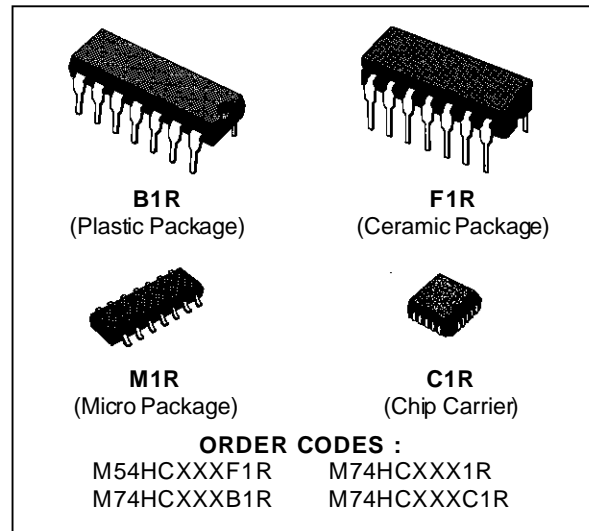


HC266 QUAD EXCLUSIVE NOR GATE WITH OPEN DRAIN

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

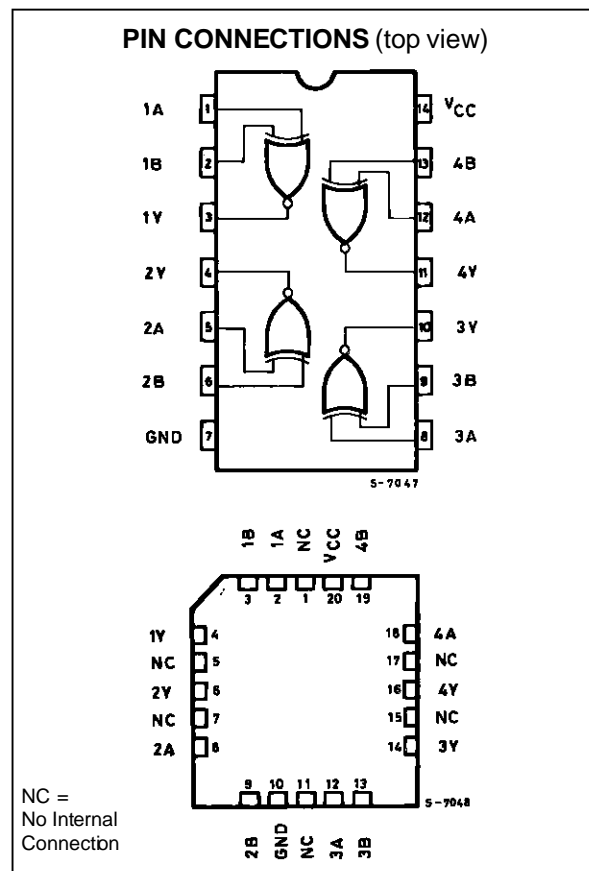
The M54/74HC266/7266 are high speed CMOS QUAD EXCLUSIVE NOR GATES, fabricated in silicon gate C²MOS technology. They have the same high speed performance of LSTTL combined with true CMOS low power consumption.

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

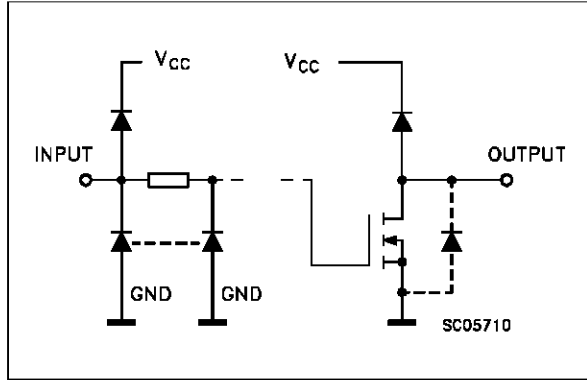
The HC7266 has an output buffer which is CMOS structure.

