



**THE DATASHEET OF  
MC74AC253DR2G**



# MC74AC253, MC74ACT253

## Dual 4-Input Multiplexer with 3-State Outputs

The MC74AC253/74ACT253 is a dual 4-input multiplexer with 3-state outputs. It can select two bits of data from four sources using common select inputs. The outputs may be individually switched to a high impedance state with a HIGH on the respective Output Enable ( $\overline{OE}$ ) inputs, allowing the outputs to interface directly with bus oriented systems.

- Multifunctional Capability
- Noninverting 3-State Outputs
- Outputs Source/Sink 24 mA
- 'ACT253 Has TTL Compatible Inputs
- These are Pb-Free Devices

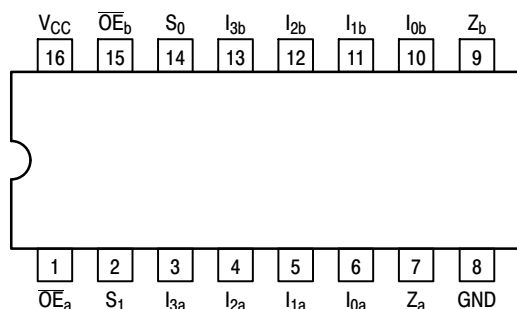


Figure 1. Pinout: 16-Lead Packages Conductors (Top View)

### PIN NAME

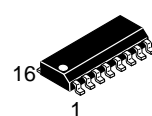
| PIN                              | FUNCTION                   |
|----------------------------------|----------------------------|
| I <sub>0a</sub> –I <sub>3a</sub> | Side A Data Inputs         |
| I <sub>0b</sub> –I <sub>3b</sub> | Side B Data Inputs         |
| S <sub>0</sub> , S <sub>1</sub>  | Common Select Inputs       |
| $\overline{OE}_a$                | Side A Output Enable Input |
| $\overline{OE}_b$                | Side B Output Enable Input |
| Z <sub>a</sub> , Z <sub>b</sub>  | 3-State Outputs            |



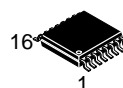
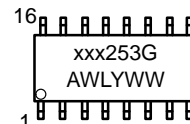
ON Semiconductor™

[www.onsemi.com](http://www.onsemi.com)

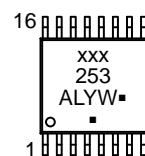
### MARKING DIAGRAMS



SOIC-16  
D SUFFIX  
CASE 751B



TSSOP-16  
DT SUFFIX  
CASE 948F



xxx = AC or ACT  
A = Assembly Location  
WL or L = Wafer Lot  
Y = Year  
WW or W = Work Week  
G or ■ = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 7 of this data sheet.

# MC74AC253, MC74ACT253

## TRUTH TABLE

| Select Inputs  |                | Data Inputs    |                |                |                | Output Enable   | Outputs |
|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|---------|
| S <sub>0</sub> | S <sub>1</sub> | I <sub>0</sub> | I <sub>1</sub> | I <sub>2</sub> | I <sub>3</sub> | $\overline{OE}$ | Z       |
| X              | X              | X              | X              | X              | X              | H               | Z       |
| L              | L              | L              | X              | X              | X              | L               | L       |
| L              | L              | H              | X              | X              | X              | L               | H       |
| H              | L              | X              | L              | X              | X              | L               | L       |
| H              | L              | X              | H              | X              | X              | L               | H       |
| L              | H              | X              | X              | L              | X              | L               | L       |
| L              | H              | X              | X              | H              | X              | L               | H       |
| H              | H              | X              | X              | X              | L              | L               | L       |
| H              | H              | X              | X              | X              | H              | L               | H       |

Address inputs S<sub>0</sub> and S<sub>1</sub> are common to both sections.

H = HIGH Voltage Level  
 L = LOW Voltage Level  
 X = Immaterial  
 Z = High Impedance

## FUNCTIONAL DESCRIPTION

The MC74AC253/74ACT253 contains two identical 4-input multiplexers with 3-state outputs. They select two bits from four sources selected by common Select inputs (S<sub>0</sub>, S<sub>1</sub>). The 4-input multiplexers have individual Output Enable ( $\overline{OE}_a$ ,  $\overline{OE}_b$ ) inputs which, when HIGH, force the outputs to a high impedance (High Z) state. This device is the logic implementation of a 2-pole, 4-position switch, where the position of the switch is determined by the logic levels

