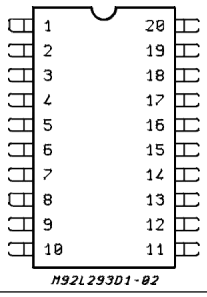
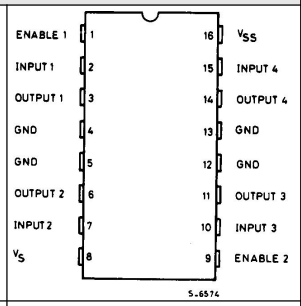
DESCRIPTION

The Device is a monolithic integrated high volt-age, high current four channel driver designed to accept standard DTL or TTL logic levels and drive inductive loads (such as relays solenoides, DC and stepping motors) and switching power transistors.To simplify use as two bridges each pair of chan-nels is equipped with an enable input.
A separate supply input is provided forthe logic, allowing op-eration at a lower voltage and internal clamp diodes are inclu ded.
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 plastic packaage which has 8 center pins connected to-gether and used for heatsinking.

- 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)
- INTERNAL CLAMP DIODES

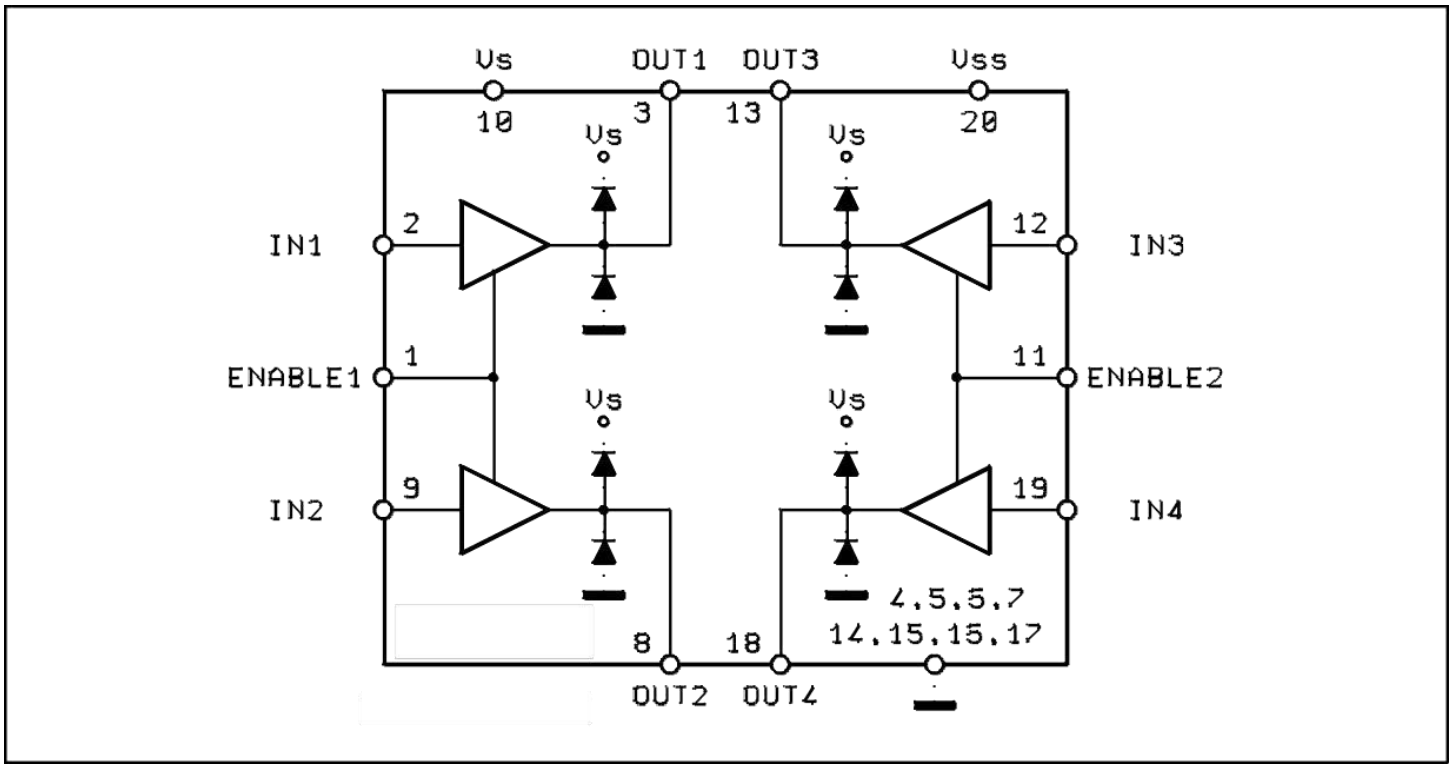
Reference News

PACKAGE OUTLINE		Marking	
			
SOP-20	DIP-16	SOP-20	DIP-16

ordering information

P/N	PKG	QTY
L293DD	SOP-20	1000/tray
L293D	DIP-16	25/One tube 1000/a box of

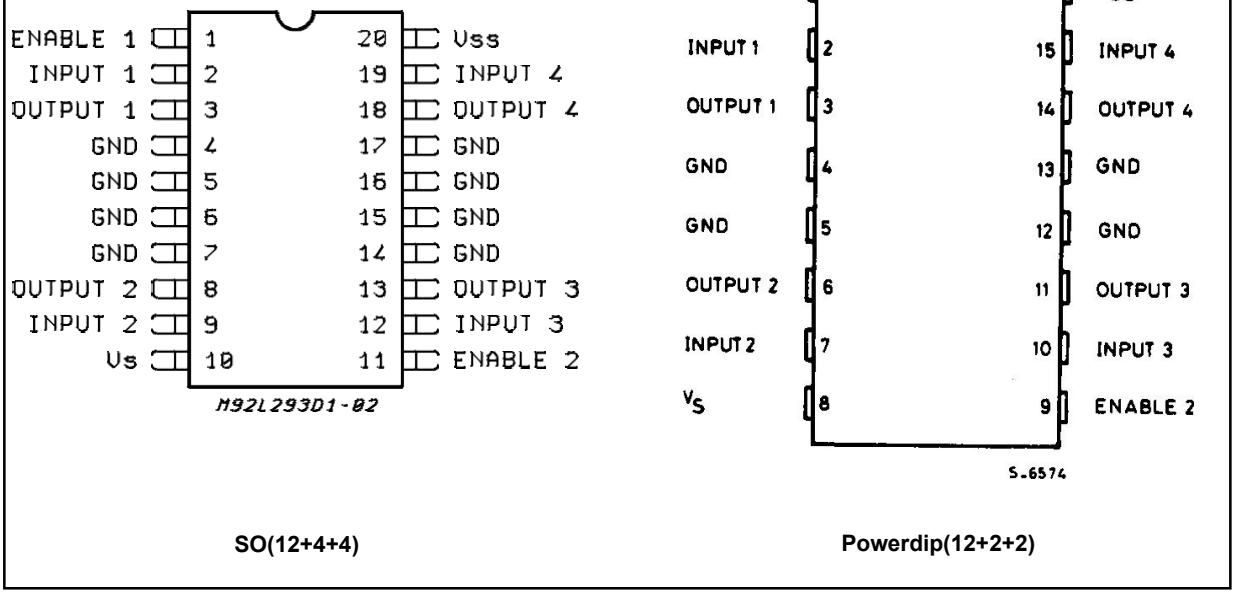
BLOCK DIAGRAM



ABSOLUTEMAXIMUMRATINGS

Symbol	Parameter	Value	Unit
V_S	Supply Voltage	36	V
V_{SS}	Logic Supply Voltage	36	V
V_i	Input Voltage	7	V
V_{en}	Enable Voltage	7	V
I_o	Peak Output Current (100 µs non repetitive)	1.2	A
P_{tot}	Total Power Dissipation at T_{pins} = 90℃	4	W
T_{stg}, T_j	Storage and Junction Temperature	– 40 to 150	℃

PIN CONNECTIONS (Top view)



