

# MC74AC540, MC74ACT540, MC74AC541, MC74ACT541

## Octal Buffer/Line Driver with 3-State Outputs

The MC74AC540/74ACT540 and MC74AC541/74ACT541 are octal buffer/line drivers designed to be employed as memory and address drivers, clock drivers and bus oriented transmitter/receivers. The MC74AC541/74ACT541 is a noninverting option of the MC74AC540/74ACT540.

These devices are similar in function to the MC74AC240/74ACT240 and MC74AC244/74ACT244 while providing flow-through architecture (inputs on opposite side from outputs). This pinout arrangement makes these devices especially useful as output ports for microprocessors, allowing ease of layout and greater PC board density.

- 3-State Outputs
- Inputs and Outputs Opposite Side of Package, Allowing Easier Interface to Microprocessors
- Outputs Source/Sink 24 mA
- MC74AC540/74ACT540 Provides Inverted Outputs
- MC74AC541/74ACT541 Provides Noninverted Outputs
- 'ACT540 and 'ACT541 Have TTL Compatible Inputs

### TRUTH TABLE

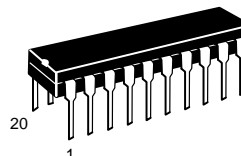
| Inputs            |                   |   | Outputs |      |
|-------------------|-------------------|---|---------|------|
| $\overline{OE}_1$ | $\overline{OE}_2$ | D | '540    | '541 |
| L                 | L                 | H | L       | H    |
| H                 | X                 | X | Z       | Z    |
| X                 | H                 | X | Z       | Z    |
| L                 | L                 | L | H       | L    |

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

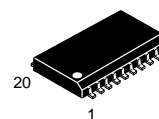


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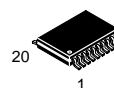
<http://onsemi.com>



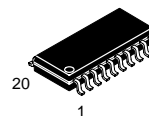
PDIP-20  
N SUFFIX  
CASE 738



SO-20  
DW SUFFIX  
CASE 751



TSSOP-20  
DT SUFFIX  
CASE 948E



EIAJ-20  
M SUFFIX  
CASE 967

### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 8 of this data sheet.

### DEVICE MARKING INFORMATION

See general marking information in the device marking section on page 9 of this data sheet.

# MC74AC540, MC74ACT540, MC74AC541, MC74ACT541

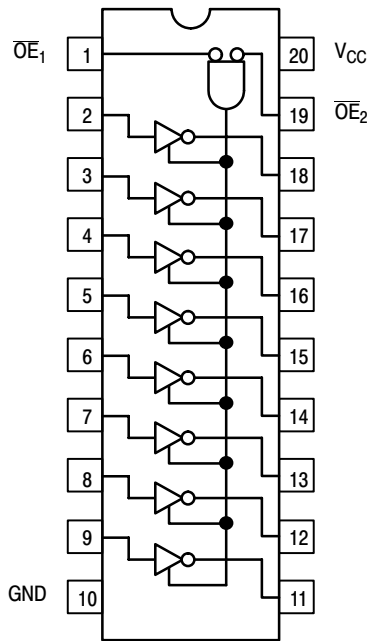


Figure 1. MC74AC540/74ACT540

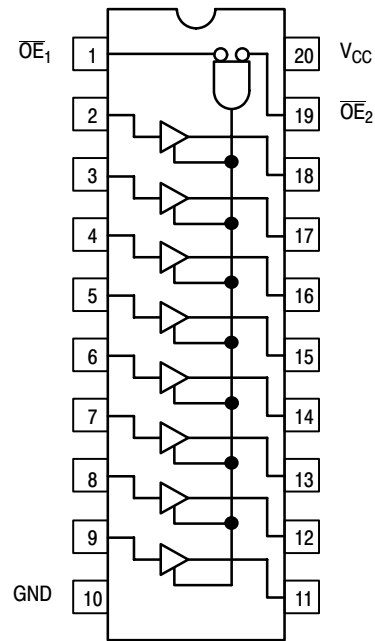


Figure 2. MC74AC541/74ACT541

## MAXIMUM RATINGS\*

| Symbol    | Parameter                                 | Value                  | Unit               |
|-----------|---|------------------------|--------------------|
| $V_{CC}$  | DC Supply Voltage (Referenced to GND)     | -0.5 to +7.0           | V                  |
| $V_{IN}$  | DC Input Voltage (Referenced to GND)      | -0.5 to $V_{CC} + 0.5$ | V                  |
| $V_{OUT}$ | DC Output Voltage (Referenced to GND)     | -0.5 to $V_{CC} + 0.5$ | V                  |
| $I_{IN}$  | DC Input Current, per Pin                 | $\pm 20$               | mA                 |
| $I_{OUT}$ | DC Output Sink/Source Current, per Pin    | $\pm 50$               | mA                 |
| $I_{CC}$  | DC $V_{CC}$ or GND Current per Output Pin | $\pm 50$               | mA                 |
| $T_{stg}$ | Storage Temperature                       | -65 to +150            | $^{\circ}\text{C}$ |

