

# MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

## L298N(MS)

Product specification

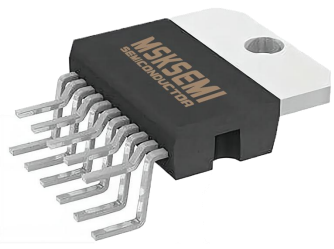

## DESCRIPTION

L298N(MS) is a high voltage, high current dual full-bridge driver designed to accept standard TTL logic levels and drive inductive loads such as relays, solenoids, DC and stepping motors.

## CHARACTERISTIC

- OPERATING SUPPLY VOLTAGE UP TO 45V
- TOTAL DC CURRENT UP TO 4 A
- LOW SATURATION VOLTAGE
- LOGICAL "0" INPUT VOLTAGE UP TO 1.5 V
- THE LOGIC POWER SUPPLY AND DRIVE POWER SUPPLY ARE INDEPENDENT OF EACH OTHER

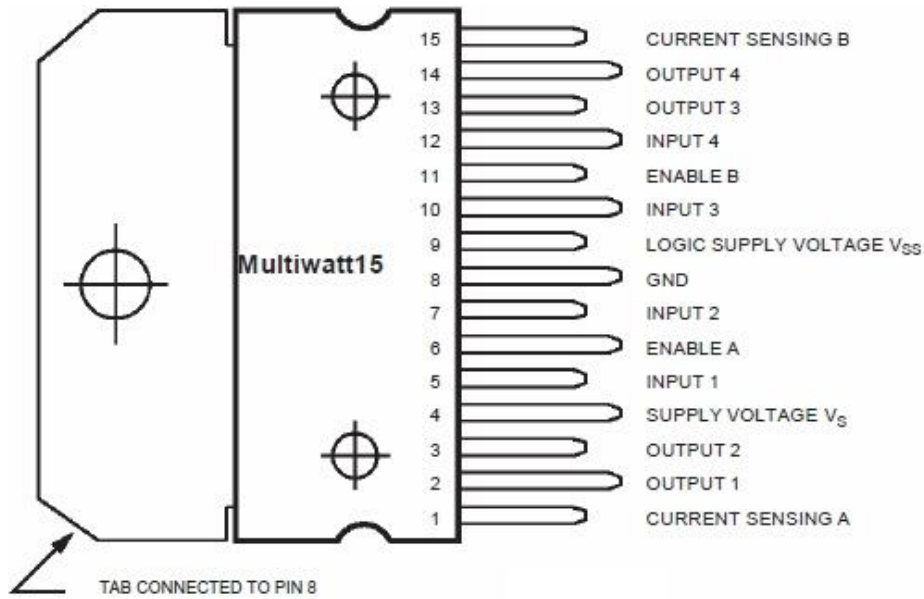
## Reference News

PACKAGE OUTLINE	Marking
 ZIP-15	

## ordering information

P/N	PKG	QTY
L298N(MS)	ZIP-15	25/One tube 1000/a box of

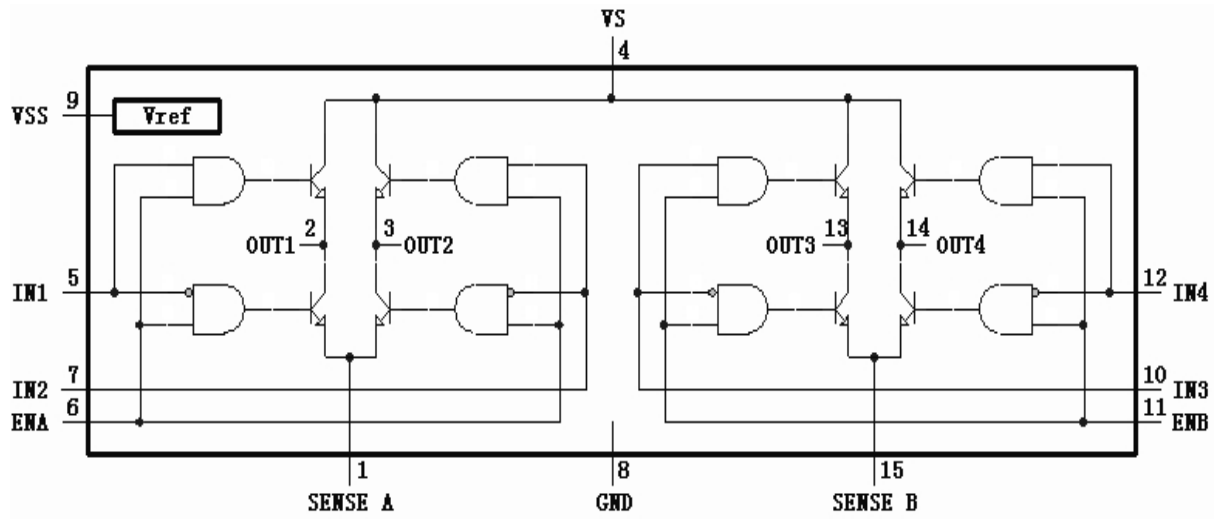
**PIN DEFINITION AND FUNCTION**



MW. 15	Name	Function
1;15	Sense A; Sense B	Between this pin and ground is connected the sense resistor to control the current of the load.
2;3	Out 1; Out 2	Outputs of the Bridge A; the current that flows through the load connected between these two pins is monitored at pin 1.
4	V <sub>S</sub>	Supply Voltage for the Power Output Stages. A non-inductive 100nF capacitor must be connected between this pin and ground.
5;7	Input 1; Input 2	TTL Compatible Inputs of the Bridge A.
6;11	Enable A; Enable B	TTL Compatible Enable Input: the L state disables the bridge A (enable A) and/or the bridge B (enable B).
8	GND	Ground.
9	V <sub>SS</sub>	Supply Voltage for the Logic Blocks. A 100nF capacitor must be connected between this pin and ground.
10; 12	Input 3; Input 4	TTL Compatible Inputs of the Bridge B.
13; 14	Out 3; Out 4	Outputs of the Bridge B. The current that flows through the load connected between these two pins is monitored at pin 15.
–	N.C.	Not Connected

**PINS AND DEFINITIONS OF L298N(MS)**

**BLOCK DIAGRAM**



**BLOCK DIAGRAM OF L298N-MS**

**ELECTRICAL CHARACTERISTICS**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_S$	Supply Voltage (pin 4)	Operative Condition	$V_{IH} + 2.5$		46	V
$V_{SS}$	Logic Supply Voltage (pin 9)		4.5	5	7	V