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

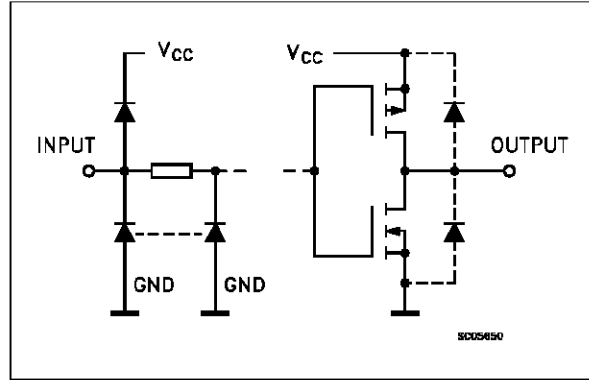
All inputs are equipped with protection circuits against static discharge and transient excess voltage.



INPUT AND OUTPUT EQUIVALENT CIRCUIT (HC266)



INPUT AND OUTPUT EQUIVALENT CIRCUIT (HC7266)



PIN DESCRIPTION

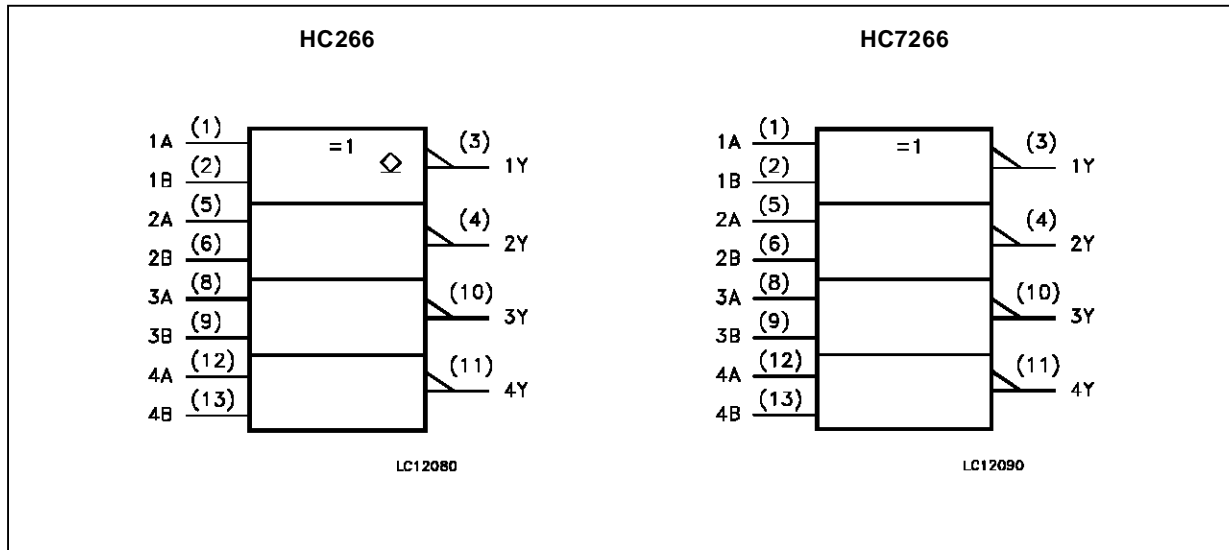
| PIN No | SYMBOL | NAME AND FUNCTION |
|--------------|----------|-------------------------|
| 1, 5, 8, 12 | 1A to 4A | Data Inputs |
| 2, 6, 9, 13 | 1B to 4B | Data Inputs |
| 3, 4, 10, 11 | 1Y to 4Y | Data Outputs |
| 7 | GND | Ground (0V) |
| 14 | Vcc | Positive Supply Voltage |

