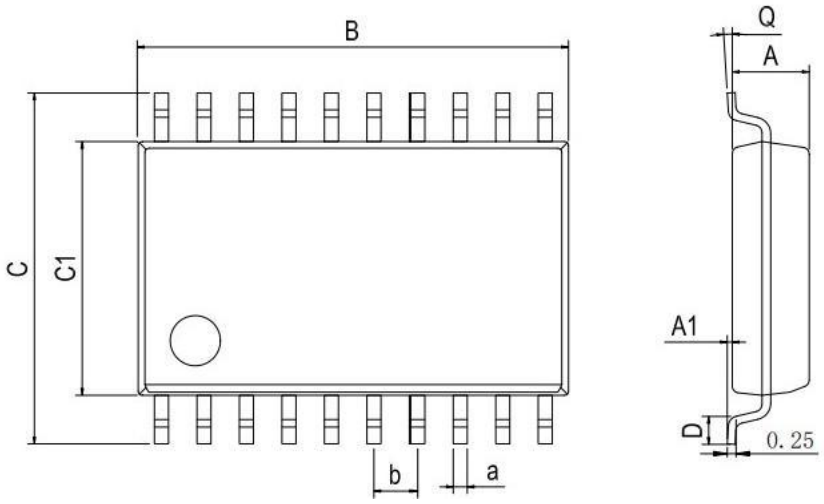
Figure 2: Junction to ambient thermal resistance vs.area on board heatsink (SOP 12+4+4 package)





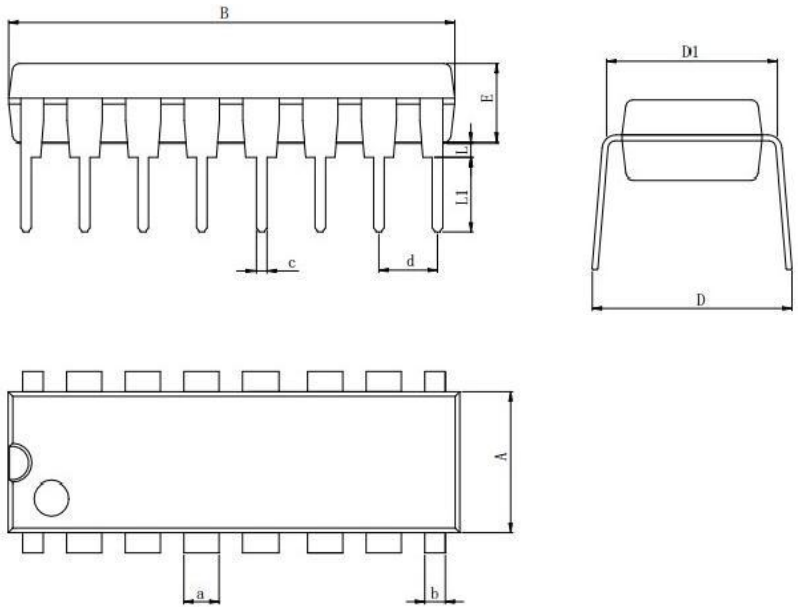
PHYSICAL DIMENSIONS

SOP-20



Dimensions In Millimeters(SOP-20)									
Symbol:	**A**	**A1**	B	C	C1	D	Q	**a**	b
Min:	2.10	0.05	12.50	10.21	7.40	**0.45**	0°	**0.35**	**1.27 BSC**
Max	2.50	0.25	13.00	10.61	7.60	**1.25**	**8°**	**0.45**	

DIP-16



Dimensions In Millimeters(DIP-16)											
Symbol:	A	B	D	D1	E	L	L1	**a**	**b**	**C**	d
Min:	6.10	18.94	8.10	7.42	3.10	0.50	3.00	**1.50**	**0.85**	**0.40**	2.54 BSC
Max:	6.68	19.56	10.9	7.82	3.55	0.70	3.60	**1.55**	0.90	**0.50**	