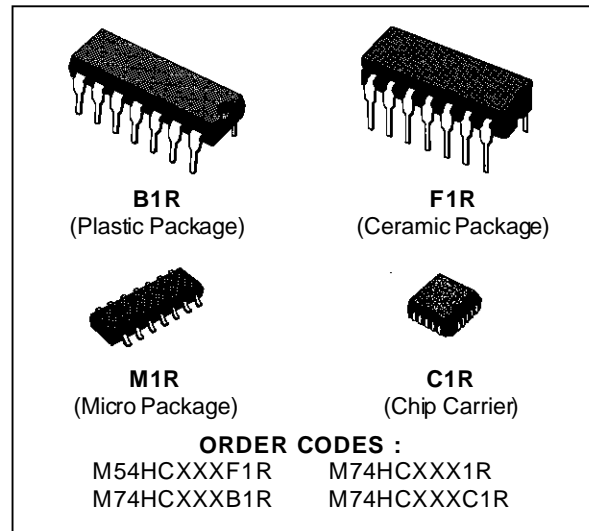


## HC266 QUAD EXCLUSIVE NOR GATE WITH OPEN DRAIN

## HC7266 QUAD EXCLUSIVE NOR GATE

- HIGH SPEED  
 $t_{PD} = 10 \text{ ns (TYP.) AT } V_{CC} = 5 \text{ V}$
- LOW POWER DISSIPATION  
 $I_{CC} = 1 \mu\text{A (MAX.) AT } T_A = 25 \text{ }^\circ\text{C}$
- HIGH NOISE IMMUNITY  
 $V_{NIH} = V_{NIL} = 28 \% V_{CC} \text{ (MIN.)}$
- OUTPUT DRIVE CAPABILITY  
 10 LSTTL LOADS
- SYMMETRICAL OUTPUT IMPEDANCE (7266)  
 $|I_{OH}| = I_{OL} = 4 \text{ mA (MIN.)}$
- BALANCED PROPAGATION DELAYS (7266)  
 $t_{PLH} = t_{PHL}$
- WIDE OPERATING VOLTAGE RANGE  
 $V_{CC} \text{ (OPR)} = 2 \text{ V TO } 6 \text{ V}$
- PIN AND FUNCTION COMPATIBLE  
 WITH 54/74LS7266



### DESCRIPTION

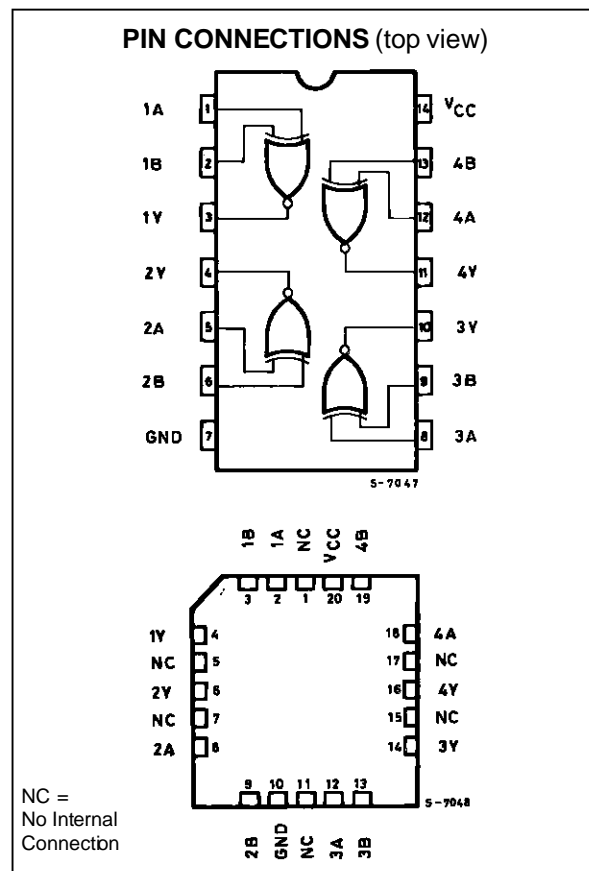
The M54/74HC266/7266 are high speed CMOS QUAD EXCLUSIVE NOR GATES, fabricated in silicon gate C<sup>2</sup>MOS technology. They have the same high speed performance of LSTTL combined with true CMOS low power consumption.