TRUTH TABLE

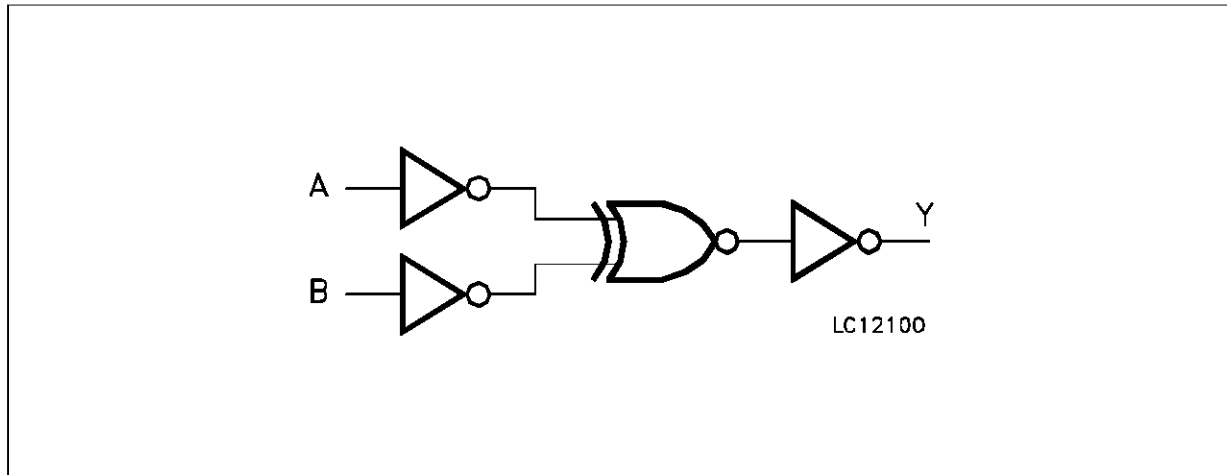
| A | B | Y | |
|---|---|------|-----|
| | | 7266 | 266 |
| L | L | H | Z |
| L | H | L | L |
| H | L | L | L |
| H | H | H | Z |

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 | ± 20 | mA |
| I_{OK} | DC Output Diode Current | ± 20 | mA |
| I_O | DC Output Source Sink Current Per Output Pin | ± 25 | mA |
| I_{CC} or I_{GND} | DC V_{CC} or Ground Current | ± 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: M54HC Series M74HC Series | -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

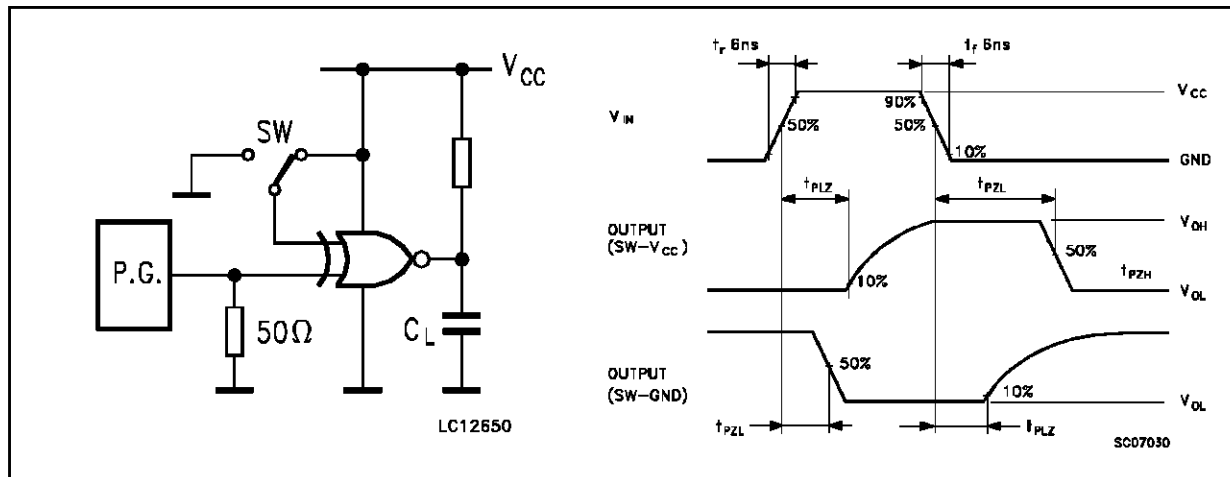
| Symbol | Parameter | Test Conditions | | Value | | | | | | Unit | | |
|-----------------|---------------------------------------|------------------------|--|---|------|------|----------------------|------|-----------------------|------|------|----|
| | | V _{CC} (V) | | T _A = 25 °C 54HC and 74HC | | | -40 to 85 °C 74HC | | -55 to 125 °C 54HC | | | |
| | | | | Min. | Typ. | Max. | Min. | Max. | Min. | | Max. | |
| V _{IH} | 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 _{IL} | 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 _{OH} | High Level Output Voltage (HC7266) | 2.0 | V _I = V _{IH} or V _{IL} | I _O = -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 _O = -4.0 mA | 4.18 | 4.31 | | 4.13 | | 4.10 | | | |
| | | 6.0 | | I _O = -5.2 mA | 5.68 | 5.8 | | 5.63 | | 5.60 | | |
| V _{OL} | Low Level Output Voltage | 2.0 | V _I = V _{IH} or V _{IL} | I _O = 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 _O = 4.0 mA | | 0.17 | 0.26 | | 0.33 | | 0.40 | | |
| | | 6.0 | | I _O = 5.2 mA | | 0.18 | 0.26 | | 0.33 | | 0.40 | |
| I _I | Input Leakage Current | 6.0 | V _I = V _{CC} or GND | | | | ±0.1 | | ±1 | | ±1 | μA |
| I _{OZ} | Output Leakage Current (HC266) | 6.0 | V _I = V _{IH} or V _{IL} V _O = V _{CC} or GND | | | | ±0.5 | | ±5 | | ±10 | μA |
| I _{CC} | Quiescent Supply Current | 6.0 | V _I = V _{CC} or GND | | | | 1 | | 10 | | 20 | μA |