SO(12+4+4) **Powerdip(12+2+2)**

THERMAL DATA

Symbol	Decription	DIP	SO	Unit
$R_{th\ j\text{-}pins}$	Thermal Resistance Junction-pins max.	–	14	℃/W
$R_{th\ j\text{-}amb}$	Thermal Resistance junction-ambient max.	80	50 (*)	℃/W
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case max.	14	–	

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

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_S	Supply Voltage (pin 10)		V_{SS}		36	V
V_{SS}	Logic Supply Voltage (pin 20)		4.5		36	V
I_S	Total Quiescent Supply Current (pin 10)	V_i = L ; I_O = 0 ; V_{en} = H		2	6	mA
		V_i = H ; I_O = 0 ; V_{en} = H		16	24	mA
		V_{en} = L			4	mA
I_{SS}	Total Quiescent Logic Supply Current (pin 20)	V_i = L ; I_O = 0 ; V_{en} = H		44	60	mA
		V_i = H ; I_O = 0 ; V_{en} = H		16	22	mA
		V_{en} = L		16	24	mA
V_{IL}	Input Low Voltage (pin 2, 9, 12, 19)		– 0.3		1.5	V
V_{IH}	Input High Voltage (pin 2, 9, 12, 19)	V_{SS} < 7 V	2.3		V_{SS}	V
		V_{SS} > 7 V	2.3		7	V
I_{IL}	Low Voltage Input Current (pin 2, 9, 12, 19)	V_{IL} = 1.5 V			– 10	µA
I_{IH}	High Voltage Input Current (pin 2, 9, 12, 19)	2.3 V < V_{IH} < V_{SS} – 0.6 V		30	100	µA
$V_{en\ L}$	Enable Low Voltage (pin 1, 11)		– 0.3		1.5	V
$V_{en\ H}$	Enable High Voltage (pin 1, 11)	V_{SS} < 7 V	2.3		V_{SS}	V
		V_{SS} > 7 V	2.3		7	V
$I_{en\ L}$	Low Voltage Enable Current (pin 1, 11)	$V_{en\ L}$ = 1.5 V		– 30	– 100	µA
$I_{en\ H}$	High Voltage Enable Current (pin 1, 11)	2.3 V < $V_{en\ H}$ < V_{SS} – 0.6 V			± 10	µA
$V_{CE(sat)H}$	Source Output Saturation Voltage (pins 3, 8, 13, 18)	I_O = – 0.6 A		1.4	1.8	V
$V_{CE(sat)L}$	Sink Output Saturation Voltage (pins 3, 8, 13, 18)	I_O = + 0.6 A		1.2	1.8	V
V_F	Clamp Diode Forward Voltage	I_O = 600nA		1.3		V
t_r	Rise Time (*)	0.1 to 0.9 V_O		250		ns
t_f	Fall Time (*)	0.9 to 0.1 V_O		250		ns
t_{on}	Turn-on Delay (*)	0.5 V_i to 0.5 V_O		750		ns
t_{off}	Turn-off Delay (*)	0.5 V_i to 0.5 V_O		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 channel