The HC266 has a high performance N-channel MOS transistor (OPEN DRAIN output).

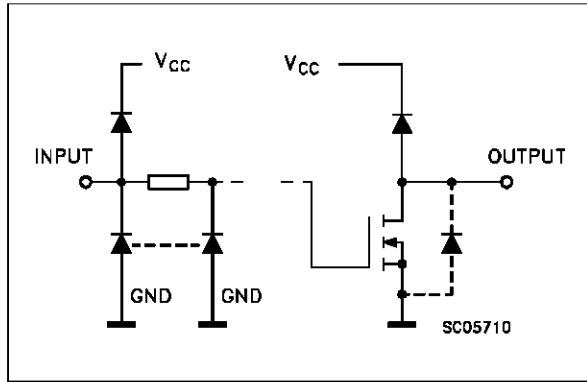
The HC7266 has an output buffer which is CMOS structure.

Input and output buffers ensure high noise immunity and stable outputs.

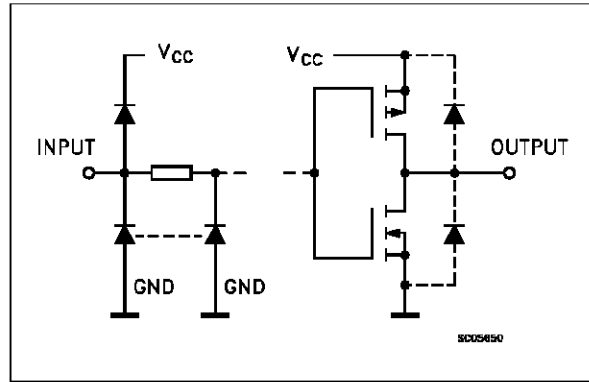
All inputs are equipped with protection circuits against static discharge and transient excess voltage.



**INPUT AND OUTPUT EQUIVALENT CIRCUIT (HC266)**



**INPUT AND OUTPUT EQUIVALENT CIRCUIT (HC7266)**



**PIN DESCRIPTION**

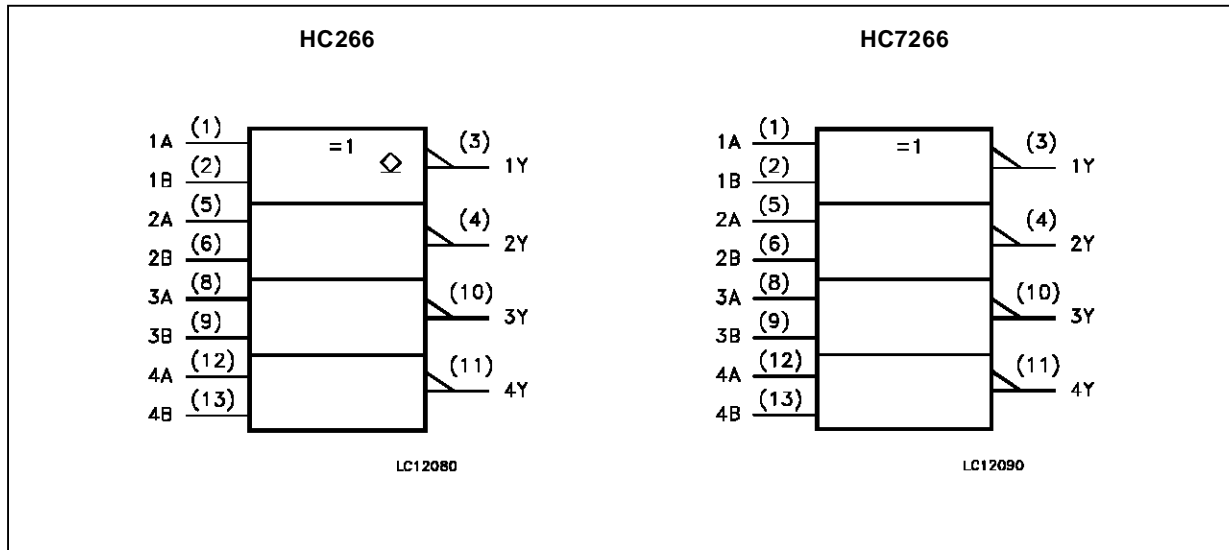
PIN No	SYMBOL	NAME AND FUNCTION
1, 5, 8, 12	1A to 4A	Data Inputs
2, 6, 9, 13	1B to 4B	Data Inputs
3, 4, 10, 11	1Y to 4Y	Data Outputs
7	GND	Ground (0V)
14	Vcc	Positive Supply Voltage

