

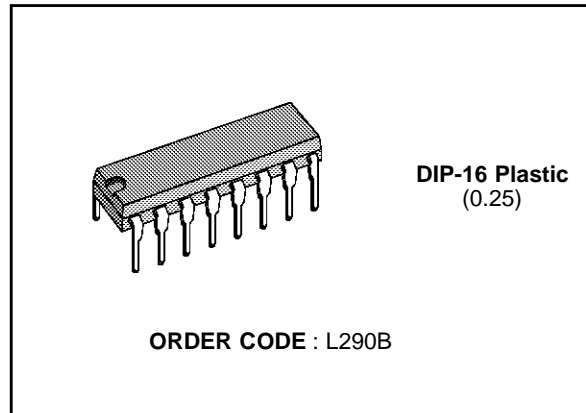
**TACHOMETER CONVERTER**

**DESCRIPTION**

The L290, a monolithic LSI circuit in 16-lead inline plastic package, is intended for user with the L291 and L292 which together form a complete **3-chip DC motor positioning system** for applications such as carriage/daisy-wheel position control in typewriters.

The L290/1/2 system can be directly controlled by a microprocessor. The L290 integrates the following functions:

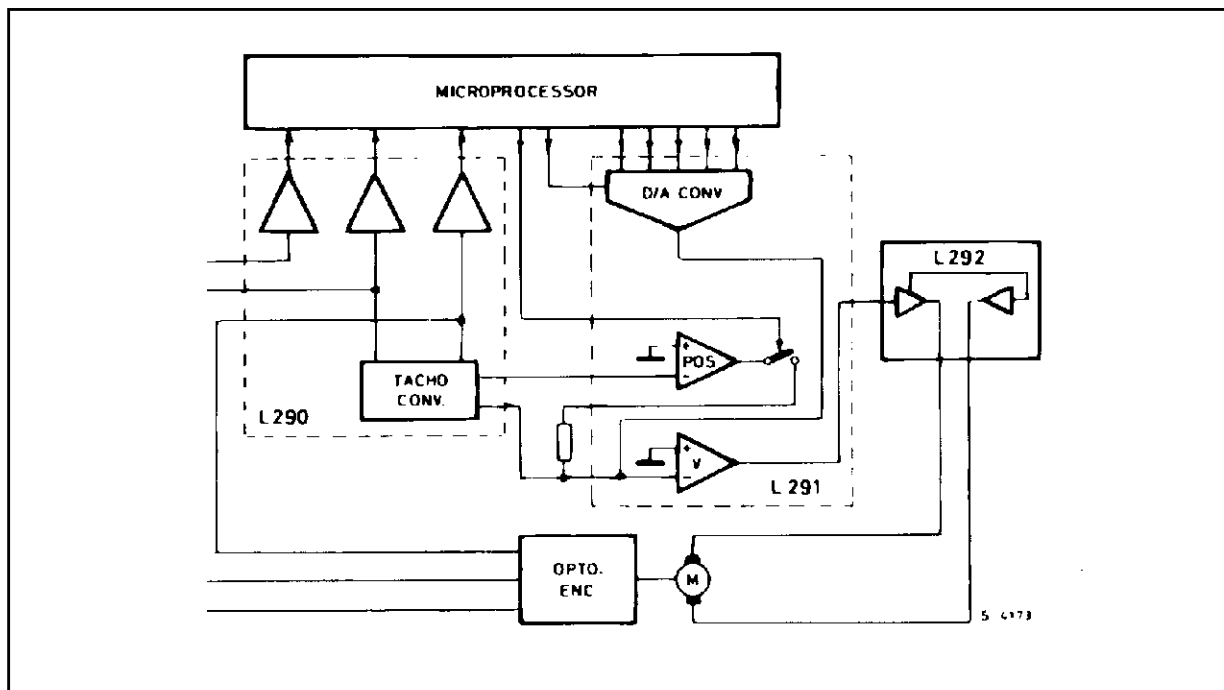
- tacho voltage generator (F/V converter)
- reference voltage generator
- position pulse generator



