

# MC14532B

## 8-Bit Priority Encoder

The MC14532B is constructed with complementary MOS (CMOS) enhancement mode devices. The primary function of a priority encoder is to provide a binary address for the active input with the highest priority. Eight data inputs (D0 thru D7) and an enable input ( $E_{in}$ ) are provided. Five outputs are available, three are address outputs (Q0 thru Q2), one group select (GS) and one enable output ( $E_{out}$ ).

### Features

- Diode Protection on All Inputs
- Supply Voltage Range = 3.0 Vdc to 18 Vdc
- Capable of Driving Two Low-Power TTL Loads or One Low-Power Schottky TTL Load over the Rated Temperature Range
- These Devices are Pb-Free and are RoHS Compliant
- NLV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q100 Qualified and PPAP Capable

### MAXIMUM RATINGS (Voltages Referenced to $V_{SS}$ )

| Rating                                            | Symbol            | Value                  | Unit |
|---------------------------------------------------|-------------------|------------------------|------|
| DC Supply Voltage Range                           | $V_{DD}$          | -0.5 to +18.0          | V    |
| Input or Output Voltage Range (DC or Transient)   | $V_{in}, V_{out}$ | -0.5 to $V_{DD} + 0.5$ | V    |
| Input or Output Current (DC or Transient) per Pin | $I_{in}, I_{out}$ | $\pm 10$               | mA   |
| Power Dissipation, per Package (Note 1)           | $P_D$             | 500                    | mW   |
| Ambient Temperature Range                         | $T_A$             | -55 to +125            | °C   |
| Storage Temperature Range                         | $T_{stg}$         | -65 to +150            | °C   |
| Lead Temperature (8 Sec Soldering)                | $T_L$             | 260                    | °C   |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

#### 1. Temperature Derating:

Plastic "P and D/DW" Packages: -7.0 mW/°C From 65°C To 125°C

This device contains protection circuitry to guard against damage due to high static voltages or electric fields. However, precautions must be taken to avoid applications of any voltage higher than maximum rated voltages to this high-impedance circuit. For proper operation,  $V_{in}$  and  $V_{out}$  should be constrained to the range  $V_{SS} \leq (V_{in} \text{ or } V_{out}) \leq V_{DD}$ .

Unused inputs must always be tied to an appropriate logic voltage level (e.g., either  $V_{SS}$  or  $V_{DD}$ ). Unused outputs must be left open.

### TRUTH TABLE

| Input    |    |    |    |    |    |    |    |    | Output |    |    |    |           |
|----------|----|----|----|----|----|----|----|----|--------|----|----|----|-----------|
| $E_{in}$ | D7 | D6 | D5 | D4 | D3 | D2 | D1 | D0 | GS     | Q2 | Q1 | Q0 | $E_{out}$ |
| 0        | X  | X  | X  | X  | X  | X  | X  | X  | 0      | 0  | 0  | 0  | 0         |
| 1        | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0      | 0  | 0  | 0  | 1         |
| 1        | 1  | X  | X  | X  | X  | X  | X  | X  | 1      | 1  | 1  | 1  | 0         |
| 1        | 0  | 1  | X  | X  | X  | X  | X  | X  | 1      | 1  | 1  | 0  | 0         |
| 1        | 0  | 0  | 1  | X  | X  | X  | X  | X  | 1      | 1  | 0  | 1  | 0         |
| 1        | 0  | 0  | 0  | 1  | X  | X  | X  | X  | 1      | 1  | 0  | 0  | 0         |
| 1        | 0  | 0  | 0  | 0  | 1  | X  | X  | X  | 1      | 0  | 1  | 1  | 0         |
| 1        | 0  | 0  | 0  | 0  | 0  | 1  | X  | X  | 1      | 0  | 1  | 0  | 0         |
| 1        | 0  | 0  | 0  | 0  | 0  | 0  | 1  | X  | 1      | 0  | 0  | 1  | 0         |
| 1        | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 1      | 0  | 0  | 0  | 0         |

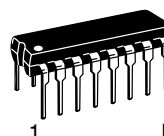
X = Don't Care



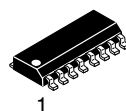
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### MARKING DIAGRAMS



PDIP-16  
P SUFFIX  
CASE 648



SOIC-16  
D SUFFIX  
CASE 751B



A = Assembly Location  
WL = Wafer Lot  
YY, Y = Year  
WW = Work Week  
G = Pb-Free Package

### PIN ASSIGNMENT

|          |   |    |           |
|----------|---|----|-----------|
| D4       | 1 | 16 | $V_{DD}$  |
| D5       | 2 | 15 | $E_{out}$ |
| D6       | 3 | 14 | GS        |
| D7       | 4 | 13 | D3        |
| $E_{in}$ | 5 | 12 | D2        |
| Q2       | 6 | 11 | D1        |
| Q1       | 7 | 10 | D0        |
| $V_{SS}$ | 8 | 9  | Q0        |

### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

# MC14532B

## ORDERING INFORMATION

| Device         | Package              | Shipping†          |
|----------------|----------------------|--------------------|
| MC14532BCPG    | PDIP-16<br>(Pb-Free) | 500 Units / Rail   |
| MC14532BDG     | SOIC-16<br>(Pb-Free) | 48 Units / Rail    |
| MC14532BDR2G   | SOIC-16<br>(Pb-Free) | 2500 / Tape & Reel |
| NLV14532BDR2G* |                      |                    |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

\*NLV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q100 Qualified and PPAP Capable.

## ELECTRICAL CHARACTERISTICS (Voltages Referenced to V<sub>SS</sub>)

| Characteristic                                                                                                                                                                                                                                     | Symbol                    | V <sub>DD</sub><br>Vdc | - 55° C                                                                                                                                                        |       | 25° C |                 |       | 125° C |       | Unit |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|-----------------|-------|--------|-------|------|
|                                                                                                                                                                                                                                                    |                           |                        | Min                                                                                                                                                            | Max   | Min   | Typ<br>(Note 2) | Max   | Min    | Max   |      |
| Output Voltage<br>V <sub>in</sub> = V <sub>DD</sub> or 0<br><br>V <sub>in</sub> = 0 or V <sub>DD</sub>                                                                                                                                             | V <sub>OL</sub>           | 5.0                    | –                                                                                                                                                              | 0.05  | –     | 0               | 0.05  | –      | 0.05  | Vdc  |
|                                                                                                                                                                                                                                                    |                           | 10                     | –                                                                                                                                                              | 0.05  | –     | 0               | 0.05  | –      | 0.05  |      |
|                                                                                                                                                                                                                                                    |                           | 15                     | –                                                                                                                                                              | 0.05  | –     | 0               | 0.05  | –      | 0.05  |      |
|                                                                                                                                                                                                                                                    | V <sub>OH</sub>           | 5.0                    | 4.95                                                                                                                                                           | –     | 4.95  | 5.0             | –     | 4.95   | –     | Vdc  |
|                                                                                                                                                                                                                                                    |                           | 10                     | 9.95                                                                                                                                                           | –     | 9.95  | 10              | –     | 9.95   | –     |      |
|                                                                                                                                                                                                                                                    |                           | 15                     | 14.95                                                                                                                                                          | –     | 14.95 | 15              | –     | 14.95  | –     |      |
| Input Voltage<br>(V <sub>O</sub> = 4.5 or 0.5 Vdc)<br>(V <sub>O</sub> = 9.0 or 1.0 Vdc)<br>(V <sub>O</sub> = 13.5 or 1.5 Vdc)<br><br>(V <sub>O</sub> = 0.5 or 4.5 Vdc)<br>(V <sub>O</sub> = 1.0 or 9.0 Vdc)<br>(V <sub>O</sub> = 1.5 or 13.5 Vdc)  | V <sub>IL</sub>           | 5.0                    | –                                                                                                                                                              | 1.5   | –     | 2.25            | 1.5   | –      | 1.5   | Vdc  |
|                                                                                                                                                                                                                                                    |                           | 10                     | –                                                                                                                                                              | 3.0   | –     | 4.50            | 3.0   | –      | 3.0   |      |
|                                                                                                                                                                                                                                                    |                           | 15                     | –                                                                                                                                                              | 4.0   | –     | 6.75            | 4.0   | –      | 4.0   |      |
|                                                                                                                                                                                                                                                    | V <sub>IH</sub>           | 5.0                    | 3.5                                                                                                                                                            | –     | 3.5   | 2.75            | –     | 3.5    | –     | Vdc  |
|                                                                                                                                                                                                                                                    |                           | 10                     | 7.0                                                                                                                                                            | –     | 7.0   | 5.50            | –     | 7.0    | –     |      |