**TRUTH TABLE**

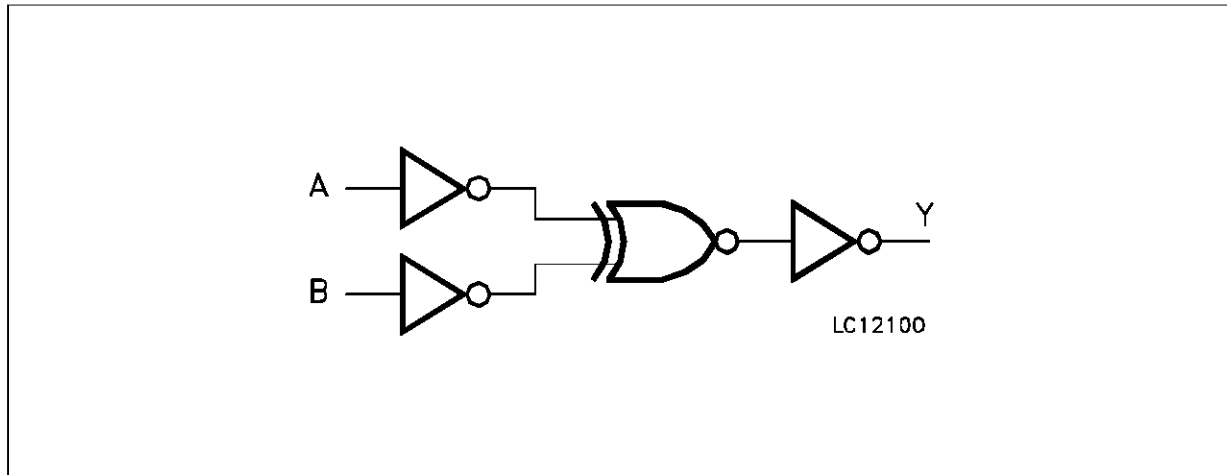
A	B	Y	
		7266	266
L	L	H	Z
L	H	L	L
H	L	L	L
H	H	H	Z

Z: High Impedance

**IEC LOGIC SYMBOLS**



## LOGIC DIAGRAM



## ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CC}$	Supply Voltage	-0.5 to +7	V
$V_I$	DC Input Voltage	-0.5 to $V_{DD} + 0.5$	V
$V_O$	DC Output Voltage	-0.5 to $V_{DD} + 0.5$	V
$I_{IK}$	DC Input Diode Current	$\pm 20$	mA
$I_{OK}$	DC Output Diode Current	$\pm 20$	mA
$I_O$	DC Output Source Sink Current Per Output Pin	$\pm 25$	mA
$I_{CC}$ or $I_{GND}$	DC $V_{CC}$ or Ground Current	$\pm 50$	mA
$P_D$	Power Dissipation	500 (*)	mW
$T_{stg}$	Storage Temperature	-65 to +150	$^{\circ}C$

Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these condition is not implied.  
 (\*) 500 mW:  $\cong 65^{\circ}C$  derate to 300 mW by 10mW/ $^{\circ}C$ : 65  $^{\circ}C$  to 85  $^{\circ}C$

## RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Value	Unit	
$V_{CC}$	Supply Voltage	2 to 6	V	
$V_I$	Input Voltage	0 to $V_{CC}$	V	
$V_O$	Output Voltage	0 to $V_{CC}$	V	
$T_{op}$	Operating Temperature: <b>M54HC Series</b> <b>M74HC Series</b>	-55 to +125 -40 to +85	$^{\circ}C$ $^{\circ}C$	
$t_r, t_f$	Input Rise and Fall Time	$V_{CC} = 2 V$ $V_{CC} = 4.5 V$ $V_{CC} = 6 V$	0 to 1000 0 to 500 0 to 400	ns

**DC SPECIFICATIONS**

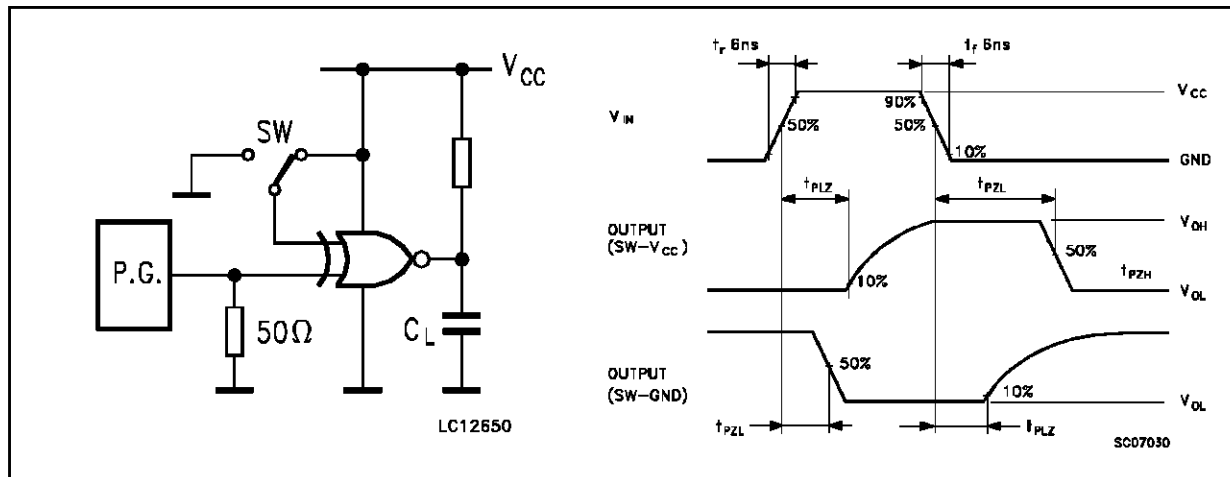
Symbol	Parameter	Test Conditions		Value						Unit		
		V <sub>CC</sub> (V)		T <sub>A</sub> = 25 °C 54HC and 74HC			-40 to 85 °C 74HC		-55 to 125 °C 54HC			
				Min.	Typ.	Max.	Min.	Max.	Min.		Max.	
V <sub>IH</sub>	High Level Input Voltage	2.0		1.5			1.5		1.5		V	
		4.5		3.15			3.15		3.15			
		6.0		4.2			4.2		4.2			
V <sub>IL</sub>	Low Level Input Voltage	2.0				0.5		0.5		0.5	V	
		4.5				1.35		1.35		1.35		
		6.0				1.8		1.8		1.8		
V <sub>OH</sub>	High Level Output Voltage (HC7266)	2.0	V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub>	I <sub>O</sub> = -20 μA	1.9	2.0		1.9		1.9	V	
		4.5			4.4	4.5		4.4		4.4		
		6.0			5.9	6.0		5.9		5.9		
		4.5	I <sub>O</sub> = -4.0 mA	4.18	4.31		4.13		4.10			
		6.0		I <sub>O</sub> = -5.2 mA	5.68	5.8		5.63		5.60		
V <sub>OL</sub>	Low Level Output Voltage	2.0	V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub>	I <sub>O</sub> = 20 μA		0.0	0.1		0.1		0.1	V
		4.5				0.0	0.1		0.1		0.1	
		6.0				0.0	0.1		0.1		0.1	
		4.5	I <sub>O</sub> = 4.0 mA		0.17	0.26		0.33		0.40		
		6.0		I <sub>O</sub> = 5.2 mA		0.18	0.26		0.33		0.40	
I <sub>I</sub>	Input Leakage Current	6.0	V <sub>I</sub> = V <sub>CC</sub> or GND				±0.1		±1		±1	μA
I <sub>OZ</sub>	Output Leakage Current (HC266)	6.0	V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> V <sub>O</sub> = V <sub>CC</sub> or GND				±0.5		±5		±10	μA
I <sub>CC</sub>	Quiescent Supply Current	6.0	V <sub>I</sub> = V <sub>CC</sub> or GND				1		10		20	μA