AC ELECTRICAL CHARACTERISTICS (C_L = 50 pF, Input t_r = t_f = 6 ns)

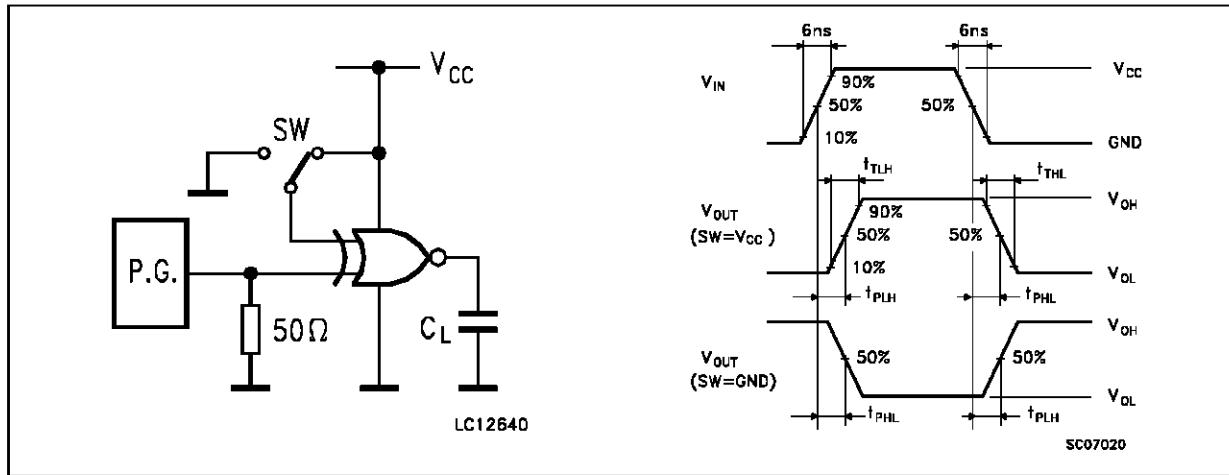
| Symbol | Parameter | Test Conditions | | Value | | | | | | Unit | |
|--------------------------------------|---------------------------------|---------------------|----------------------|---|------|------|----------------------|------|-----------------------|------|------|
| | | V _{CC} (V) | R _L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

(*) C_{PD} 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_{CC(opr)} = C_{PD} • V_{CC} • f_{IN} + I_{CC}/4 (per Gate)