Figure 1: Switching Times

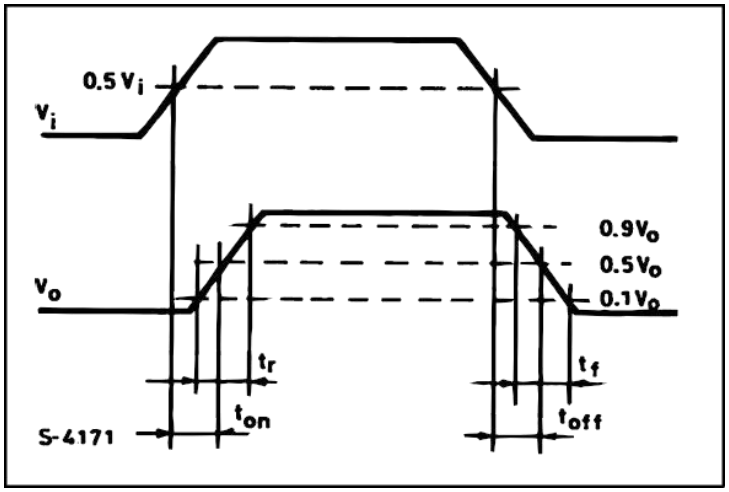
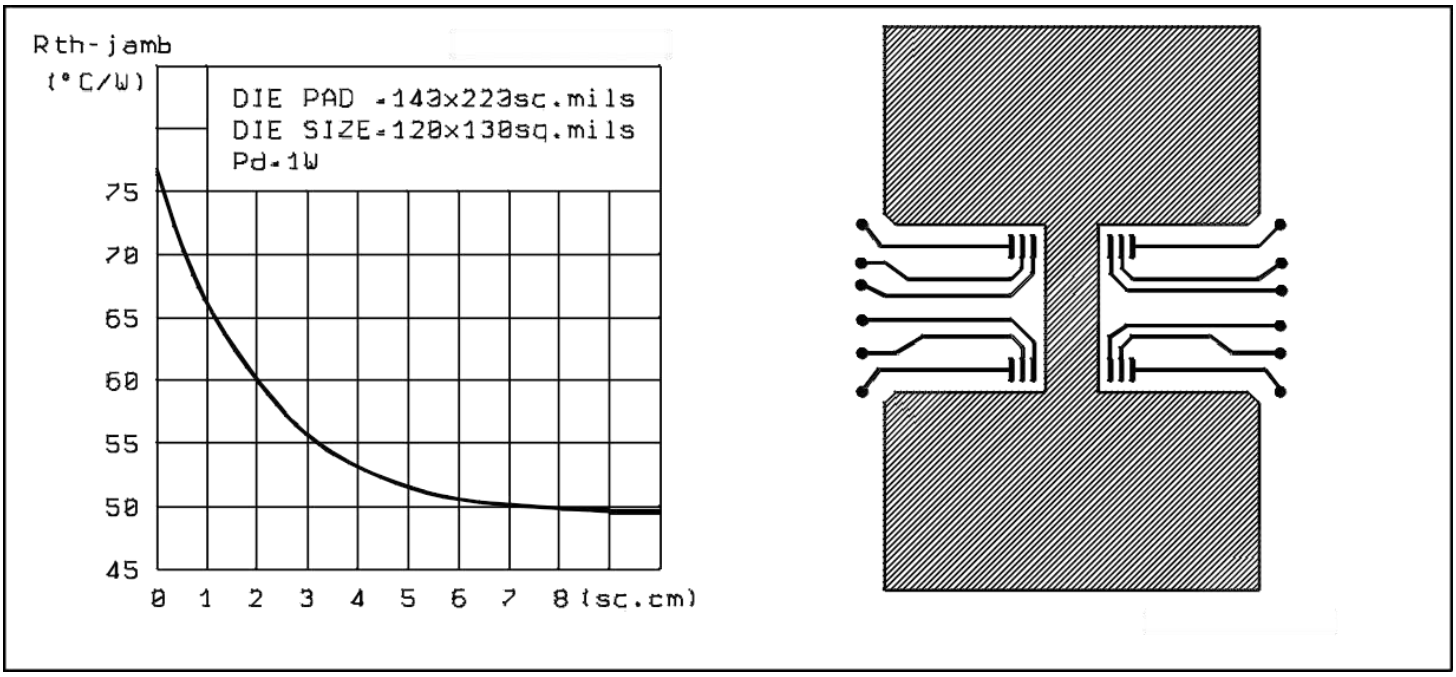
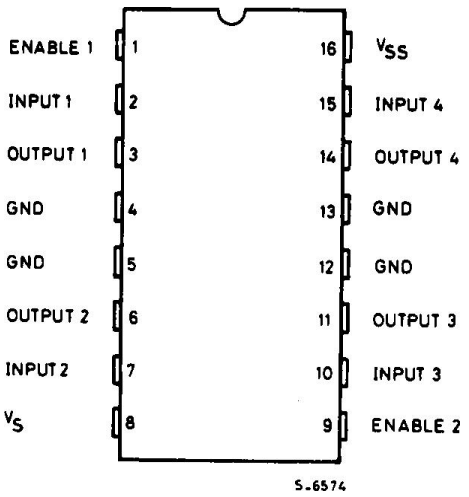