\*Maximum Ratings are those values beyond which damage to the device may occur. Functional operation should be restricted to the Recommended Operating Conditions.

# MC74AC540, MC74ACT540, MC74AC541, MC74ACT541

## 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>J</sub>                     | Junction Temperature (PDIP)  | –                       | –   | 140             | °C   |      |
| 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   |      |

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.

# MC74AC540, MC74ACT540, MC74AC541, MC74ACT541

## 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>.

# MC74AC540, MC74ACT540, MC74AC541, MC74ACT541

**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>Data to Output ('AC540) | 3.3<br>5.0               | 1.5<br>1.5                                       | 5.5<br>4.0 | 7.5<br>6.0  | 1.0<br>1.0   | 8.0<br>6.5  | ns   | 3-5      |
| t <sub>PHL</sub> | Propagation Delay<br>Data to Output ('AC540) | 3.3<br>5.0               | 1.5<br>1.5                                       | 5.0<br>4.0 | 7.0<br>5.5  | 1.0<br>1.0   | 7.5<br>6.0  | ns   | 3-5      |
| t <sub>PZH</sub> | Output Enable Time<br>( 'AC540)              | 3.3<br>5.0               | 3.0<br>2.0                                       | 8.5<br>6.5 | 11<br>8.5   | 2.5<br>2.0   | 12<br>9.5   | ns   | 3-7      |
| t <sub>PZL</sub> | Output Enable Time<br>( 'AC540)              | 3.3<br>5.0               | 2.5<br>2.0                                       | 7.5<br>6.0 | 10<br>7.5   | 2.0<br>1.5   | 11<br>8.5   | ns   | 3-8      |
| t <sub>PHZ</sub> | Output Disable Time<br>( 'AC540)             | 3.3<br>5.0               | 2.5<br>1.5                                       | 8.5<br>7.5 | 13<br>10.5  | 1.5<br>1.0   | 14<br>11    | ns   | 3-7      |
| t <sub>PLZ</sub> | Output Disable Time<br>( 'AC540)             | 3.3<br>5.0               | 2.0<br>1.5                                       | 7.0<br>6.0 | 10<br>8.0   | 2.0<br>1.5   | 11<br>9.0   | ns   | 3-8      |
| t <sub>PLH</sub> | Propagation Delay<br>Data to Output ('AC541) | 3.3<br>5.0               | 2.0<br>1.5                                       | 5.5<br>4.0 | 8.0<br>6.0  | 1.5<br>1.0   | 9.0<br>6.5  | ns   | 3-5      |
| t <sub>PHL</sub> | Propagation Delay<br>Data to Output ('AC541) | 3.3<br>5.0               | 2.0<br>1.5                                       | 5.5<br>4.0 | 8.0<br>6.0  | 1.5<br>1.0   | 8.5<br>6.5  | ns   | 3-5      |
| t <sub>PZH</sub> | Output Enable Time<br>( 'AC541)              | 3.3<br>5.0               | 3.0<br>2.0                                       | 8.0<br>6.0 | 11.5<br>8.5 | 3.0<br>1.5   | 12.5<br>9.5 | ns   | 3-7      |
| t <sub>PZL</sub> | Output Enable Time<br>( 'AC541)              | 3.3<br>5.0               | 2.5<br>1.5                                       | 7.0<br>5.5 | 10<br>7.5   | 2.5<br>1.0   | 11.5<br>8.5 | ns   | 3-8      |
| t <sub>PHZ</sub> | Output Disable Time<br>( 'AC541)             | 3.3<br>5.0               | 3.5<br>2.0                                       | 9.0<br>7.0 | 12.5<br>9.5 | 2.5<br>1.0   | 14<br>10.5  | ns   | 3-7      |
| t <sub>PLZ</sub> | Output Disable Time<br>( 'AC541)             | 3.3<br>5.0               | 2.5<br>2.0                                       | 6.5<br>5.5 | 9.5<br>7.5  | 2.0<br>1.0   | 10.5<br>8.5 | 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.