|                                                                                                                                                                                                                                                    |                           | 15                     | 11                                                                                                                                                             | –     | 11    | 8.25            | –     | 11     | –     |      |
| Output Drive Current<br>(V <sub>OH</sub> = 2.5 Vdc)<br>(V <sub>OH</sub> = 4.6 Vdc)<br>(V <sub>OH</sub> = 9.5 Vdc)<br>(V <sub>OH</sub> = 13.5 Vdc)<br><br>(V <sub>OL</sub> = 0.4 Vdc)<br>(V <sub>OL</sub> = 0.5 Vdc)<br>(V <sub>OL</sub> = 1.5 Vdc) | Source<br>I <sub>OH</sub> | 5.0                    | –3.0                                                                                                                                                           | –     | –2.4  | –4.2            | –     | –1.7   | –     | mAdc |
|                                                                                                                                                                                                                                                    |                           | 5.0                    | –0.64                                                                                                                                                          | –     | –0.51 | –0.88           | –     | –0.36  | –     |      |
|                                                                                                                                                                                                                                                    |                           | 10                     | –1.6                                                                                                                                                           | –     | –1.3  | –2.25           | –     | –0.9   | –     |      |
|                                                                                                                                                                                                                                                    |                           | 15                     | –4.2                                                                                                                                                           | –     | –3.4  | –8.8            | –     | –2.4   | –     |      |
|                                                                                                                                                                                                                                                    | Sink<br>I <sub>OL</sub>   | 5.0                    | 0.64                                                                                                                                                           | –     | 0.51  | 0.88            | –     | 0.36   | –     | mAdc |
|                                                                                                                                                                                                                                                    |                           | 10                     | 1.6                                                                                                                                                            | –     | 1.3   | 2.25            | –     | 0.9    | –     |      |
|                                                                                                                                                                                                                                                    |                           | 15                     | 4.2                                                                                                                                                            | –     | 3.4   | 8.8             | –     | 2.4    | –     |      |
| Input Current                                                                                                                                                                                                                                      | I <sub>in</sub>           | 15                     | –                                                                                                                                                              | ± 0.1 | –     | ± 0.00001       | ± 0.1 | –      | ± 1.0 | μAdc |
| Input Capacitance<br>(V <sub>in</sub> = 0)                                                                                                                                                                                                         | C <sub>in</sub>           | –                      | –                                                                                                                                                              | –     | –     | 5.0             | 7.5   | –      | –     | pF   |
| Quiescent Current<br>(Per Package)                                                                                                                                                                                                                 | I <sub>DD</sub>           | 5.0                    | –                                                                                                                                                              | 5.0   | –     | 0.005           | 5.0   | –      | 150   | μAdc |
|                                                                                                                                                                                                                                                    |                           | 10                     | –                                                                                                                                                              | 10    | –     | 0.010           | 10    | –      | 300   |      |
|                                                                                                                                                                                                                                                    |                           | 15                     | –                                                                                                                                                              | 20    | –     | 0.015           | 20    | –      | 600   |      |
| Total Supply Current (Notes 3, 4)<br>(Dynamic plus Quiescent,<br>Per Package)<br>(C <sub>L</sub> = 50 pF on all outputs, all<br>buffers switching)                                                                                                 | I <sub>T</sub>            | 5.0<br>10<br>15        | I <sub>T</sub> = (1.74 μA/kHz) f + I <sub>DD</sub><br>I <sub>T</sub> = (3.65 μA/kHz) f + I <sub>DD</sub><br>I <sub>T</sub> = (5.73 μA/kHz) f + I <sub>DD</sub> |       |       |                 |       |        |       | μAdc |