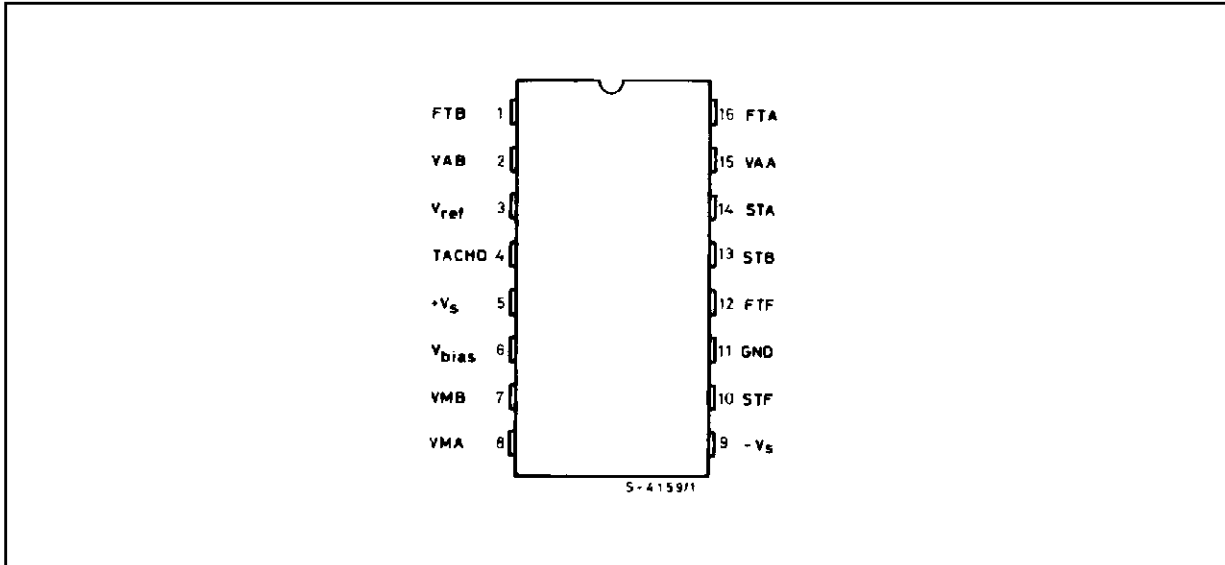
**ABSOLUTE MAXIMUM RATING**

Symbol	Parameter	Value	Unit
$V_s$	Supply Voltage	$\pm 15$	V
$V_i$ (FTA, FTB, FTF)	Input Signals	$\pm 7$	V
$P_{tot}$	Total Power Dissipation ( $T_{amb} = 70^\circ\text{C}$ )	1	W
$T_{stg}, T_j$	Storage and Junction Temperature	- 40 to + 150	$^\circ\text{C}$