# MC74AC540, MC74ACT540, MC74AC541, MC74ACT541

## 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   |            |
|                   |  | 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  |            |
|                   |  | 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>CCT</sub> | 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.

# MC74AC540, MC74ACT540, MC74AC541, MC74ACT541

**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) | 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>Data to Output ('ACT540) | 5.0                      | 1.0  | –   | 7.0  | 1.0  | 7.5  | ns   | 3–5      |
| t <sub>PHL</sub> | Propagation Delay<br>Data to Output ('ACT540) | 5.0                      | 1.0  | –   | 8.0  | 1.0  | 8.5  | ns   | 3–5      |
| t <sub>PZH</sub> | Output Enable Time<br>(‘ACT540)               | 5.0                      | 1.0  | –   | 10.5 | 1.0  | 11.5 | ns   | 3–7      |
| t <sub>PZL</sub> | Output Enable Time<br>(‘ACT540)               | 5.0                      | 1.0  | –   | 9.5  | 1.0  | 10.5 | ns   | 3–8      |
| t <sub>PHZ</sub> | Output Disable Time<br>(‘ACT540)              | 5.0                      | 1.0  | –   | 12.0 | 1.0  | 12.5 | ns   | 3–7      |
| t <sub>PLZ</sub> | Output Disable Time<br>(‘ACT540)              | 5.0                      | 1.5  | –   | 9.0  | 1.0  | 10   | ns   | 3–8      |
| t <sub>PLH</sub> | Propagation Delay<br>Data to Output ('ACT541) | 5.0                      | 1.5  | –   | 7.5  | 1.0  | 8.0  | ns   | 3–5      |
| t <sub>PHL</sub> | Propagation Delay<br>Data to Output ('ACT541) | 5.0                      | 1.5  | –   | 7.5  | 1.0  | 8.0  | ns   | 3–5      |
| t <sub>PZH</sub> | Output Enable Time<br>(‘ACT541)               | 5.0                      | 2.0  | –   | 10.0 | 1.0  | 11.0 | ns   | 3–7      |
| t <sub>PZL</sub> | Output Enable Time<br>(‘ACT541)               | 5.0                      | 1.5  | –   | 9.5  | 1.0  | 10.5 | ns   | 3–8      |
| t <sub>PHZ</sub> | Output Disable Time<br>(‘ACT541)              | 5.0                      | 2.0  | –   | 11.0 | 1.0  | 12.0 | ns   | 3–7      |
| t <sub>PLZ</sub> | Output Disable Time<br>(‘ACT541)              | 5.0                      | 2.0  | –   | 9.0  | 1.0  | 10   | ns   | 3–8      |

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

## CAPACITANCE

| Symbol          | Parameter                     | Value<br>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 | 30           | pF   | V <sub>CC</sub> = 5.0 V |

# MC74AC540, MC74ACT540, MC74AC541, MC74ACT541

## ORDERING INFORMATION

| Device         | Package  | Shipping         |
|----------------|----------|------------------|
| MC74AC540N     | PDIP-20  | 18 Units/Rail    |
| MC74ACT540N    | PDIP-20  | 18 Units/Rail    |
| MC74AC540DW    | SOIC-20  | 38 Units/Rail    |
| MC74AC540DWR2  | SOIC-20  | 1000 Tape & Reel |
| MC74ACT540DW   | SOIC-20  | 38 Units/Rail    |
| MC74ACT540DWR2 | SOIC-20  | 1000 Tape & Reel |
| MC74AC540DT    | TSSOP-20 | 75 Units/Rail    |
| MC74AC540DTR2  | TSSOP-20 | 2500 Tape & Reel |
| MC74ACT540DT   | TSSOP-20 | 75 Units/Rail    |
| MC74ACT540DTR2 | TSSOP-20 | 2500 Tape & Reel |
| MC74AC540M     | EIAJ-20  | 40 Units/Rail    |
| MC74ACT540M    | EIAJ-20  | 40 Units/Rail    |
| MC74ACT540MEL  | EIAJ-20  | 2000 Tape & Reel |
| MC74AC541N     | PDIP-20  | 18 Units/Rail    |
| MC74ACT541N    | PDIP-20  | 18 Units/Rail    |
| MC74AC541DW    | SOIC-20  | 38 Units/Rail    |
| MC74AC541DWR2  | SOIC-20  | 1000 Tape & Reel |
| MC74ACT541DW   | SOIC-20  | 38 Units/Rail    |
| MC74ACT541DWR2 | SOIC-20  | 1000 Tape & Reel |
| MC74AC541DT    | TSSOP-20 | 75 Units/Rail    |
| MC74AC541DTR2  | TSSOP-20 | 2500 Tape & Reel |
| MC74ACT541DT   | TSSOP-20 | 75 Units/Rail    |
| MC74ACT541DTR2 | TSSOP-20 | 2500 Tape & Reel |
| MC74AC541M     | EIAJ-20  | 40 Units/Rail    |
| MC74AC541MEL   | EIAJ-20  | 2000 Tape & Reel |
| MC74ACT541M    | EIAJ-20  | 40 Units/Rail    |
| MC74ACT541MEL  | EIAJ-20  | 2000 Tape & Reel |