AC ELECTRICAL CHARACTERISTICS (C<sub>L</sub> = 50 pF, Input t<sub>r</sub> = t<sub>f</sub> = 6 ns)

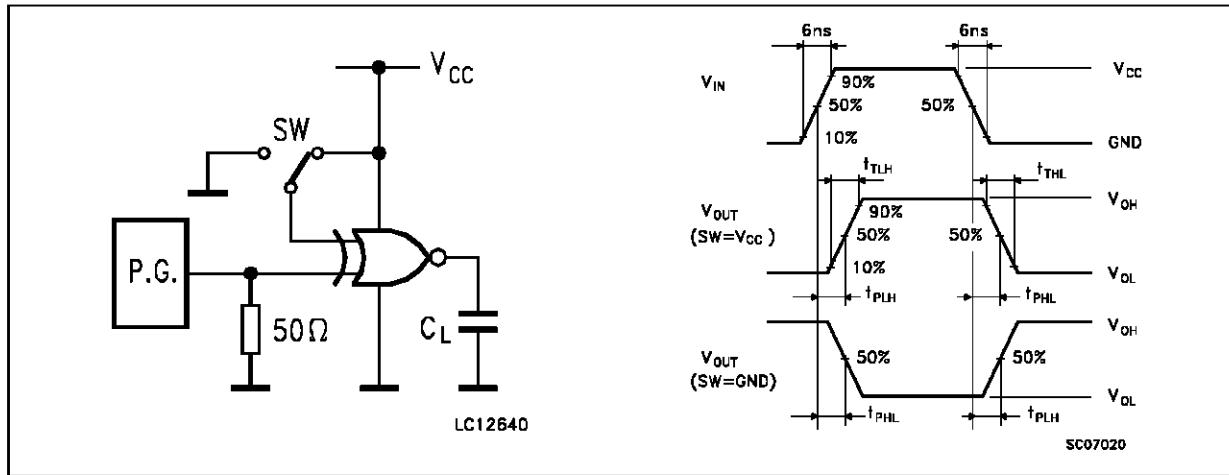
Symbol	Parameter	Test Conditions		Value						Unit	
		V <sub>CC</sub> (V)	R <sub>L</sub> (Ω)	T <sub>A</sub> = 25 °C 54HC and 74HC			-40 to 85 °C 74HC		-55 to 125 °C 54HC		
				Min.	Typ.	Max.	Min.	Max.	Min.		Max.
t <sub>THL</sub>	Output Transition Time (HC266)	2.0			30	75		95		110	ns
		4.5			8	15		19		22	
		6.0			7	13		16		19	
t <sub>TLH</sub> t <sub>THL</sub>	Output Transition Time (HC7266)	2.0			30	75		95		110	ns
		4.5			8	15		19		22	
		6.0			7	13		16		19	
t <sub>PLZ</sub> t <sub>PZL</sub>	Propagation Delay Time (HC266)	2.0	R <sub>L</sub> = 1KΩ		48	90		115		135	ns
		4.5			12	18		23		27	
		6.0			10	15		20		23	
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay Time (HC7266)	2.0			36	90		115		135	ns
		4.5			11	18		23		27	
		6.0			9	15		20		23	
C <sub>IN</sub>	Input Capacitance				5	10		10		10	pF
C <sub>PD</sub> (*)	Power Dissipation Capacitance				20						pF