2. Data labelled "Typ" is not to be used for design purposes but is intended as an indication of the IC's potential performance.

3. The formulas given are for the typical characteristics only at 25°C.

4. To calculate total supply current at loads other than 50 pF:

$$I_T(C_L) = I_T(50 \text{ pF}) + (C_L - 50) V f k$$

where: I<sub>T</sub> is in μA (per package), C<sub>L</sub> in pF, V = (V<sub>DD</sub> – V<sub>SS</sub>) in volts, f in kHz is input frequency, and k = 0.005.

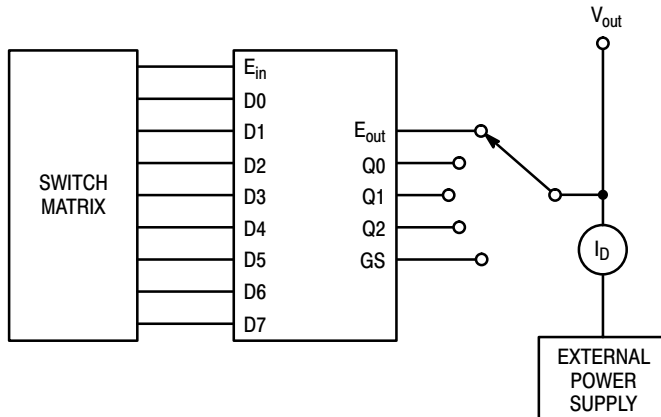
# MC14532B

## SWITCHING CHARACTERISTICS ( $C_L = 50 \text{ pF}$ , $T_A = 25^\circ\text{C}$ ) (Note 5)

| Characteristic                                                                                                                                                                                                                                   | Symbol             | $V_{DD}$        | Min         | Typ<br>(Note 6)   | Max               | Unit |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------|-------------|-------------------|-------------------|------|
| Output Rise and Fall Time<br>$t_{TLH}, t_{THL} = (1.5 \text{ ns/pF}) C_L + 25 \text{ ns}$<br>$t_{TLH}, t_{THL} = (0.75 \text{ ns/pF}) C_L + 12.5 \text{ ns}$<br>$t_{TLH}, t_{THL} = (0.55 \text{ ns/pF}) C_L + 9.5 \text{ ns}$                   | $t_{TLH}, t_{THL}$ | 5.0<br>10<br>15 | —<br>—<br>— | 100<br>50<br>40   | 200<br>100<br>80  | ns   |
| Propagation Delay Time — $E_{in}$ to $E_{out}$<br>$t_{PLH}, t_{PHL} = (1.7 \text{ ns/pF}) C_L + 120 \text{ ns}$<br>$t_{PLH}, t_{PHL} = (0.66 \text{ ns/pF}) C_L + 77 \text{ ns}$<br>$t_{PLH}, t_{PHL} = (0.5 \text{ ns/pF}) C_L + 55 \text{ ns}$ | $t_{PLH}, t_{PHL}$ | 5.0<br>10<br>15 | —<br>—<br>— | 205<br>110<br>80  | 410<br>220<br>160 | ns   |
| Propagation Delay Time — $E_{in}$ to GS<br>$t_{PLH}, t_{PHL} = (1.7 \text{ ns/pF}) C_L + 90 \text{ ns}$<br>$t_{PLH}, t_{PHL} = (0.66 \text{ ns/pF}) C_L + 57 \text{ ns}$<br>$t_{PLH}, t_{PHL} = (0.5 \text{ ns/pF}) C_L + 40 \text{ ns}$         | $t_{PLH}, t_{PHL}$ | 5.0<br>10<br>15 | —<br>—<br>— | 175<br>90<br>65   | 350<br>180<br>130 | ns   |
| Propagation Delay Time — $E_{in}$ to $Q_n$<br>$t_{PLH}, t_{PHL} = (1.7 \text{ ns/pF}) C_L + 195 \text{ ns}$<br>$t_{PLH}, t_{PHL} = (0.66 \text{ ns/pF}) C_L + 107 \text{ ns}$<br>$t_{PLH}, t_{PHL} = (0.5 \text{ ns/pF}) C_L + 75 \text{ ns}$    | $t_{PHL}, t_{PLH}$ | 5.0<br>10<br>15 | —<br>—<br>— | 280<br>140<br>100 | 560<br>280<br>200 | ns   |
| Propagation Delay Time — $D_n$ to $Q_n$<br>$t_{PLH}, t_{PHL} = (1.7 \text{ ns/pF}) C_L + 265 \text{ ns}$<br>$t_{PLH}, t_{PHL} = (0.66 \text{ ns/pF}) C_L + 137 \text{ ns}$<br>$t_{PLH}, t_{PHL} = (0.5 \text{ ns/pF}) C_L + 85 \text{ ns}$       | $t_{PLH}, t_{PHL}$ | 5.0<br>10<br>15 | —<br>—<br>— | 300<br>170<br>110 | 600<br>340<br>220 | ns   |
| Propagation Delay Time — $D_n$ to GS<br>$t_{PLH}, t_{PHL} = (1.7 \text{ ns/pF}) C_L + 195 \text{ ns}$<br>$t_{PLH}, t_{PHL} = (0.66 \text{ ns/pF}) C_L + 107 \text{ ns}$<br>$t_{PLH}, t_{PHL} = (0.5 \text{ ns/pF}) C_L + 75 \text{ ns}$          | $t_{PLH}, t_{PHL}$ | 5.0<br>10<br>15 | —<br>—<br>— | 280<br>140<br>100 | 560<br>280<br>200 | ns   |

5. The formulas given are for the typical characteristics only at  $25^\circ\text{C}$ .

6. Data labelled "Typ" is not to be used for design purposes but is intended as an indication of the IC's potential performance.



| Output Under Test | $V_{GS} = V_{DD}$<br>$V_{DS} = V_{out}$<br>Sink Current |          | $V_{GS} = -V_{DD}$<br>$V_{DS} = V_{out} - V_{DD}$<br>Source Current |    |          |  |
|-------------------|---------------------------------------------------------|----------|---------------------------------------------------------------------|----|----------|--|
|                   | D0 thru D7                                              | $E_{in}$ | D0 thru D6                                                          | D7 | $E_{in}$ |  |
| $E_{out}$         | X                                                       | 0        | 0                                                                   | 0  | 1        |  |
| Q0                | X                                                       | 0        | 0                                                                   | 1  | 1        |  |
| Q1                | X                                                       | 0        | 0                                                                   | 1  | 1        |  |
| Q2                | X                                                       | 0        | 0                                                                   | 1  | 1        |  |
| GS                | X                                                       | 0        | 0                                                                   | 1  | 1        |  |