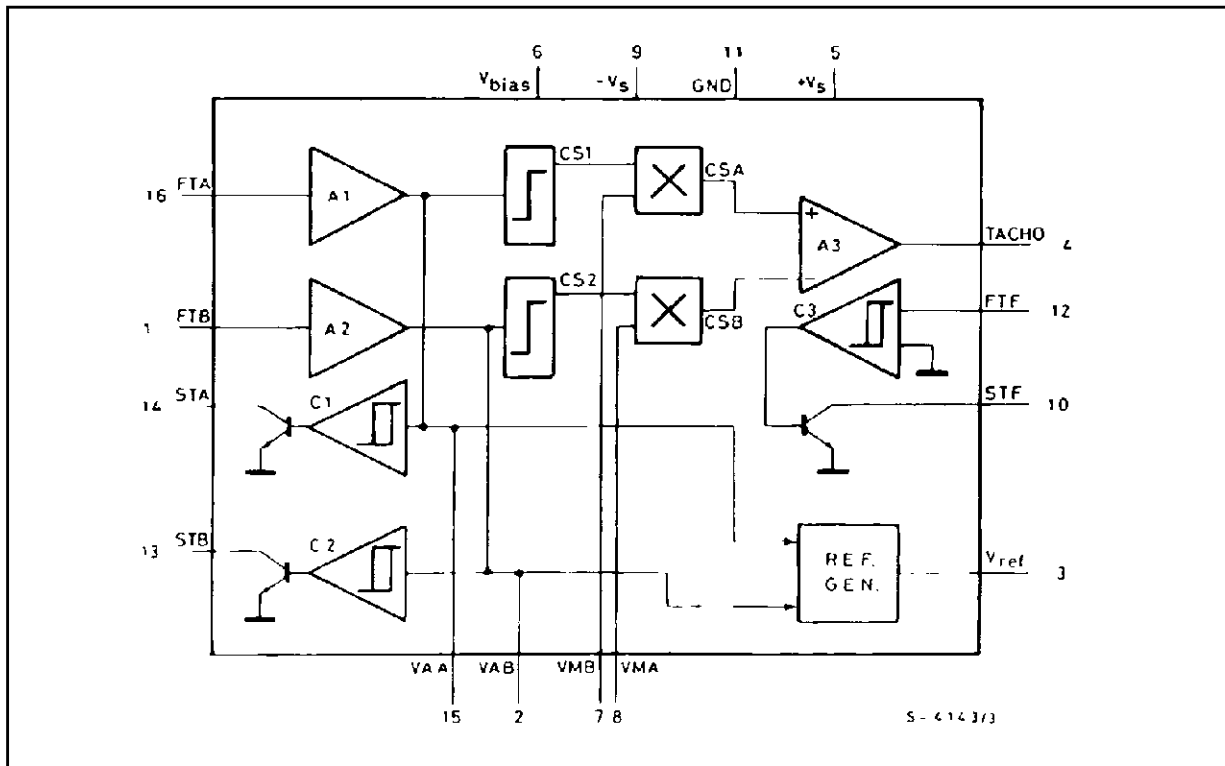
**SYSTEM BLOCK DIAGRAM**



CONNECTION DIAGRAM (top view)



BLOCK DIAGRAM





## L290

### ELECTRICAL CHARACTERISTICS (continued)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
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#### COMPARATORS WITH HYSTERESIS (C<sub>1</sub>, C<sub>2</sub>, and C<sub>3</sub>)

V <sub>THP</sub> (°)	Positive Threshold Voltage (pin 2, 12, 15)	C <sub>1</sub> and C <sub>2</sub>	550		850	mV
		C <sub>3</sub>	700		900	mV
V <sub>THN</sub> (° °)	Negative Threshold Voltage (pin 2, 12, 15)	C <sub>1</sub> and C <sub>2</sub>	55		175	mV
		C <sub>3</sub>	570		830	mV
ΔFTF	Threshold Hysteresis	C <sub>3</sub>	72		120	mV
V <sub>L</sub>	Output Voltage (low level) (pin 10, 13, 14)	I <sub>o</sub> = 2 mA FTA = FTB = FTF = 0 V		0.2	0.4	V
I <sub>leak</sub>	(pins 10, 13, 14)	FTA = FTB = 0.5 V V <sub>CE</sub> = 5 V FTF = 1 V			1	μA

#### REFERENCE GENERATOR

V <sub>ref</sub>	DC Reference Voltage (pin 3)	FTA = FTB = ± 0.5 V <sub>p</sub> (*) I <sub>ref</sub> = 1 mA	4.5	5	5.5	V
I <sub>ref</sub>	Output Current (pin 3)				1.4	mA