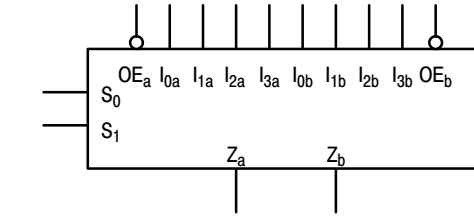


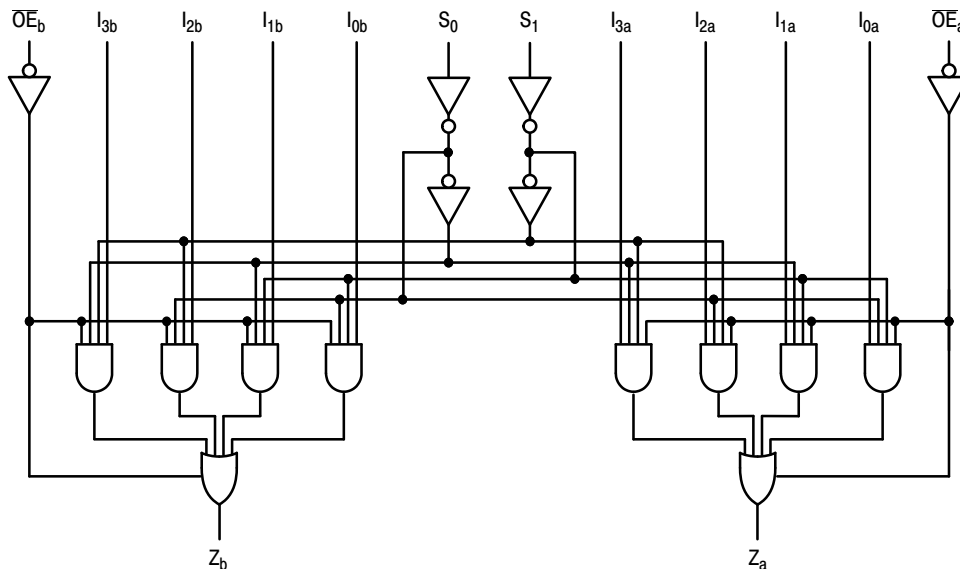
Figure 2. Logic Symbol

supplied to the two select inputs. The logic equations for the outputs are shown:

$$Z_a = \overline{OE}_a \cdot (I_{0a} \cdot \overline{S_1} \cdot \overline{S_0} + I_{1a} \cdot \overline{S_1} \cdot S_0 + I_{2a} \cdot S_1 \cdot \overline{S_0} + I_{3a} \cdot S_1 \cdot S_0)$$

$$Z_b = \overline{OE}_b \cdot (I_{0b} \cdot \overline{S_1} \cdot \overline{S_0} + I_{1b} \cdot \overline{S_1} \cdot S_0 + I_{2b} \cdot S_1 \cdot \overline{S_0} + I_{3b} \cdot S_1 \cdot S_0)$$

If the outputs of 3-state devices are tied together, all but one device must be in the high impedance state to avoid high currents that would exceed the maximum ratings. Designers should ensure that Output Enable signals to 3-state devices whose outputs are tied together are designed so that there is no overlap.



NOTE: This diagram is provided only for the understanding of logic operations and should not be used to estimate propagation delays.

Figure 3. Logic Diagram

# MC74AC253, MC74ACT253

## MAXIMUM RATINGS

| Symbol                | Parameter                                       | Value  | Unit                      |
|-----------------------|---|--|---------------------------|
| V <sub>CC</sub>       | DC Supply Voltage                               | -0.5 to +7.0   | V                         |
| V <sub>I</sub>        | DC Input Voltage                                | -0.5 ≤ V <sub>CC</sub> +0.5  | V                         |
| V <sub>O</sub>        | DC Output Voltage (Note 1)                      | -0.5 ≤ V <sub>CC</sub> +0.5  | V                         |
| I <sub>IK</sub>       | DC Input Diode Current                          | ±20  | mA                        |
| I <sub>OK</sub>       | DC Output Diode Current                         | ±50  | mA                        |
| I <sub>O</sub>        | DC Output Sink/Source Current                   | ±50  | mA                        |
| I <sub>CC</sub>       | DC Supply Current per Output Pin                | ±50  | mA                        |
| I <sub>GND</sub>      | DC Ground Current per Output Pin                | ±50  | mA                        |
| T <sub>STG</sub>      | Storage Temperature Range                       | -65 to +150  | °C                        |
| T <sub>L</sub>        | Lead temperature, 1 mm from Case for 10 Seconds | 260  | °C                        |
| T <sub>J</sub>        | Junction temperature under Bias                 | +150   | °C                        |
| θ <sub>JA</sub>       | Thermal Resistance (Note 2)                     | SOIC<br>TSSOP<br>69.1<br>103.8   | °C/W                      |
| P <sub>D</sub>        | Power Dissipation in Still Air at 65°C (Note 3) | SOIC<br>TSSOP<br>500<br>500  | mW                        |
| MSL                   | Moisture Sensitivity                            | Level 1  |                           |
| F <sub>R</sub>        | Flammability Rating                             | Oxygen Index: 30% – 35%  | UL 94 V-0 @ 0.125 in      |
| V <sub>ESD</sub>      | ESD Withstand Voltage                           | Human Body Model (Note 4)<br>Machine Model (Note 5)<br>Charged Device Model (Note 6) | > 2000<br>> 200<br>> 1000 |
| I <sub>Latch-Up</sub> | Latch-Up Performance                            | Above V <sub>CC</sub> and Below GND at 85°C (Note 7)                                 | ±100<br>mA                |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. I<sub>O</sub> absolute maximum rating must be observed.
2. The package thermal impedance is calculated in accordance with JEDEC51-7.
3. 500 mW at 65°C; derate to 300 mW by 10 mW/ from 65°C to 85°C.
4. Tested to EIA/JESD22-A114-A.
5. Tested to EIA/JESD22-A115-A.
6. Tested to JESD22-C101-A.
7. Tested to EIA/JESD78.