Figure 1. Typical Sink and Source Current Characteristics

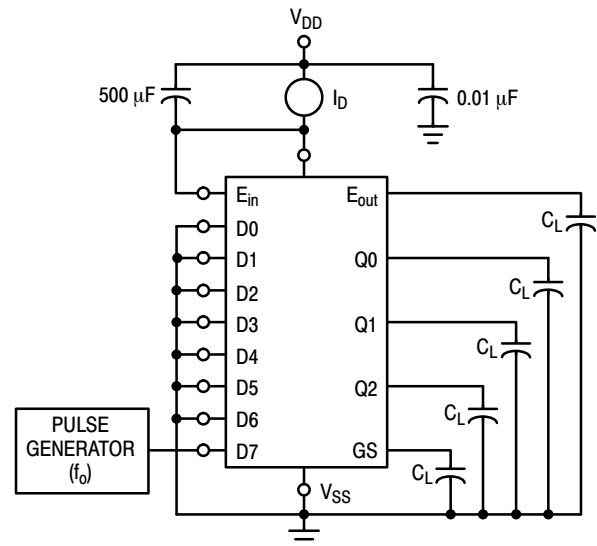


Figure 2. Typical Power Dissipation Test Circuit

# MC14532B

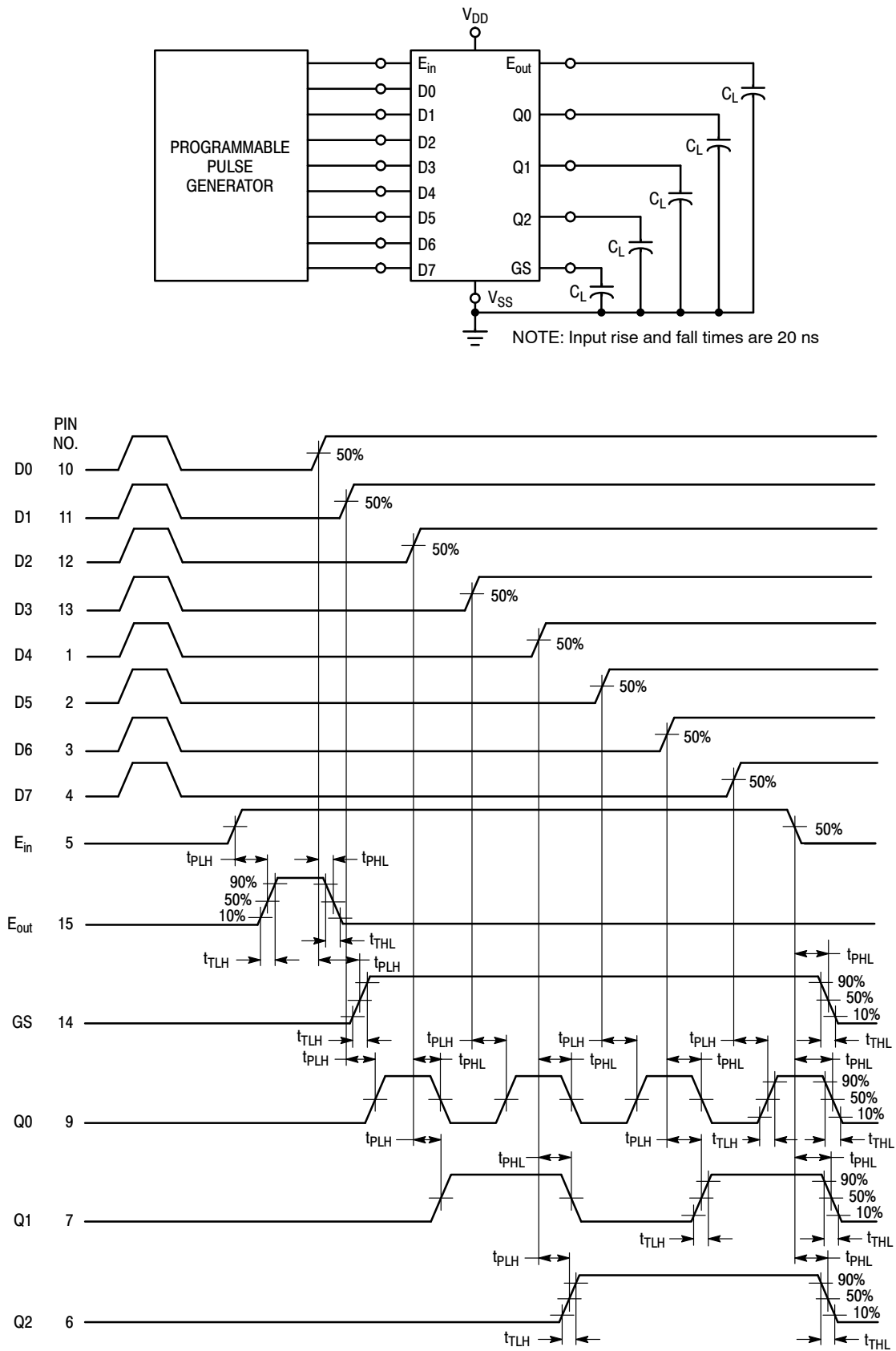


Figure 3. AC Test Circuit and Waveforms

# MC14532B

## LOGIC EQUATIONS

$$E_{out} = E_{in} \cdot \bar{D0} \cdot \bar{D1} \cdot \bar{D2} \cdot \bar{D3} \cdot \bar{D4} \cdot \bar{D5} \cdot \bar{D6} \cdot \bar{D7}$$

$$Q0 = E_{in} \cdot (D1 \cdot \bar{D2} \cdot \bar{D4} \cdot \bar{D6} + D3 \cdot \bar{D4} \cdot \bar{D6} + D5 \cdot \bar{D6} + D7)$$

$$Q1 = E_{in} \cdot (D2 \cdot \bar{D4} \cdot \bar{D5} + D3 \cdot \bar{D4} \cdot \bar{D5} + D6 + D7)$$