#### "TACHO" AMPLIFIER (A3)

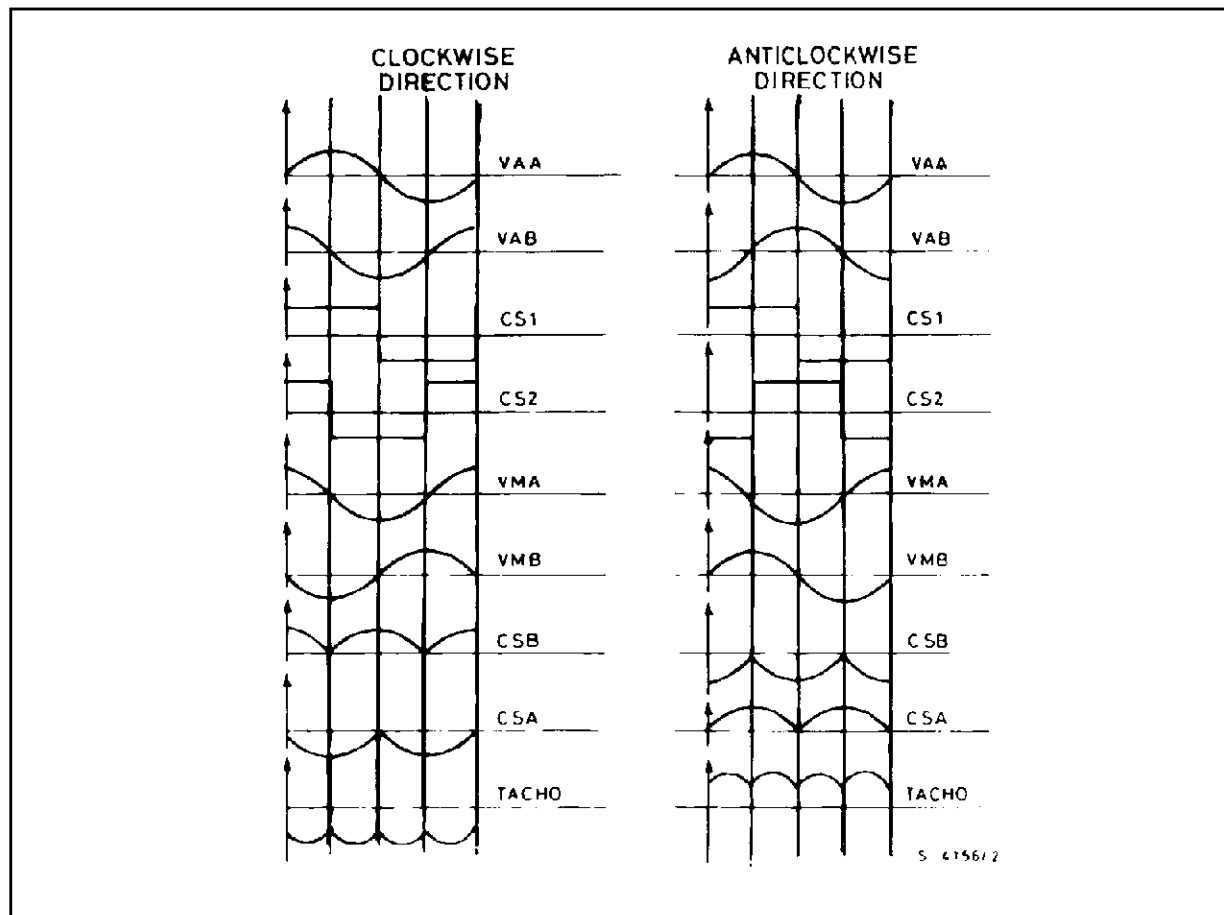
V <sub>os</sub>	Output Offset Voltage (pin 4)	FTA = ± 15 mV FTB = 0.5V				± 80	mV
V <sub>o</sub>	DC Output Voltage (pin 4)	FTA = FTB = ± 0.5 V <sub>p</sub>  V <sub>MA</sub> = V <sub>MB</sub> = ± 1.25 V <sub>p</sub>	(**) V <sub>01</sub>	5.4	6	6.6	V
			(***) V <sub>02</sub>	- 5.4	- 6	- 6.6	
ΔV <sub>0</sub>		V <sub>01</sub> + V <sub>02</sub>		- 150		+ 150	mV
V <sub>0</sub>	Output Voltage Swing (pin 4)	Sin (B)	FTA = FTB = 0.5V	9			V
			FTA = FTB = -0.5 V	- 9			
V <sub>MA</sub> V <sub>MB</sub>	Multiplier Input Voltage (pin 7, 8)				± 1.25	± 1.7	V <sub>p</sub>
V <sub>bias</sub>	Bias Voltage (pin 6)	FTA and FTB Floating		- 6.5		- 8	V