## RECOMMENDED OPERATING CONDITIONS

| Symbol                             | Parameter   | Min                     | Typ | Max             | Unit |      |
|------------------------------------|---|-------------------------|-----|-----------------|------|------|
| V <sub>CC</sub>                    | Supply Voltage  | 'AC                     | 2.0 | 5.0             | 6.0  | V    |
|                                    |   | 'ACT                    | 4.5 | 5.0             | 5.5  |      |
| V <sub>IN</sub> , V <sub>OUT</sub> | DC Input Voltage, Output Voltage (Ref. to GND)                          | 0                       | -   | V <sub>CC</sub> | V    |      |
| t <sub>r</sub> , t <sub>f</sub>    | Input Rise and Fall Time (Note 1)<br>'AC Devices except Schmitt Inputs  | V <sub>CC</sub> @ 3.0 V | -   | 150             | -    | ns/V |
|                                    |   | V <sub>CC</sub> @ 4.5 V | -   | 40              | -    |      |
|                                    |   | V <sub>CC</sub> @ 5.5 V | -   | 25              | -    |      |
| t <sub>r</sub> , t <sub>f</sub>    | Input Rise and Fall Time (Note 2)<br>'ACT Devices except Schmitt Inputs | V <sub>CC</sub> @ 4.5 V | -   | 10              | -    | ns/V |
|                                    |   | V <sub>CC</sub> @ 5.5 V | -   | 8.0             | -    |      |
| T <sub>A</sub>                     | Operating Ambient Temperature Range                                     | -40                     | 25  | 85              | °C   |      |
| I <sub>OH</sub>                    | Output Current – High   | -                       | -   | -24             | mA   |      |
| I <sub>OL</sub>                    | Output Current – Low  | -                       | -   | 24              | mA   |      |

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended Operating Ranges limits may affect device reliability.

1. V<sub>IN</sub> from 30% to 70% V<sub>CC</sub>; see individual Data Sheets for devices that differ from the typical input rise and fall times.
2. V<sub>IN</sub> from 0.8 V to 2.0 V; see individual Data Sheets for devices that differ from the typical input rise and fall times.