$$Q2 = E_{in} \cdot (D4 + D5 + D6 + D7)$$

$$GS = E_{in} \cdot (D0 + D1 + D2 + D3 + D4 + D5 + D6 + D7)$$

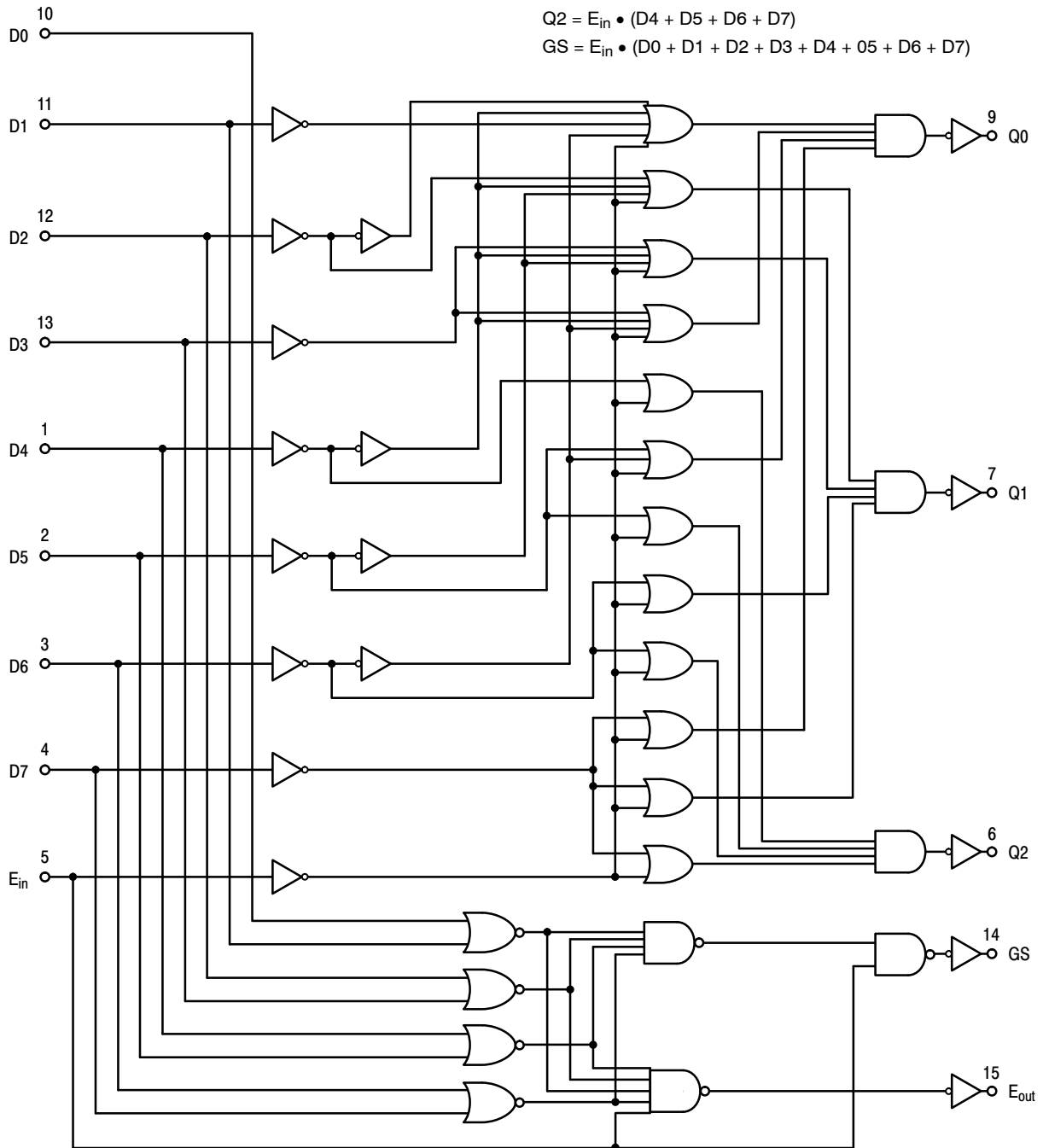


Figure 4. Logic Diagram  
(Positive Logic)

The diagram illustrates a 4-bit ripple-carry adder implemented using two 74161 counters and three 3-input OR gates (MC14071B).

- Counter 1 (Left):** Its  $E_{in}$  is connected to  $V_{DD}$ . Its  $E_{out}$  is connected to the  $E_{in}$  of Counter 2. Its outputs  $Q_2, Q_1, Q_0$  are connected to the inputs of the first three OR gates.
- Counter 2 (Right):** Its  $E_{in}$  is connected to the  $E_{out}$  of Counter 1. Its outputs  $Q_2, Q_1, Q_0$  are connected to the inputs of the last three OR gates.
- OR Gates:** Three 3-input OR gates (MC14071B) are used to generate the sum outputs  $S_3, S_2, S_1, S_0$ . The inputs to these gates are the  $Q$  outputs of the two counters:
  - OR Gate 1 (Output  $S_3$ ): Inputs are  $Q_2$  of Counter 1,  $Q_1$  of Counter 1, and  $Q_0$  of Counter 1.
  - OR Gate 2 (Output  $S_2$ ): Inputs are  $Q_2$  of Counter 1,  $Q_1$  of Counter 2, and  $Q_0$  of Counter 1.
  - OR Gate 3 (Output  $S_1$ ): Inputs are  $Q_2$  of Counter 1,  $Q_1$  of Counter 2, and  $Q_0$  of Counter 2.