(\*) C<sub>PD</sub> is defined as the value of the IC's internal equivalent capacitance which is calculated from the operating current consumption without load. (Refer to Test Circuit). Average operating current can be obtained by the following equation. I<sub>CC(opr)</sub> = C<sub>PD</sub> • V<sub>CC</sub> • f<sub>IN</sub> + I<sub>CC</sub>/4 (per Gate)

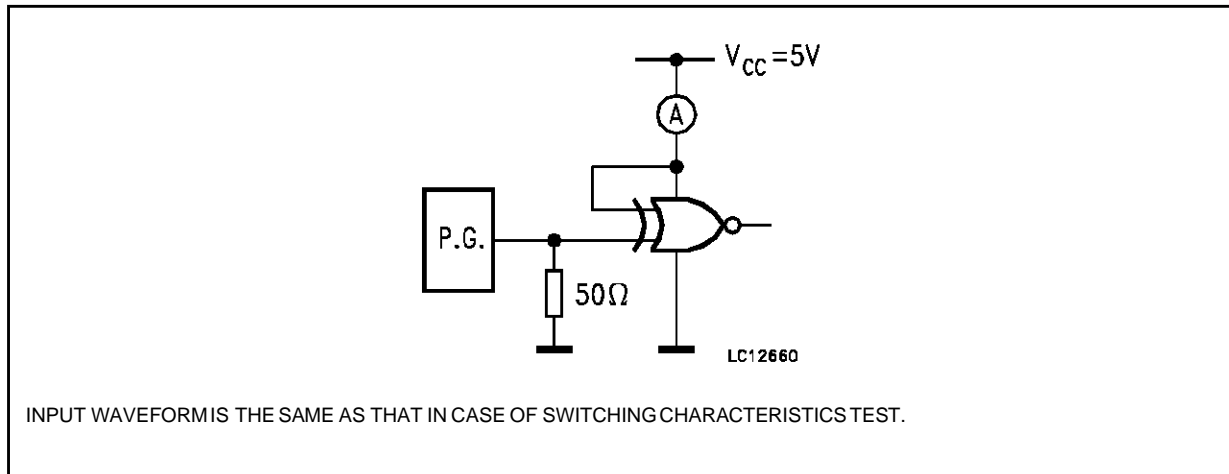
SWITCHING CHARACTERISTICS TEST CIRCUIT (HC266)



SWITCHING CHARACTERISTICS TEST CIRCUIT (HC7266)