# MC74AC253, MC74ACT253

## DC CHARACTERISTICS

| Symbol           | Parameter                            | V <sub>CC</sub><br>(V) | 74AC                   |                   | 74AC                                  | Unit | Conditions  |
|------------------|--------------------------------------|------------------------|------------------------|-------------------|---------------------------------------|------|---|
|                  |                                      |                        | T <sub>A</sub> = +25°C |                   | T <sub>A</sub> =<br>-40°C to<br>+85°C |      |   |
|                  |                                      |                        | Typ                    | Guaranteed Limits |                                       |      |   |
| V <sub>IH</sub>  | Minimum High Level<br>Input Voltage  | 3.0                    | 1.5                    | 2.1               | 2.1                                   | V    | V <sub>OUT</sub> = 0.1 V<br>or V <sub>CC</sub> - 0.1 V  |
|                  |                                      | 4.5                    | 2.25                   | 3.15              | 3.15                                  |      |   |
|                  |                                      | 5.5                    | 2.75                   | 3.85              | 3.85                                  |      |   |
| V <sub>IL</sub>  | Maximum Low Level<br>Input Voltage   | 3.0                    | 1.5                    | 0.9               | 0.9                                   | V    | V <sub>OUT</sub> = 0.1 V<br>or V <sub>CC</sub> - 0.1 V  |
|                  |                                      | 4.5                    | 2.25                   | 1.35              | 1.35                                  |      |   |
|                  |                                      | 5.5                    | 2.75                   | 1.65              | 1.65                                  |      |   |
| V <sub>OH</sub>  | Minimum High Level<br>Output Voltage | 3.0                    | 2.99                   | 2.9               | 2.9                                   | V    | I <sub>OUT</sub> = -50 μA   |
|                  |                                      | 4.5                    | 4.49                   | 4.4               | 4.4                                   |      |   |
|                  |                                      | 5.5                    | 5.49                   | 5.4               | 5.4                                   |      |   |
|                  |                                      | 3.0                    | -                      | 2.56              | 2.46                                  | V    | *V <sub>IN</sub> = V <sub>IL</sub> or V <sub>IH</sub><br>-12 mA<br>I <sub>OH</sub> -24 mA<br>-24 mA   |
|                  |                                      | 4.5                    | -                      | 3.86              | 3.76                                  |      |   |
|                  |                                      | 5.5                    | -                      | 4.86              | 4.76                                  |      |   |
| V <sub>OL</sub>  | Maximum Low Level<br>Output Voltage  | 3.0                    | 0.002                  | 0.1               | 0.1                                   | V    | I <sub>OUT</sub> = 50 μA  |
|                  |                                      | 4.5                    | 0.001                  | 0.1               | 0.1                                   |      |   |
|                  |                                      | 5.5                    | 0.001                  | 0.1               | 0.1                                   |      |   |
|                  |                                      | 3.0                    | -                      | 0.36              | 0.44                                  | V    | *V <sub>IN</sub> = V <sub>IL</sub> or V <sub>IH</sub><br>12 mA<br>I <sub>OL</sub> 24 mA<br>24 mA  |
|                  |                                      | 4.5                    | -                      | 0.36              | 0.44                                  |      |   |
|                  |                                      | 5.5                    | -                      | 0.36              | 0.44                                  |      |   |
| I <sub>IN</sub>  | Maximum Input<br>Leakage Current     | 5.5                    | -                      | ±0.1              | ±1.0                                  | μA   | V <sub>I</sub> = V <sub>CC</sub> , GND  |
| I <sub>OZ</sub>  | Maximum<br>3-State<br>Current        | 5.5                    | -                      | ±0.5              | ±5.0                                  | μA   | V <sub>I</sub> (OE) = V <sub>IL</sub> , V <sub>IH</sub><br>V <sub>I</sub> = V <sub>CC</sub> , GND<br>V <sub>O</sub> = V <sub>CC</sub> , GND |
| I <sub>OLD</sub> | †Minimum Dynamic<br>Output Current   | 5.5                    | -                      | -                 | 75                                    | mA   | V <sub>OLD</sub> = 1.65 V Max   |
| I <sub>OHD</sub> |                                      | 5.5                    | -                      | -                 | -75                                   | mA   | V <sub>OHD</sub> = 3.85 V Min   |
| I <sub>CC</sub>  | Maximum Quiescent<br>Supply Current  | 5.5                    | -                      | 8.0               | 80                                    | μA   | V <sub>IN</sub> = V <sub>CC</sub> or GND  |

\*All outputs loaded; thresholds on input associated with output under test.

†Maximum test duration 2.0 ms, one output loaded at a time.

NOTE: I<sub>IN</sub> and I<sub>CC</sub> @ 3.0 V are guaranteed to be less than or equal to the respective limit @ 5.5 V V<sub>CC</sub>.