  - OR Gate 4 (Output  $S_0$ ): Inputs are  $Q_2$  of Counter 2,  $Q_1$  of Counter 2, and  $Q_0$  of Counter 2.

## DIGITAL TO ANALOG CONVERSION

## ANALOG TO DIGITAL CONVERSION

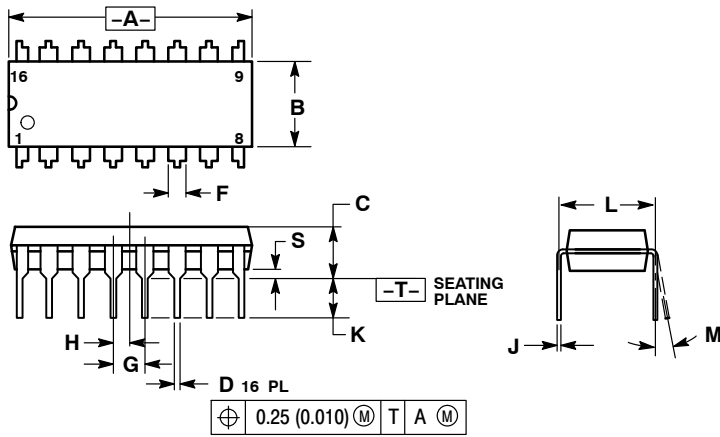
The circuit diagram illustrates a 16-bit digital-to-analog converter. It features two 1/2 MC14520B comparators and an MC14512 DAC. The comparators are configured with their clock inputs (C) to a common CLOCK INPUT, their enable inputs (E) to V<sub>DD</sub>, and their reset inputs (R) to V<sub>SS</sub>. The outputs of the comparators (Q1, Q2, Q3, Q4) are connected to the digital input/output pins (D0-D7, Q2, Q1, Q0) of the MC14512 DAC. The DAC is also configured with its enable input (E<sub>in</sub>) to V<sub>DD</sub>. The DAC's 8-bit word (X7-X0) is connected to the digital input/output pins. The DAC's output (Z) is connected to the non-inverting input of an MC1710 op-amp. The op-amp's output is connected to the analog output (A) through a resistor (R) and a capacitor (C). The op-amp's inverting input is connected to the analog input (A) and its output. The op-amp's power supply pins are connected to V<sub>DD</sub> and V<sub>SS</sub>. The op-amp's output is also connected to a STOP WORD INCREMENTATION signal.

