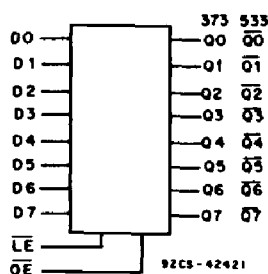


**CD54/74AC373, CD54/74AC533**  
**CD54/74ACT373, CD54/74ACT533**



## Octal Transparent Latch, 3-State

**CD54/74AC/ACT373 - Non-Inverting**

**CD54/74AC/ACT533 - Inverting**

### Type Features:

- Buffered inputs
- Typical propagation delay:  
4.3 ns @  $V_{CC} = 5\text{ V}$ ,  $T_A = 25^\circ\text{C}$ ,  $C_L = 50\text{ pF}$

### FUNCTIONAL DIAGRAM

The RCA-CD54/74AC373 and CD54/74AC533 and the CD54/74ACT373 and CD54/74ACT533 octal transparent 3-state latches use the RCA ADVANCED CMOS technology. The outputs are transparent to the inputs when the Latch Enable ( $\overline{LE}$ ) is HIGH. When the Latch Enable ( $\overline{LE}$ ) goes LOW, the data is latched. The Output Enable ( $\overline{OE}$ ) controls the 3-state outputs. When the Output Enable ( $\overline{OE}$ ) is HIGH, the outputs are in the high-impedance state. The latching operation is independent of the state of the Output Enable.

The CD74AC/ACT373 and CD74AC/ACT533 are supplied in 20-lead dual-in-line plastic packages (E suffix) and in 20-lead dual-in-line small-outline plastic packages (M suffix). Both package types are operable over the following temperature ranges: Commercial (0 to 70°C); Industrial (-40 to +85°C); and Extended Industrial/Military (-55 to +125°C).

The CD54AC/ACT373 and CD54AC/ACT533, available in chip form (H suffix), are operable over the -55 to +125°C temperature range.

### Family Features:

- Exceeds 2-kV ESD Protection - MIL-STD-883, Method 3015
- SCR-Latchup-resistant CMOS process and circuit design
- Speed of bipolar FAST\*/AS/S with significantly reduced power consumption
- Balanced propagation delays
- AC types feature 1.5-V to 5.5-V operation and balanced noise immunity at 30% of the supply
- $\pm 24$ -mA output drive current
  - Fanout to 15 FAST\* ICs
  - Drives 50-ohm transmission lines

\*FAST is a Registered Trademark of Fairchild Semiconductor Corp.

### TRUTH TABLE

| Output Enable | Latch Enable | Data | AC/ACT373 Output | AC/ACT533 Output |
|---------------|--------------|------|------------------|------------------|
| L             | H            | H    | H                | L                |
| L             | H            | L    | L                | H                |
| L             | L            | I    | L                | H                |
| L             | L            | h    | H                | L                |
| H             | X            | X    | Z                | Z                |

**Note:**

L = Low voltage level  
H = High voltage level  
I = Low voltage level one set-up  
time prior to the high to low  
latch enable transition

h = High voltage level one set-up time prior to the high to low latch enable transition.  
X = Don't Care  
Z = High Impedance State

# Technical Data

## CD54/74AC373, CD54/74AC533

## CD54/74ACT373, CD54/74ACT533

### MAXIMUM RATINGS, Absolute-Maximum Values:

|                                                                                                       |                                                     |
|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| DC SUPPLY-VOLTAGE ( $V_{CC}$ )                                                                        | -0.5 to 6 V                                         |
| DC INPUT DIODE CURRENT, $I_{IK}$ (for $V_i < -0.5$ V or $V_i > V_{CC} + 0.5$ V)                       | $\pm 20$ mA                                         |
| DC OUTPUT DIODE CURRENT, $I_{OK}$ (for $V_o < -0.5$ V or $V_o > V_{CC} + 0.5$ V)                      | $\pm 50$ mA                                         |
| DC OUTPUT SOURCE OR SINK CURRENT per Output Pin, $I_o$ (for $V_o > -0.5$ V or $V_o < V_{CC} + 0.5$ V) | $\pm 50$ mA                                         |
| DC $V_{CC}$ or GROUND CURRENT ( $I_{CC}$ or $I_{GND}$ )                                               | $\pm 100$ mA*                                       |
| POWER DISSIPATION PER PACKAGE ( $P_D$ ):                                                              |                                                     |
| For $T_A = -55$ to $+100^\circ\text{C}$ (PACKAGE TYPE E)                                              | 500 mW                                              |
| For $T_A = +100$ to $+125^\circ\text{C}$ (PACKAGE TYPE E)                                             | Derate Linearly at 8 mW/ $^\circ\text{C}$ to 300 mW |
| For $T_A = -55$ to $+70^\circ\text{C}$ (PACKAGE TYPE M)                                               | 400 mW                                              |
| For $T_A = +70$ to $+125^\circ\text{C}$ (PACKAGE TYPE M)                                              | Derate Linearly at 6 mW/ $^\circ\text{C}$ to 70 mW  |
| OPERATING-TEMPERATURE RANGE ( $T_A$ )                                                                 | -55 to $+125^\circ\text{C}$                         |
| STORAGE TEMPERATURE ( $T_{stg}$ )                                                                     | -65 to $+150^\circ\text{C}$                         |
| LEAD TEMPERATURE (DURING SOLDERING):                                                                  |                                                     |
| At distance $1/16 \pm 1/32$ in. (1.59 $\pm$ 0.79 mm) from case for 10 s maximum                       | $+265^\circ\text{C}$                                |
| Unit inserted into PC board min. thickness $1/16$ in. (1.59 mm) with solder contacting lead tips only | $+300^\circ\text{C}$                                |