# MC74AC253, MC74ACT253

**AC CHARACTERISTICS** (For Figures and Waveforms – See Section 3 of the ON Semiconductor FACT Data Book, DL138/D)

| Symbol           | Parameter   | V <sub>CC</sub> *<br>(V) | 74AC   |        |              | 74AC   |              | Unit | Fig. No. |
|------------------|---|--------------------------|--|--------|--------------|--|--------------|------|----------|
|                  |   |                          | T <sub>A</sub> = +25°C<br>C <sub>L</sub> = 50 pF |        |              | T <sub>A</sub> = -40°C<br>to +85°C<br>C <sub>L</sub> = 50 pF |              |      |          |
|                  |   |                          | Min  | Typ    | Max          | Min  | Max          |      |          |
| t <sub>PLH</sub> | Propagation Delay<br>S <sub>n</sub> to Z <sub>n</sub> | 3.3<br>5.0               | 2.0<br>2.0                                       | –<br>– | 15.5<br>11.0 | 2.0<br>1.5   | 17.5<br>12.5 | ns   | 3–6      |
| t <sub>PHL</sub> | Propagation Delay<br>S <sub>n</sub> to Z <sub>n</sub> | 3.3<br>5.0               | 2.5<br>2.0                                       | –<br>– | 16.0<br>11.5 | 2.0<br>1.5   | 18.0<br>13.0 | ns   | 3–6      |
| t <sub>PLH</sub> | Propagation Delay<br>I <sub>n</sub> to Z <sub>n</sub> | 3.3<br>5.0               | 1.5<br>1.5                                       | –<br>– | 14.5<br>10.0 | 1.5<br>1.5   | 17.0<br>11.5 | ns   | 3–5      |
| t <sub>PHL</sub> | Propagation Delay<br>I <sub>n</sub> to Z <sub>n</sub> | 3.3<br>5.0               | 2.0<br>1.5                                       | –<br>– | 13.0<br>9.5  | 1.5<br>1.5   | 15.0<br>11.0 | ns   | 3–5      |
| t <sub>PZH</sub> | Output Enable Time                                    | 3.3<br>5.0               | 1.5<br>1.5                                       | –<br>– | 8.0<br>6.0   | 1.0<br>1.0   | 8.5<br>6.5   | ns   | 3–7      |
| t <sub>PZL</sub> | Output Enable Time                                    | 3.3<br>5.0               | 1.5<br>1.5                                       | –<br>– | 8.0<br>6.0   | 1.0<br>1.0   | 9.0<br>7.0   | ns   | 3–8      |
| t <sub>PHZ</sub> | Output Disable Time                                   | 3.3<br>5.0               | 2.0<br>2.0                                       | –<br>– | 9.5<br>8.0   | 1.5<br>1.5   | 10.0<br>8.5  | ns   | 3–7      |
| t <sub>PLZ</sub> | Output Disable Time                                   | 3.3<br>5.0               | 1.5<br>1.5                                       | –<br>– | 8.0<br>7.0   | 1.0<br>1.0   | 9.0<br>7.5   | ns   | 3–8      |

\*Voltage Range 3.3 V is 3.3 V ±0.3 V.

\*Voltage Range 5.0 V is 5.0 V ±0.5 V.

# MC74AC253, MC74ACT253

## DC CHARACTERISTICS

| Symbol             | Parameter                              | V <sub>CC</sub><br>(V) | 74ACT                  |                   | 74ACT                                 | Unit | Conditions  |
|--------------------|--|------------------------|------------------------|-------------------|---------------------------------------|------|---|
|                    |  |                        | T <sub>A</sub> = +25°C |                   | T <sub>A</sub> =<br>-40°C to<br>+85°C |      |   |
|                    |  |                        | Typ                    | Guaranteed Limits |                                       |      |   |
| V <sub>IH</sub>    | Minimum High Level<br>Input Voltage    | 4.5                    | 1.5                    | 2.0               | 2.0                                   | V    | V <sub>OUT</sub> = 0.1 V<br>or V <sub>CC</sub> - 0.1 V  |
|                    |  | 5.5                    | 1.5                    | 2.0               | 2.0                                   |      |   |
| V <sub>IL</sub>    | Maximum Low Level<br>Input Voltage     | 4.5                    | 1.5                    | 0.8               | 0.8                                   | V    | V <sub>OUT</sub> = 0.1 V<br>or V <sub>CC</sub> - 0.1 V  |
|                    |  | 5.5                    | 1.5                    | 0.8               | 0.8                                   |      |   |
| V <sub>OH</sub>    | Minimum High Level<br>Output Voltage   | 4.5                    | 4.49                   | 4.4               | 4.4                                   | V    | I <sub>OUT</sub> = -50 μA   |
|                    |  | 5.5                    | 5.49                   | 5.4               | 5.4                                   |      |   |
|                    |  | 4.5                    | -                      | 3.86              | 3.76                                  | V    | *V <sub>IN</sub> = V <sub>IL</sub> or V <sub>IH</sub><br>-24 mA<br>I <sub>OH</sub> -24 mA   |
|                    |  | 5.5                    | -                      | 4.86              | 4.76                                  |      |   |
| V <sub>OL</sub>    | Maximum Low Level<br>Output Voltage    | 4.5                    | 0.001                  | 0.1               | 0.1                                   | V    | I <sub>OUT</sub> = 50 μA  |
|                    |  | 5.5                    | 0.001                  | 0.1               | 0.1                                   |      |   |
|                    |  | 4.5                    | -                      | 0.36              | 0.44                                  | V    | *V <sub>IN</sub> = V <sub>IL</sub> or V <sub>IH</sub><br>24 mA<br>I <sub>OL</sub> 24 mA   |
|                    |  | 5.5                    | -                      | 0.36              | 0.44                                  |      |   |
| I <sub>IN</sub>    | Maximum Input<br>Leakage Current       | 5.5                    | -                      | ±0.1              | ±1.0                                  | μA   | V <sub>I</sub> = V <sub>CC</sub> , GND  |
| ΔI <sub>CC</sub> T | Additional Max. I <sub>CC</sub> /Input | 5.5                    | 0.6                    | -                 | 1.5                                   | mA   | V <sub>I</sub> = V <sub>CC</sub> - 2.1 V  |
| I <sub>OZ</sub>    | Maximum<br>3-State<br>Current          | 5.5                    | -                      | ±0.5              | ±5.0                                  | μA   | V <sub>I</sub> (OE) = V <sub>IL</sub> , V <sub>IH</sub><br>V <sub>I</sub> = V <sub>CC</sub> , GND<br>V <sub>O</sub> = V <sub>CC</sub> , GND |
| I <sub>OLD</sub>   | †Minimum Dynamic<br>Output Current     | 5.5                    | -                      | -                 | 75                                    | mA   | V <sub>OLD</sub> = 1.65 V Max   |
| I <sub>OHD</sub>   |  | 5.5                    | -                      | -                 | -75                                   | mA   | V <sub>OHD</sub> = 3.85 V Min   |
| I <sub>CC</sub>    | Maximum Quiescent<br>Supply Current    | 5.5                    | -                      | 8.0               | 80                                    | μA   | V <sub>IN</sub> = V <sub>CC</sub> or GND  |