$I_S$	Quiescent Supply Current (pin 4)	$V_{en} = H; I_L = 0$	$V_i = L$	13	22	mA
			$V_i = H$	50	70	mA
		$V_{en} = L$	$V_i = X$		4	mA
$I_{SS}$	Quiescent Current from $V_{SS}$ (pin 9)	$V_{en} = H; I_L = 0$	$V_i = L$	24	36	mA
			$V_i = H$	7	12	mA
		$V_{en} = L$	$V_i = X$		6	mA
$V_{iL}$	Input Low Voltage (pins 5, 7, 10, 12)		-0.3		1.5	V
$V_{iH}$	Input High Voltage (pins 5, 7, 10, 12)		2.3		$V_{SS}$	V
$I_{iL}$	Low Voltage Input Current (pins 5, 7, 10, 12)	$V_i = L$			-10	$\mu A$
$I_{iH}$	High Voltage Input Current (pins 5, 7, 10, 12)	$V_i = H \leq V_{SS} - 0.6V$		30	100	$\mu A$
$V_{en} = L$	Enable Low Voltage (pins 6, 11)		-0.3		1.5	V
$V_{en} = H$	Enable High Voltage (pins 6, 11)		2.3		$V_{SS}$	V
$I_{en} = L$	Low Voltage Enable Current (pins 6, 11)	$V_{en} = L$			-10	$\mu A$
$I_{en} = H$	High Voltage Enable Current (pins 6, 11)	$V_{en} = H \leq V_{SS} - 0.6V$		30	100	$\mu A$
$V_{CEsat(H)}$	Source Saturation Voltage	$I_L = 1A$	0.95	1.35	1.7	V
		$I_L = 2A$		2	2.7	V
$V_{CEsat(L)}$	Sink Saturation Voltage	$I_L = 1A$	0.85	1.2	1.6	V
		$I_L = 2A$		1.7	2.3	V
$V_{CEsat}$	Total Drop	$I_L = 1A$	1.80		3.2	V
		$I_L = 2A$			4.9	V
$V_{sens}$	Sensing Voltage (pins 1, 15)		-1		2	V

## **APPLICATION**

### **POWER OUTPUT STAGE**

The L298N(MS) integrates two power output stages (A ; B).The power output stage is a bridge configuration and its outputs can drive an inductive load in common or differenzial mode, depending on the state of the inputs. The current that flows through the load comes out from the bridge at the sense output : an external resistor (RSA ; RSB.) allows to detect the intensity of this current.

### **INPUT STAGE**

All the inputs are TTL compatible

### **POWER**

A non inductive capacitor, usually of 100 nF, must be foreseen between both Vs and Vss, to ground, as near as possible to GND pin.The en terminal shall be in L state before the output protection is turned off and on.

### **OUTPUT PROTECTION**

The fast diode shall be selected as the output protection when driving inductive load. When  $I = 2 \text{ A}$ ,  $V_F \leq 1.2\text{V}$ ,  $\text{TRR} \leq 200 \text{ ns}$ .