(°) : FTA = FTB = FTF  (° °) : FTA = FTB = FTF = 

**Note** : Phase relationship between the signals :

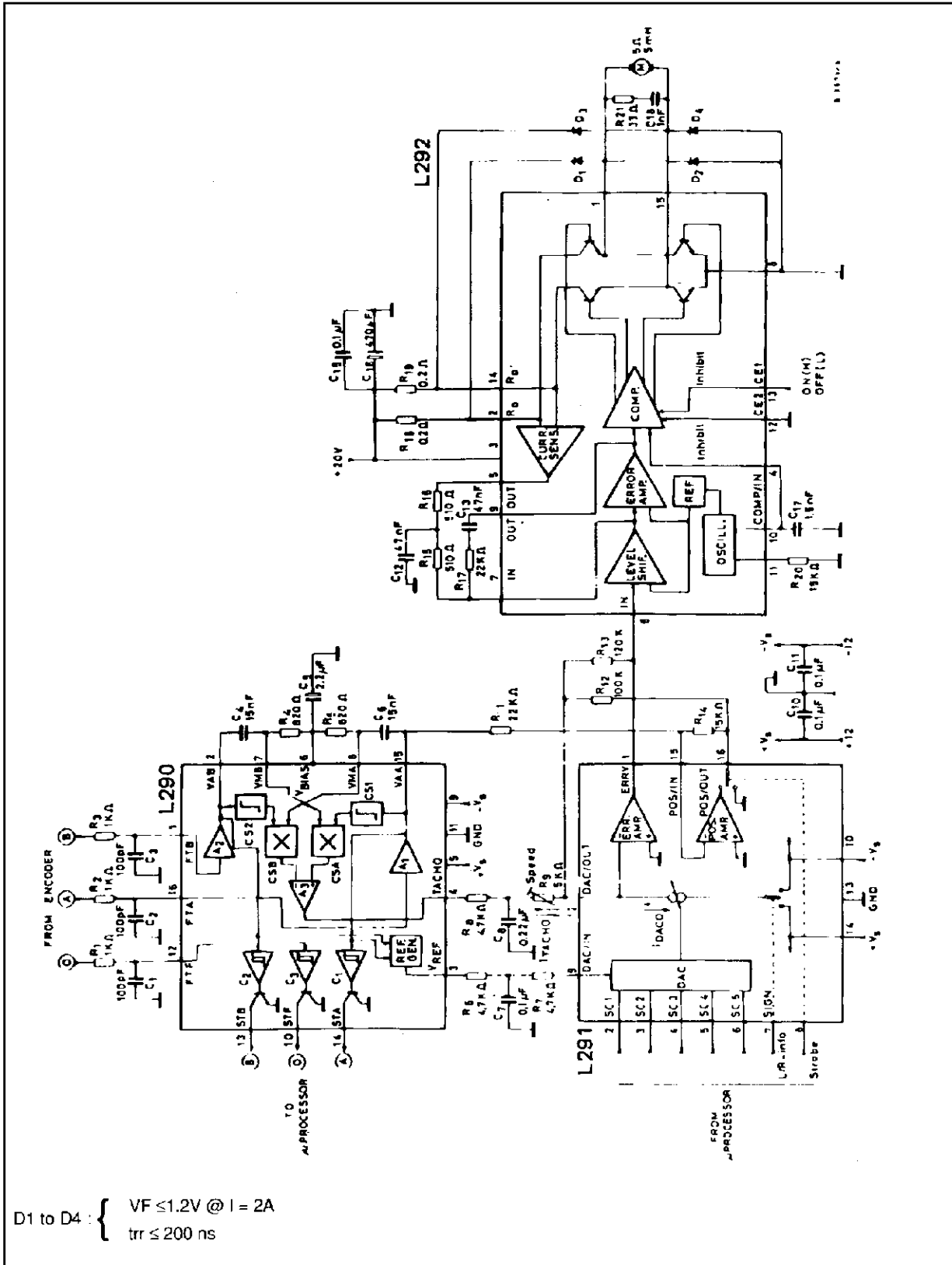
\* FTA : 0° FTB : 90°  
 \*\* FTA : 0° FTB : - 90° V<sub>MA</sub> = 90° V<sub>MB</sub> = 0°  
 \*\*\* FTA : 0° FTB : 90° V<sub>MA</sub> = 90° V<sub>MB</sub> = 180°