\*All outputs loaded; thresholds on input associated with output under test.

†Maximum test duration 2.0 ms, one output loaded at a time.

# MC74AC253, MC74ACT253

**AC CHARACTERISTICS** (For Figures and Waveforms – See Section 3 of the ON Semiconductor FACT Data Book, DL138/D)

| Symbol           | Parameter   | V <sub>CC</sub> * (V) | 74ACT  |     |      | 74ACT  |      | Unit | Fig. No. |
|------------------|---|-----------------------|--|-----|------|--|------|------|----------|
|                  |   |                       | T <sub>A</sub> = +25°C<br>C <sub>L</sub> = 50 pF |     |      | T <sub>A</sub> = –40°C<br>to +85°C<br>C <sub>L</sub> = 50 pF |      |      |          |
|                  |   |                       | Min  | Typ | Max  | Min  | Max  |      |          |
| t <sub>PLH</sub> | Propagation Delay<br>S <sub>n</sub> to Z <sub>n</sub> | 5.0                   | 2.0  | –   | 11.5 | 2.0  | 13.0 | ns   | 3–6      |
| t <sub>PHL</sub> | Propagation Delay<br>S <sub>n</sub> to Z <sub>n</sub> | 5.0                   | 3.0  | –   | 13.0 | 2.5  | 14.5 | ns   | 3–6      |
| t <sub>PLH</sub> | Propagation Delay<br>I <sub>n</sub> to Z <sub>n</sub> | 5.0                   | 2.5  | –   | 10.0 | 2.0  | 11.0 | ns   | 3–5      |
| t <sub>PHL</sub> | Propagation Delay<br>I <sub>n</sub> to Z <sub>n</sub> | 5.0                   | 3.5  | –   | 11.0 | 3.0  | 12.5 | ns   | 3–5      |
| t <sub>PZH</sub> | Output Enable Time                                    | 5.0                   | 2.0  | –   | 7.5  | 1.5  | 8.5  | ns   | 3–7      |
| t <sub>PZL</sub> | Output Enable Time                                    | 5.0                   | 2.0  | –   | 8.0  | 1.5  | 9.0  | ns   | 3–8      |
| t <sub>PHZ</sub> | Output Disable Time                                   | 5.0                   | 3.0  | –   | 9.5  | 2.5  | 10.0 | ns   | 3–7      |
| t <sub>PLZ</sub> | Output Disable Time                                   | 5.0                   | 2.5  | –   | 7.5  | 2.0  | 8.5  | ns   | 3–8      |

\* Voltage Range 5.0 V is 5.0 V ±0.5 V.

## CAPACITANCE

| Symbol          | Parameter                     | Value Typ | Unit | Test Conditions         |
|-----------------|-------------------------------|-----------|------|-------------------------|
| C <sub>IN</sub> | Input Capacitance             | 4.5       | pF   | V <sub>CC</sub> = 5.0 V |
| C <sub>PD</sub> | Power Dissipation Capacitance | 50        | pF   | V <sub>CC</sub> = 5.0 V |