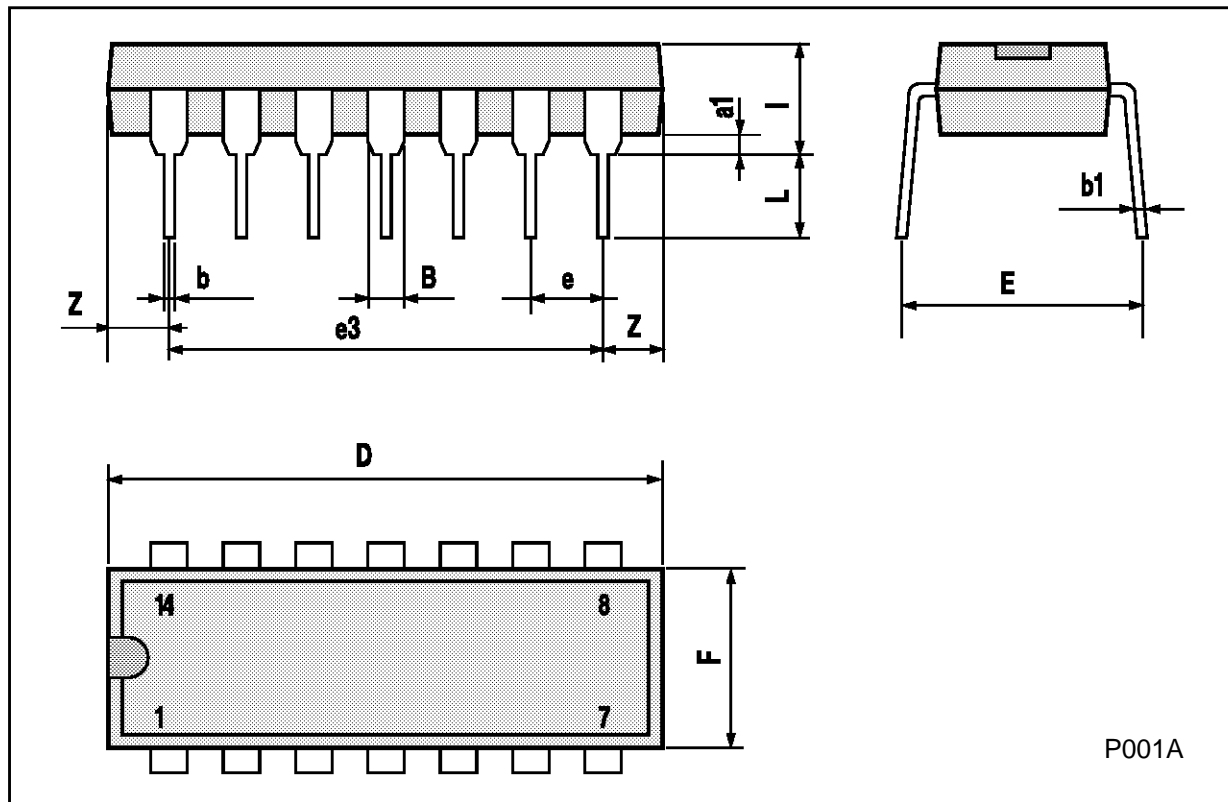


TEST CIRCUIT I<sub>CC</sub> (Opr.)



## Plastic DIP14 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
a1	0.51			0.020		
B	1.39		1.65	0.055		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		15.24			0.600	
F			7.1			0.280
I			5.1			0.201
L		3.3			0.130	
Z	1.27		2.54	0.050		0.100



**Ceramic DIP14/1 MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			20			0.787
B			7.0			0.276
D		3.3			0.130	
E	0.38			0.015		
e3		15.24			0.600	
F	2.29		2.79	0.090		0.110
G	0.4		0.55	0.016		0.022
H	1.17		1.52	0.046		0.060
L	0.22		0.31	0.009		0.012
M	1.52		2.54	0.060		0.100
N			10.3			0.406
P	7.8		8.05	0.307		0.317
Q			5.08			0.200



P053C



## SO14 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			1.75			0.068
a1	0.1		0.2	0.003		0.007
a2			1.65			0.064
b	0.35		0.46	0.013		0.018
b1	0.19		0.25	0.007		0.010
C		0.5			0.019	
c1	45° (typ.)					
D	8.55		8.75	0.336		0.344
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		7.62			0.300	
F	3.8		4.0	0.149		0.157
G	4.6		5.3	0.181		0.208
L	0.5		1.27	0.019		0.050
M			0.68			0.026
S	8° (max.)					



**PLCC20 MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	9.78		10.03	0.385		0.395
B	8.89		9.04	0.350		0.356
D	4.2		4.57	0.165		0.180
d1		2.54			0.100	
d2		0.56			0.022	
E	7.37		8.38	0.290		0.330
e		1.27			0.050	
e3		5.08			0.200	
F		0.38			0.015	
G			0.101			0.004
M		1.27			0.050	
M1		1.14			0.045	



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