Figure 2: Junction to ambient thermal resistance vs. area on board heatsink (SO12+4+4 package)

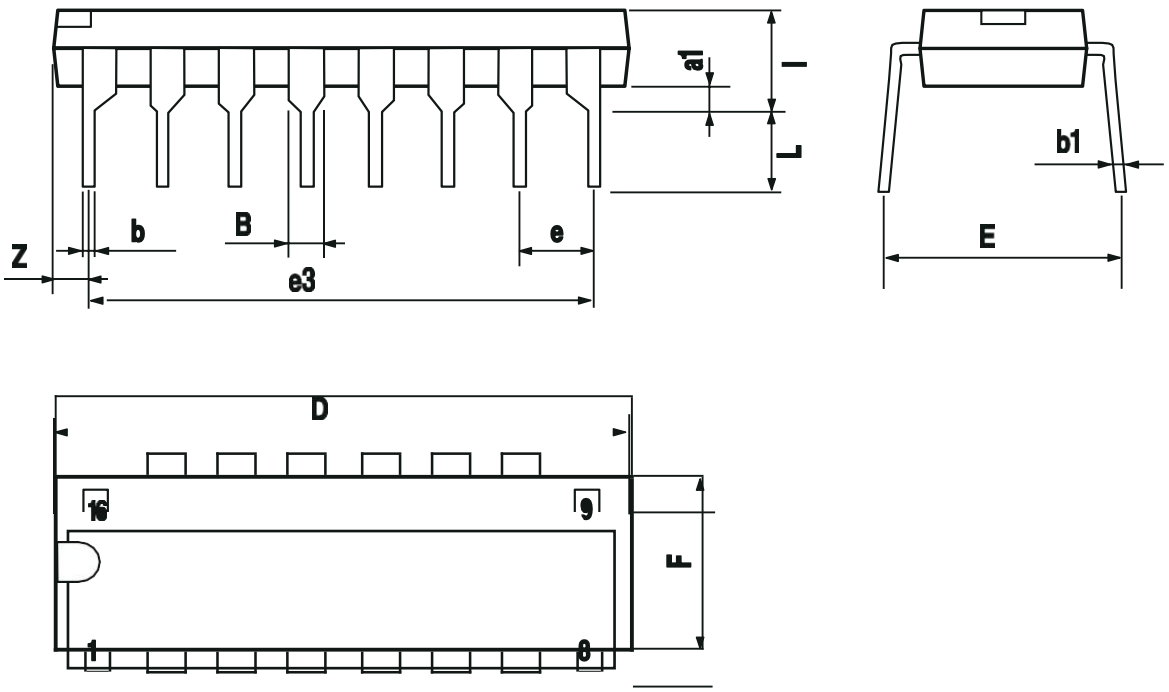


DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
a1	0.51			0.020		
B	0.85		1.40	0.033		0.055
b		0.50			0.020	
b1	0.38		0.50	0.015		0.020
D			20.0			0.787
E		8.80			0.346	
e		2.54			0.100	
e3		17.78			0.700	
F			7.10			0.280
I			5.10			0.201
L		3.30			0.130	
Z			1.27			0.050

OUTLINE AND MECHANICAL DATA

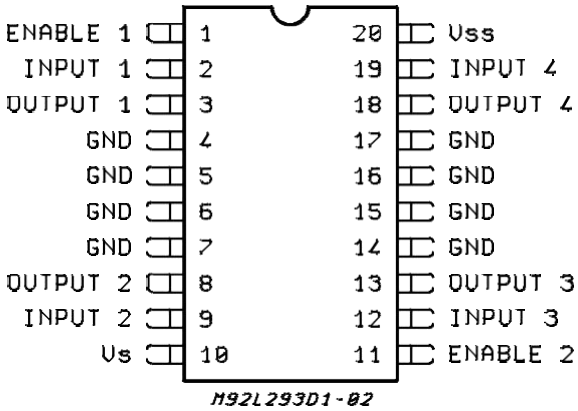


DIP-16



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.)					

OUTLINE AND MECHANICAL DATA



SOP-20