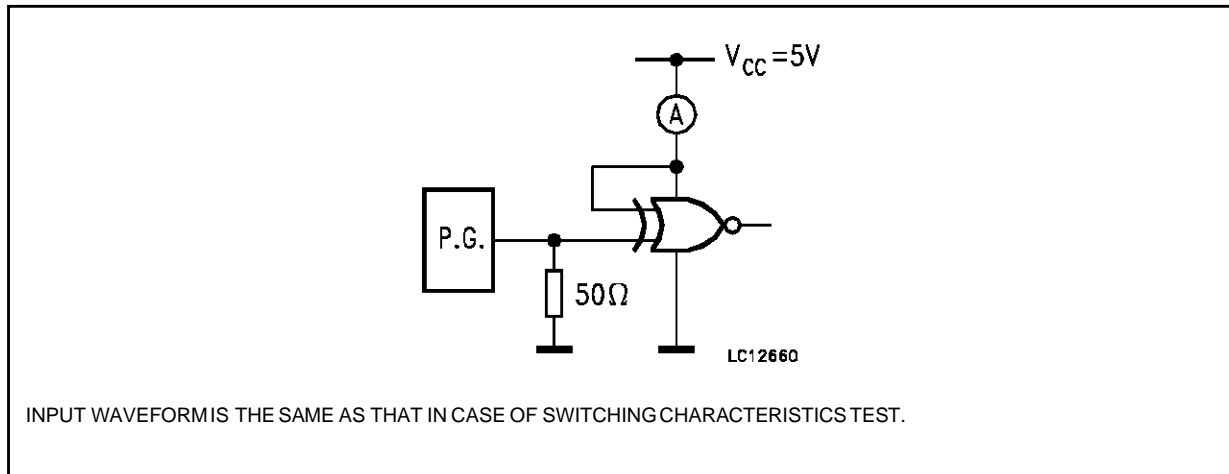
SWITCHING CHARACTERISTICS TEST CIRCUIT (HC266)



SWITCHING CHARACTERISTICS TEST CIRCUIT (HC7266)

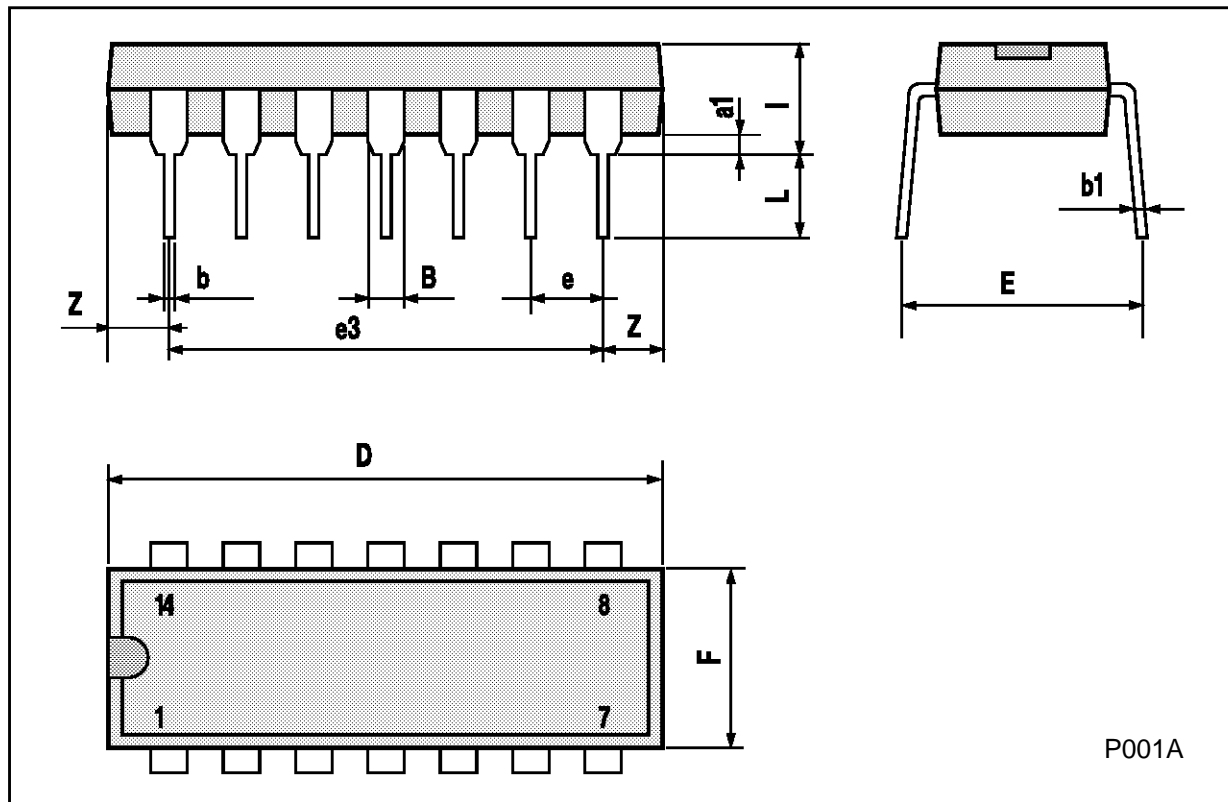


TEST CIRCUIT I_{CC} (Opr.)