\*For up to 4 outputs per device; add  $\pm 25$  mA for each additional output.

### RECOMMENDED OPERATING CONDITIONS:

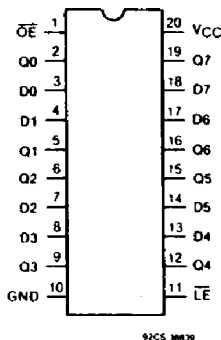
For maximum reliability, normal operating conditions should be selected so that operation is always within the following ranges:

| CHARACTERISTIC                                                                                                                        | LIMITS      |                | UNITS                |
|---------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------|----------------------|
|                                                                                                                                       | MIN.        | MAX.           |                      |
| Supply-Voltage Range, $V_{CC}$ *:<br>(For $T_A$ = Full Package-Temperature Range)<br>AC Types<br>ACT Types                            | 1.5<br>4.5  | 5.5<br>5.5     | V                    |
| DC Input or Output Voltage, $V_i$ , $V_o$                                                                                             | 0           | $V_{CC}$       | V                    |
| Operating Temperature, $T_A$                                                                                                          | -55         | $+125$         | $^\circ\text{C}$     |
| Input Rise and Fall Slew Rate, $dt/dv$<br>at 1.5 V to 3 V (AC Types)<br>at 3.6 V to 5.5 V (AC Types)<br>at 4.5 V to 5.5 V (ACT Types) | 0<br>0<br>0 | 50<br>20<br>10 | ns/V<br>ns/V<br>ns/V |

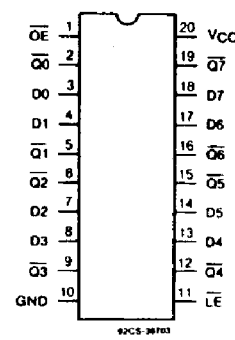
\*Unless otherwise specified, all voltages are referenced to ground.

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### TERMINAL ASSIGNMENT DIAGRAMS