## ORDERING INFORMATION

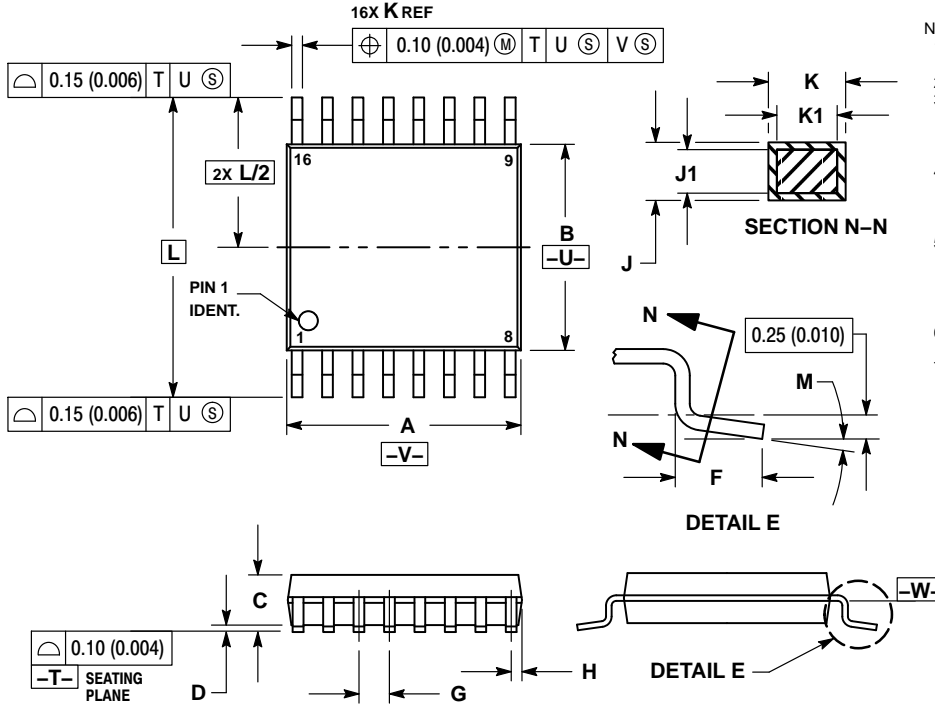
| Device Order Number | Package               | Shipping†        |
|---------------------|-----------------------|------------------|
| MC74AC253DG         | SOIC–16<br>(Pb–Free)  | 48 Units / Rail  |
| MC74AC253DR2G       | SOIC–16<br>(Pb–Free)  | 2500 Tape & Reel |
| MC74AC253DTR2G      | TSSOP–16<br>(Pb–Free) | 2500 Tape & Reel |
| MC74ACT253DG        | SOIC–16<br>(Pb–Free)  | 48 Units / Rail  |
| MC74ACT253DR2G      | SOIC–16<br>(Pb–Free)  | 2500 Tape & Reel |
| MC74ACT253DTR2G     | TSSOP–16<br>(Pb–Free) | 2500 Tape & Reel |

†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.

# MC74AC253, MC74ACT253

## PACKAGE DIMENSIONS

TSSOP-16  
DT SUFFIX  
CASE 948F  
ISSUE B

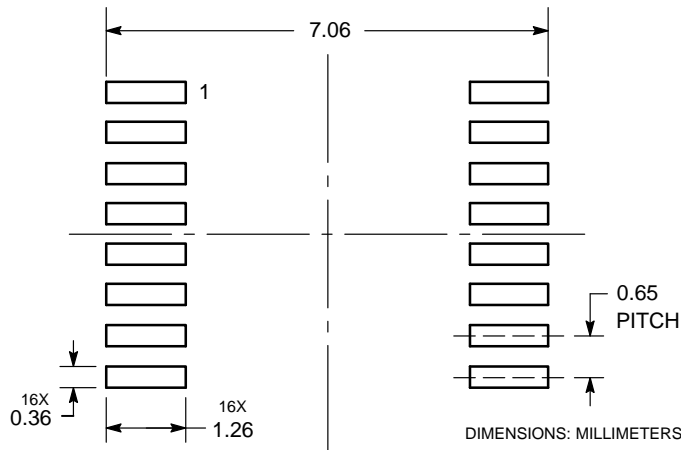


**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION A DOES NOT INCLUDE MOLD FLASH. PROTRUSIONS OR GATE BURRS. MOLD FLASH OR GATE BURRS SHALL NOT EXCEED 0.15 (0.006) PER SIDE.
4. DIMENSION B DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.25 (0.010) PER SIDE.
5. DIMENSION K DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.08 (0.003) TOTAL IN EXCESS OF THE K DIMENSION AT MAXIMUM MATERIAL CONDITION.
6. TERMINAL NUMBERS ARE SHOWN FOR REFERENCE ONLY.
7. DIMENSION A AND B ARE TO BE DETERMINED AT DATUM PLANE -W-.