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 |



P001A

Ceramic DIP14/1 MECHANICAL DATA

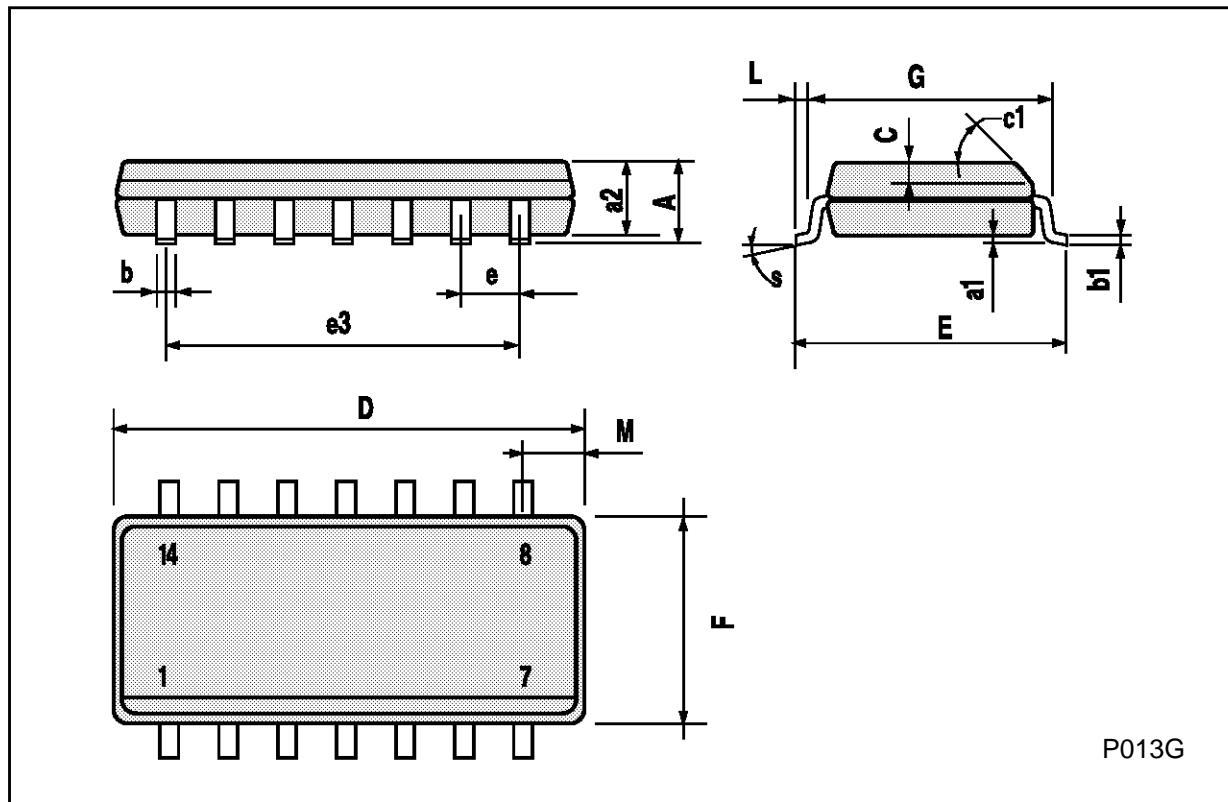
| DIM. | mm | | | inch | | |
|------|------|-------|------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | | | 20 | | | 0.787 |
| B | | | 7.0 | | | 0.276 |
| D | | 3.3 | | | 0.130 | |
| E | 0.38 | | | 0.015 | | |
| e3 | | 15.24 | | | 0.600 | |
| F | 2.29 | | 2.79 | 0.090 | | 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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