# MC74AC540, MC74ACT540, MC74AC541, MC74ACT541

## MARKING DIAGRAMS

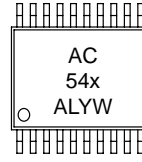
PDIP-20



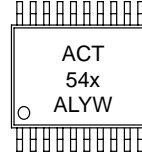
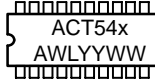
SO-20



TSSOP-20



EIAJ-20

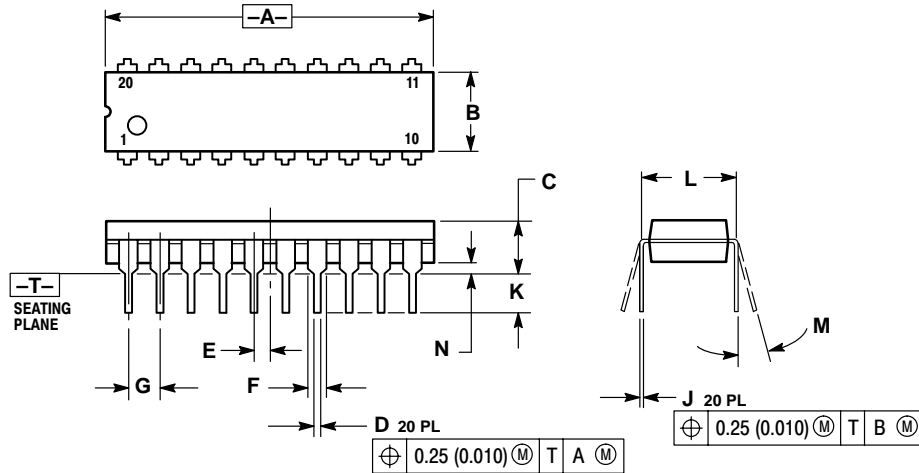


- x = 0 or 1
- A = Assembly Location
- WL, L = Wafer Lot
- YY, Y = Year
- WW, W = Work Week

# MC74AC540, MC74ACT540, MC74AC541, MC74ACT541

## PACKAGE DIMENSIONS

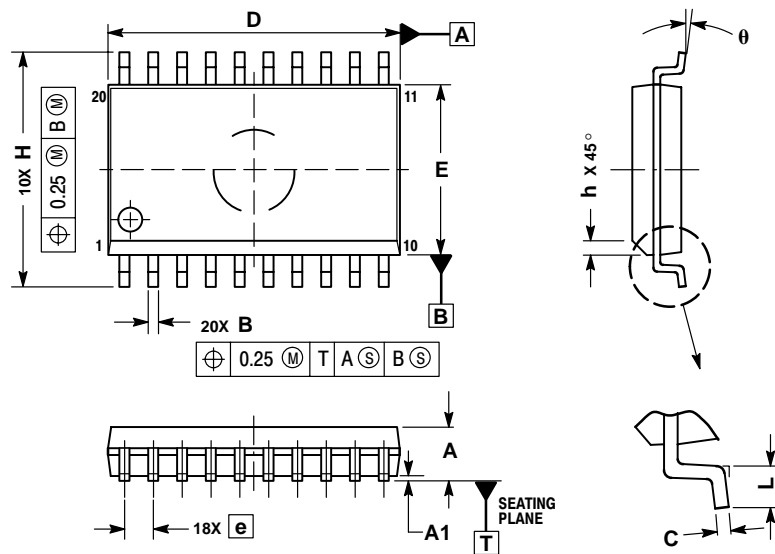
**PDIP-20**  
**N SUFFIX**  
 20 PIN PLASTIC DIP PACKAGE  
 CASE 738-03  
 ISSUE E