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# MC14532B

## PACKAGE DIMENSIONS

PDIP-16  
CASE 648-08  
ISSUE T



### NOTES:

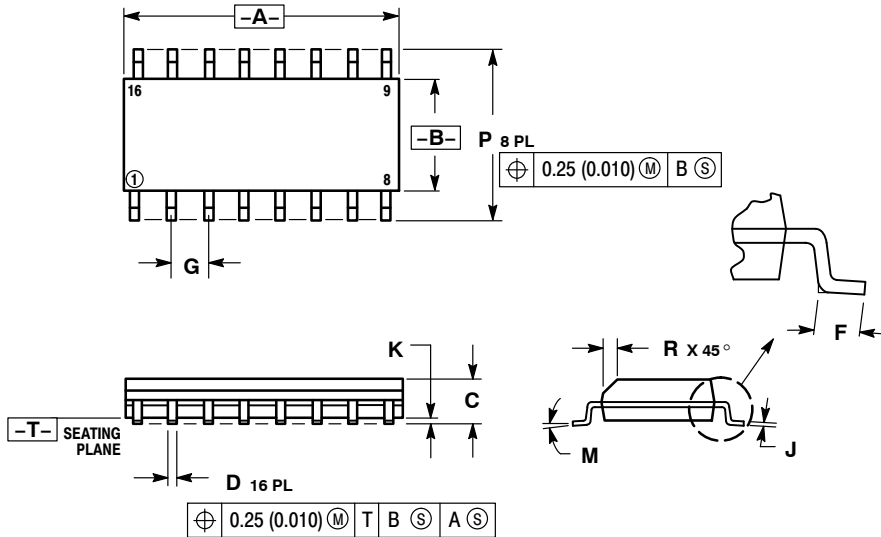
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION L TO CENTER OF LEADS WHEN FORMED PARALLEL.
4. DIMENSION B DOES NOT INCLUDE MOLD FLASH.
5. ROUNDED CORNERS OPTIONAL.

| DIM | INCHES    |       | MILLIMETERS |       |
|-----|-----------|-------|-------------|-------|
|     | MIN       | MAX   | MIN         | MAX   |
| A   | 0.740     | 0.770 | 18.80       | 19.55 |
| B   | 0.250     | 0.270 | 6.35        | 6.85  |
| C   | 0.145     | 0.175 | 3.69        | 4.44  |
| D   | 0.015     | 0.021 | 0.39        | 0.53  |
| F   | 0.040     | 0.70  | 1.02        | 1.77  |
| G   | 0.100 BSC |       | 2.54 BSC    |       |
| H   | 0.050 BSC |       | 1.27 BSC    |       |
| J   | 0.008     | 0.015 | 0.21        | 0.38  |
| K   | 0.110     | 0.130 | 2.80        | 3.30  |
| L   | 0.295     | 0.305 | 7.50        | 7.74  |
| M   | 0°        | 10°   | 0°          | 10°   |
| S   | 0.020     | 0.040 | 0.51        | 1.01  |

# MC14532B

## PACKAGE DIMENSIONS

SOIC-16  
CASE 751B-05  
ISSUE K

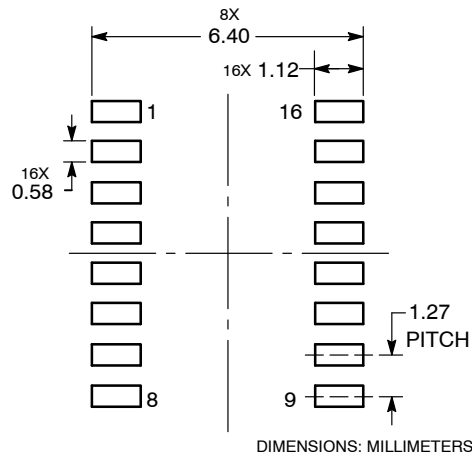


### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSIONS A AND B DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
5. DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 (0.005) TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.

| DIM | MILLIMETERS |       | INCHES    |       |
|-----|-------------|-------|-----------|-------|
|     | MIN         | MAX   | MIN       | MAX   |
| A   | 9.80        | 10.00 | 0.386     | 0.393 |
| B   | 3.80        | 4.00  | 0.150     | 0.157 |
| C   | 1.35        | 1.75  | 0.054     | 0.068 |
| D   | 0.35        | 0.49  | 0.014     | 0.019 |
| F   | 0.40        | 1.25  | 0.016     | 0.049 |
| G   | 1.27 BSC    |       | 0.050 BSC |       |
| J   | 0.19        | 0.25  | 0.008     | 0.009 |
| K   | 0.10        | 0.25  | 0.004     | 0.009 |
| M   | 0°          | 7°    | 0°        | 7°    |
| P   | 5.80        | 6.20  | 0.229     | 0.244 |
| R   | 0.25        | 0.50  | 0.010     | 0.019 |

## SOLDERING FOOTPRINT



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