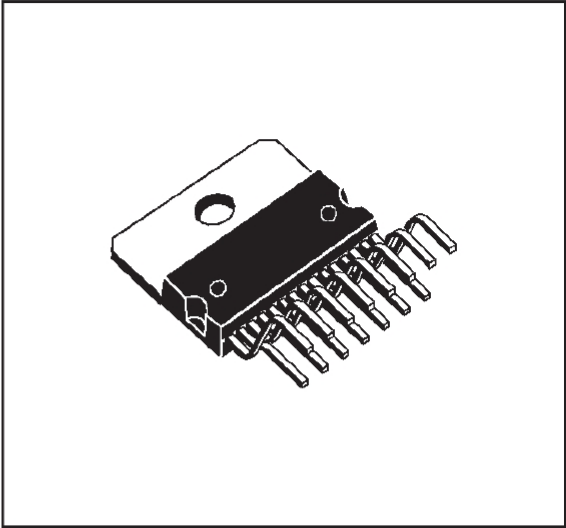
### **PARALLEL CONNECTION**

When the driving current is greater than 2A, two groups can be connected in parallel for current expansion.

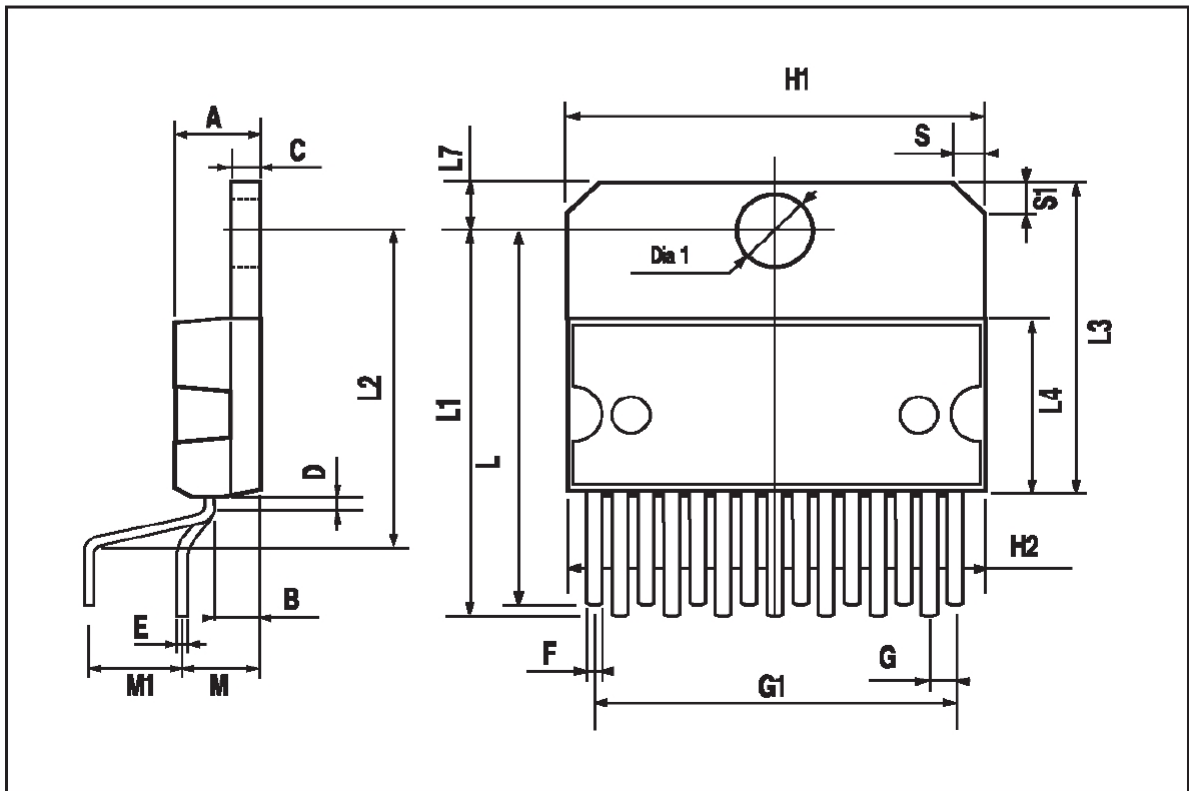
**DIMENSION**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			5			0.197
B			2.65			0.104
C			1.6			0.063
D		1			0.039	
E	0.49		0.55	0.019		0.022
F	0.66		0.75	0.026		0.030
G	1.02	1.27	1.52	0.040	0.050	0.060
G1	17.53	17.78	18.03	0.690	0.700	0.710
H1	19.6			0.772		
H2			20.2			0.795
L	21.9	22.2	22.5	0.862	0.874	0.886
L1	21.7	22.1	22.5	0.854	0.870	0.886
L2	17.65		18.1	0.695		0.713
L3	17.25	17.5	17.75	0.679	0.689	0.699
L4	10.3	10.7	10.9	0.406	0.421	0.429
L7	2.65		2.9	0.104		0.114
M	4.25	4.55	4.85	0.167	0.179	0.191
M1	4.63	5.08	5.53	0.182	0.200	0.218
S	1.9		2.6	0.075		0.102
S1	1.9		2.6	0.075		0.102
Dia1	3.65		3.85	0.144		0.152

外观及尺寸



Multiwatt15



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