| DIM | MILLIMETERS |      | INCHES    |       |
|-----|-------------|------|-----------|-------|
|     | MIN         | MAX  | MIN       | MAX   |
| A   | 4.90        | 5.10 | 0.193     | 0.200 |
| B   | 4.30        | 4.50 | 0.169     | 0.177 |
| C   | ---         | 1.20 | ---       | 0.047 |
| D   | 0.05        | 0.15 | 0.002     | 0.006 |
| F   | 0.50        | 0.75 | 0.020     | 0.030 |
| G   | 0.65 BSC    |      | 0.026 BSC |       |
| H   | 0.18        | 0.28 | 0.007     | 0.011 |
| J   | 0.09        | 0.20 | 0.004     | 0.008 |
| J1  | 0.09        | 0.16 | 0.004     | 0.006 |
| K   | 0.19        | 0.30 | 0.007     | 0.012 |
| K1  | 0.19        | 0.25 | 0.007     | 0.010 |
| L   | 6.40 BSC    |      | 0.252 BSC |       |
| M   | 0°          | 8°   | 0°        | 8°    |

**SOLDERING FOOTPRINT\***

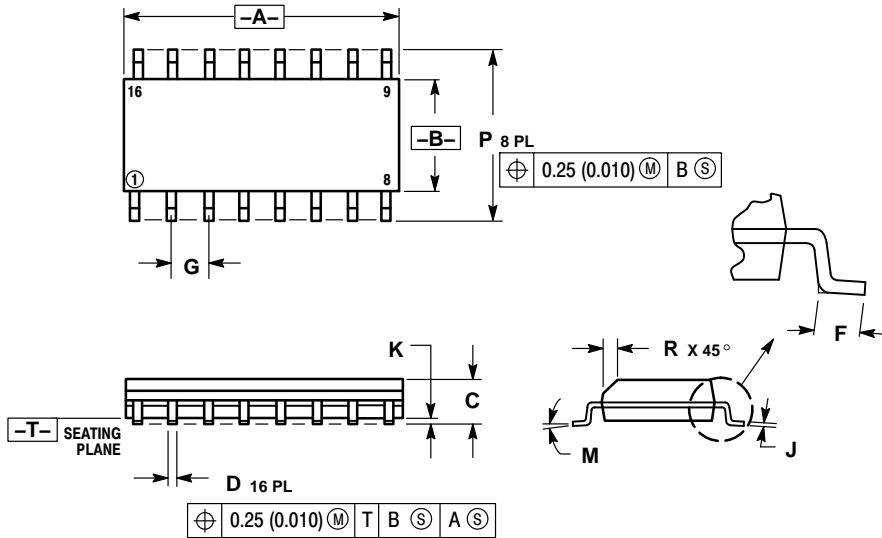


\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

# MC74AC253, MC74ACT253

## PACKAGE DIMENSIONS

SOIC-16  
D SUFFIX  
CASE 751B-05  
ISSUE K

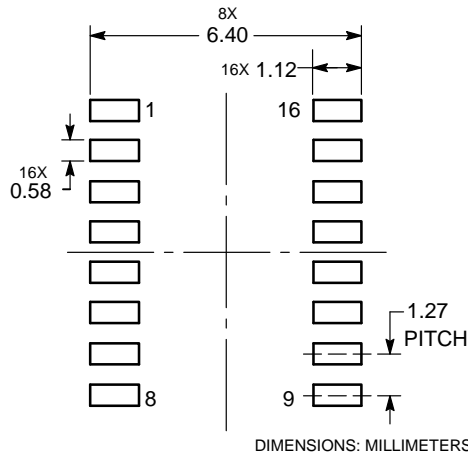


### NOTES:

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\*



\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

ON Semiconductor and the are registered trademarks of Semiconductor Components Industries, LLC (SCILLC) or its subsidiaries in the United States and/or other countries. SCILLC owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of SCILLC's product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

### PUBLICATION ORDERING INFORMATION

**LITERATURE FULFILLMENT:**  
Literature Distribution Center for ON Semiconductor  
P.O. Box 5163, Denver, Colorado 80217 USA  
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada  
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada  
Email: [orderlit@onsemi.com](mailto:orderlit@onsemi.com)

**N. American Technical Support:** 800-282-9855 Toll Free  
USA/Canada  
**Europe, Middle East and Africa Technical Support:**  
Phone: 421 33 790 2910  
**Japan Customer Focus Center**  
Phone: 81-3-5817-1050

**ON Semiconductor Website:** [www.onsemi.com](http://www.onsemi.com)  
**Order Literature:** <http://www.onsemi.com/orderlit>  
For additional information, please contact your local Sales Representative

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

 [View MC74AC253DR2G on WIN SOURCE](#)

 [ON Semiconductor](#) Information

## Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management