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

| DIM | INCHES    |       | MILLIMETERS |       |
|-----|-----------|-------|-------------|-------|
|     | MIN       | MAX   | MIN         | MAX   |
| A   | 1.010     | 1.070 | 25.66       | 27.17 |
| B   | 0.240     | 0.260 | 6.10        | 6.60  |
| C   | 0.150     | 0.180 | 3.81        | 4.57  |
| D   | 0.015     | 0.022 | 0.39        | 0.55  |
| E   | 0.050 BSC |       | 1.27 BSC    |       |
| F   | 0.050     | 0.070 | 1.27        | 1.77  |
| G   | 0.100 BSC |       | 2.54 BSC    |       |
| J   | 0.008     | 0.015 | 0.21        | 0.38  |
| K   | 0.110     | 0.140 | 2.80        | 3.55  |
| L   | 0.300 BSC |       | 7.62 BSC    |       |
| M   | 0°        | 15°   | 0°          | 15°   |
| N   | 0.020     | 0.040 | 0.51        | 1.01  |

**SO-20**  
**DW SUFFIX**  
 20 PIN PLASTIC SOIC PACKAGE  
 CASE 751D-05  
 ISSUE F

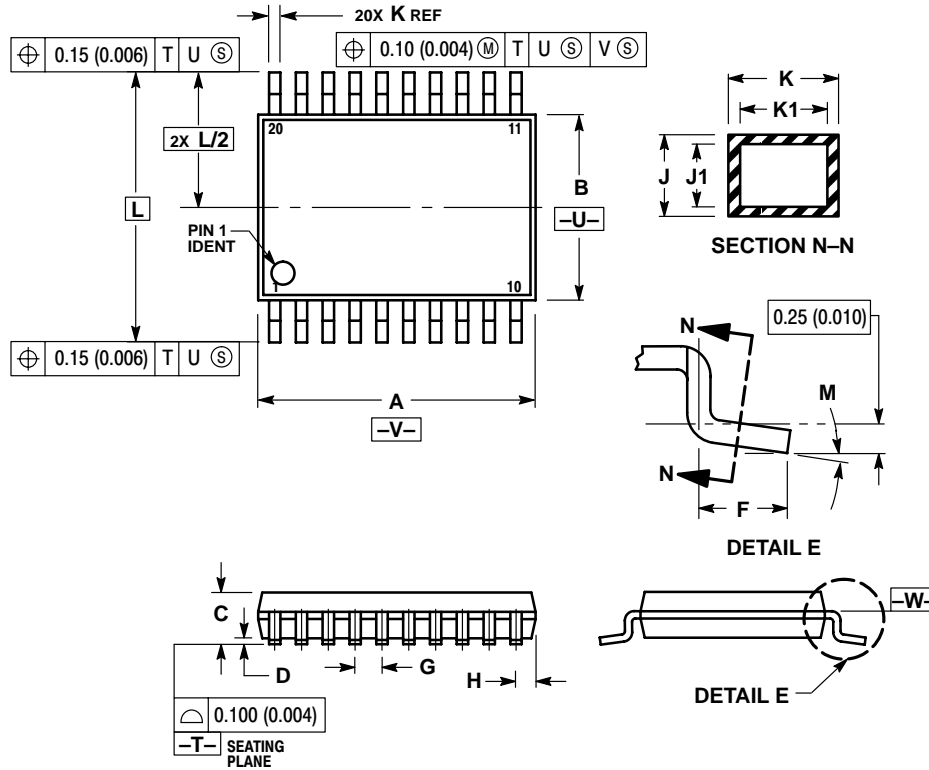


- NOTES:
1. DIMENSIONS ARE IN MILLIMETERS.
  2. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M, 1994.
  3. DIMENSIONS D AND E DO NOT INCLUDE MOLD PROTRUSION.
  4. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.
  5. DIMENSION B DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE PROTRUSION SHALL BE 0.13 TOTAL IN EXCESS OF B DIMENSION AT MAXIMUM MATERIAL CONDITION.

| DIM      | MILLIMETERS |       |
|----------|-------------|-------|
|          | MIN         | MAX   |
| A        | 2.35        | 2.65  |
| A1       | 0.10        | 0.25  |
| B        | 0.35        | 0.49  |
| C        | 0.23        | 0.32  |
| D        | 12.65       | 12.95 |
| E        | 7.40        | 7.60  |
| e        | 1.27 BSC    |       |
| H        | 10.05       | 10.55 |
| h        | 0.25        | 0.75  |
| L        | 0.50        | 0.90  |
| $\theta$ | 0°          | 7°    |