**WAVEFORMS** (Neglecting threshold voltage level of the comparators).



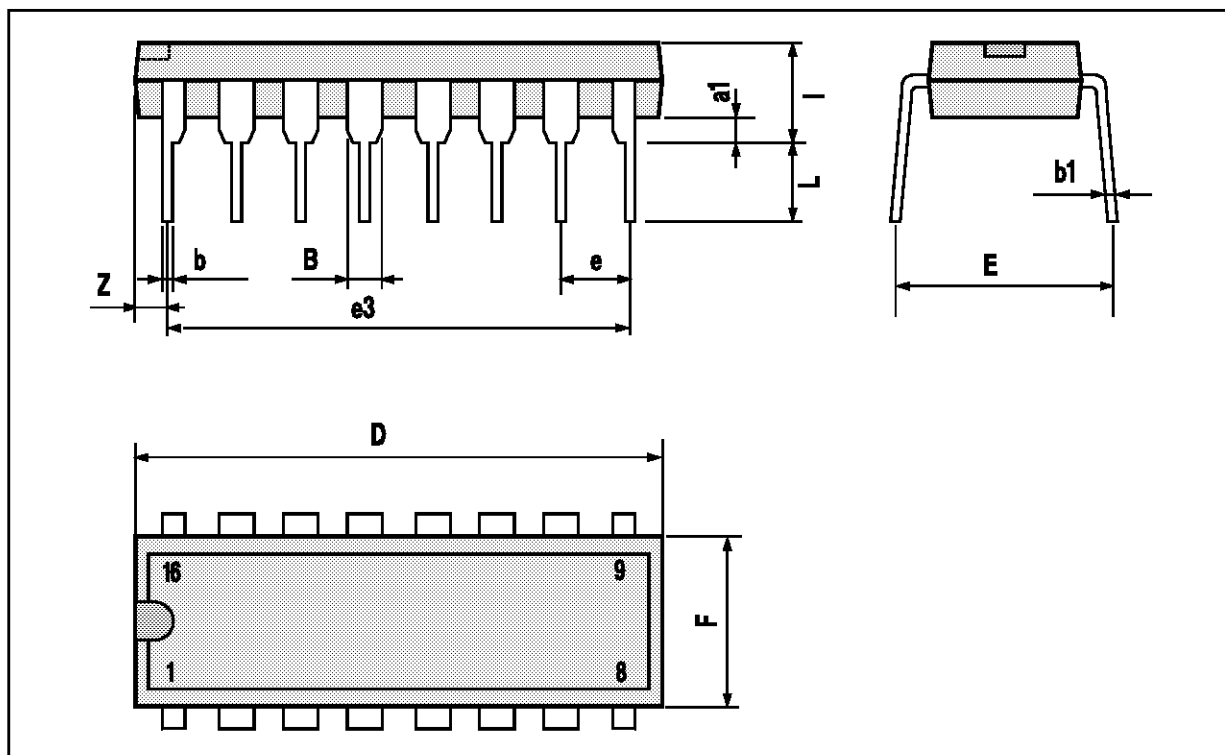
**SYSTEM DESCRIPTION** : refer to the L292 data sheet.

Figure 1. Complete application circuit.



## DIP-16 PLASTIC PACKAGE MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
a1	0.51			0.020		
B	0.77		1.65	0.030		0.065
b		0.5			0.020	
b1		0.25			0.010	
D			20			0.787
E		8.5			0.335	
e		2.54			0.100	
e3		17.78			0.700	
F			7.1			0.280
I			5.1			0.201
L		3.3			0.130	
Z			1.27			0.050



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