# MC74AC540, MC74ACT540, MC74AC541, MC74ACT541

## TSSOP-20 DT SUFFIX 20 PIN PLASTIC TSSOP PACKAGE CASE 948E-02 ISSUE A

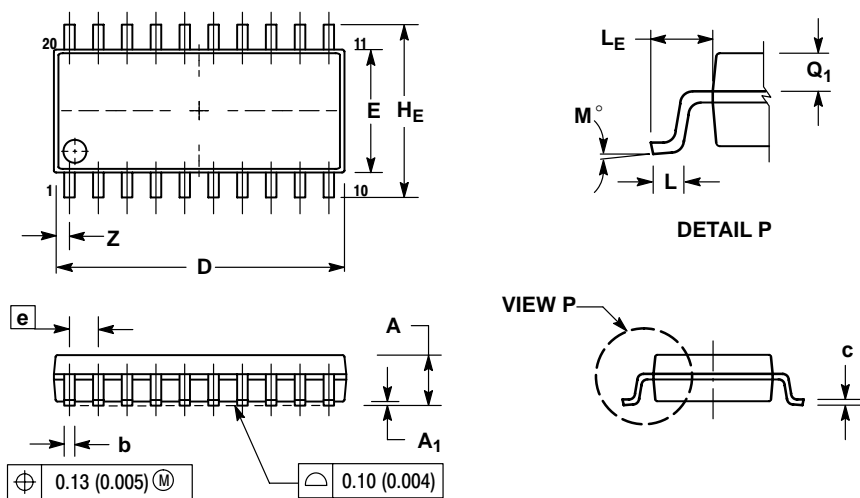


### NOTES:

- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
- CONTROLLING DIMENSION: MILLIMETER.
- 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.
- DIMENSION B DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.25 (0.010) PER SIDE.
- 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.
- TERMINAL NUMBERS ARE SHOWN FOR REFERENCE ONLY.
- DIMENSION A AND B ARE TO BE DETERMINED AT DATUM PLANE -W-.

| DIM | MILLIMETERS |      | INCHES    |       |
|-----|-------------|------|-----------|-------|
|     | MIN         | MAX  | MIN       | MAX   |
| A   | 6.40        | 6.60 | 0.252     | 0.260 |
| 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   | 0.27        | 0.37 | 0.011     | 0.015 |
| 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°    |


## EIAJ-20 M SUFFIX 20 PIN PLASTIC EIAJ PACKAGE CASE 967-01 ISSUE O



### NOTES:

- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
- CONTROLLING DIMENSION: MILLIMETER.
- DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS AND ARE MEASURED AT THE PARTING LINE. MOLD FLASH OR PROTRUSIONS SHALL NOT EXCEED 0.15 (0.006) PER SIDE.
- TERMINAL NUMBERS ARE SHOWN FOR REFERENCE ONLY.
- THE LEAD WIDTH DIMENSION (b) DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.08 (0.003) TOTAL IN EXCESS OF THE LEAD WIDTH DIMENSION AT MAXIMUM MATERIAL CONDITION. DAMBAR CANNOT BE LOCATED ON THE LOWER RADIUS OR THE FOOT. MINIMUM SPACE BETWEEN PROTRUSIONS AND ADJACENT LEAD TO BE 0.46 (0.018).

| DIM | MILLIMETERS |       | INCHES    |       |
|-----|-------------|-------|-----------|-------|
|     | MIN         | MAX   | MIN       | MAX   |
| A   | ---         | 2.05  | ---       | 0.081 |
| A1  | 0.05        | 0.20  | 0.002     | 0.008 |
| b   | 0.35        | 0.50  | 0.014     | 0.020 |
| c   | 0.18        | 0.27  | 0.007     | 0.011 |
| D   | 12.35       | 12.80 | 0.486     | 0.504 |
| E   | 5.10        | 5.45  | 0.201     | 0.215 |
| e   | 1.27 BSC    |       | 0.050 BSC |       |
| HE  | 7.40        | 8.20  | 0.291     | 0.323 |
| L   | 0.50        | 0.85  | 0.020     | 0.033 |
| LE  | 1.10        | 1.50  | 0.043     | 0.059 |
| M   | 0°          | 10°   | 0°        | 10°   |
| Q1  | 0.70        | 0.90  | 0.028     | 0.035 |
| Z   | ---         | 0.81  | ---       | 0.032 |

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