CD54/74AC373, CD54/74ACT373



CD54/74AC533, CD54/74ACT533

# CD54/74AC373, CD54/74AC533 CD54/74ACT373, CD54/74ACT533

## STATIC ELECTRICAL CHARACTERISTICS: AC Series

| CHARACTERISTICS                                  | TEST CONDITIONS                                                                              |                        | V <sub>CC</sub><br>(V) | AMBIENT TEMPERATURE (T <sub>A</sub> ) - °C |      |            |      |             |      | UNITS |
|--------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------|------------------------|--------------------------------------------|------|------------|------|-------------|------|-------|
|                                                  |                                                                                              |                        |                        | +25                                        |      | -40 to +85 |      | -55 to +125 |      |       |
|                                                  | V <sub>I</sub><br>(V)                                                                        | I <sub>O</sub><br>(mA) |                        | MIN.                                       | MAX. | MIN.       | MAX. | MIN.        | MAX. |       |
| High-Level Input Voltage<br>V <sub>IH</sub>      |                                                                                              |                        | 1.5                    | 1.2                                        | —    | 1.2        | —    | 1.2         | —    | V     |
|                                                  |                                                                                              |                        | 3                      | 2.1                                        | —    | 2.1        | —    | 2.1         | —    |       |
|                                                  |                                                                                              |                        | 5.5                    | 3.85                                       | —    | 3.85       | —    | 3.85        | —    |       |
| Low-Level Input Voltage<br>V <sub>IL</sub>       |                                                                                              |                        | 1.5                    | —                                          | 0.3  | —          | 0.3  | —           | 0.3  | V     |
|                                                  |                                                                                              |                        | 3                      | —                                          | 0.9  | —          | 0.9  | —           | 0.9  |       |
|                                                  |                                                                                              |                        | 5.5                    | —                                          | 1.65 | —          | 1.65 | —           | 1.65 |       |
| High-Level Output Voltage<br>V <sub>OH</sub>     | V <sub>IH</sub><br>or<br>V <sub>IL</sub>                                                     | -0.05                  | 1.5                    | 1.4                                        | —    | 1.4        | —    | 1.4         | —    | V     |
|                                                  |                                                                                              | -0.05                  | 3                      | 2.9                                        | —    | 2.9        | —    | 2.9         | —    |       |
|                                                  |                                                                                              | -0.05                  | 4.5                    | 4.4                                        | —    | 4.4        | —    | 4.4         | —    |       |
|                                                  |                                                                                              | -4                     | 3                      | 2.58                                       | —    | 2.48       | —    | 2.4         | —    |       |
|                                                  |                                                                                              | -24                    | 4.5                    | 3.94                                       | —    | 3.8        | —    | 3.7         | —    |       |
|                                                  | #, *                                                                                         | -75                    | 5.5                    | —                                          | —    | 3.85       | —    | —           | —    |       |
|                                                  |                                                                                              | -50                    | 5.5                    | —                                          | —    | —          | —    | 3.85        | —    |       |
| Low-Level Output Voltage<br>V <sub>OL</sub>      | V <sub>IH</sub><br>or<br>V <sub>IL</sub>                                                     | 0.05                   | 1.5                    | —                                          | 0.1  | —          | 0.1  | —           | 0.1  | V     |
|                                                  |                                                                                              | 0.05                   | 3                      | —                                          | 0.1  | —          | 0.1  | —           | 0.1  |       |
|                                                  |                                                                                              | 0.05                   | 4.5                    | —                                          | 0.1  | —          | 0.1  | —           | 0.1  |       |
|                                                  |                                                                                              | 12                     | 3                      | —                                          | 0.36 | —          | 0.44 | —           | 0.5  |       |
|                                                  |                                                                                              | 24                     | 4.5                    | —                                          | 0.36 | —          | 0.44 | —           | 0.5  |       |
|                                                  | #, *                                                                                         | 75                     | 5.5                    | —                                          | —    | —          | 1.65 | —           | —    |       |
|                                                  |                                                                                              | 50                     | 5.5                    | —                                          | —    | —          | —    | —           | 1.65 |       |
| Input Leakage Current<br>I <sub>I</sub>          | V <sub>CC</sub><br>or<br>GND                                                                 |                        | 5.5                    | —                                          | ±0.1 | —          | ±1   | —           | ±1   | μA    |
| 3-State Leakage Current<br>I <sub>OZ</sub>       | V <sub>IH</sub><br>or<br>V <sub>IL</sub><br>V <sub>O</sub> =<br>V <sub>CC</sub><br>or<br>GND |                        | 5.5                    | —                                          | ±0.5 | —          | ±5   | —           | ±10  | μA    |
| Quiescent Supply Current, MSI<br>I <sub>CC</sub> | V <sub>CC</sub><br>or<br>GND                                                                 | 0                      | 5.5                    | —                                          | 8    | —          | 80   | —           | 160  | μA    |

#Test one output at a time for a 1-second maximum duration. Measurement is made by forcing current and measuring voltage to minimize power dissipation.

\*Test verifies a minimum 50-ohm transmission-line-drive capability at +85°C, 75 ohms at +125°C.

Technical Data

# CD54/74AC373, CD54/74AC533 CD54/74ACT373, CD54/74ACT533

## STATIC ELECTRICAL CHARACTERISTICS: ACT Series

| CHARACTERISTICS                                                                                         | TEST CONDITIONS                                                               |                        | V <sub>CC</sub><br>(V) | AMBIENT TEMPERATURE (T <sub>A</sub> ) - °C |      |            |      |             |      | UNITS |
|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|------------------------|------------------------|--------------------------------------------|------|------------|------|-------------|------|-------|
|                                                                                                         | V <sub>I</sub><br>(V)                                                         | I <sub>O</sub><br>(mA) |                        | +25                                        |      | -40 to +85 |      | -55 to +125 |      |       |
|                                                                                                         |                                                                               |                        |                        | MIN.                                       | MAX. | MIN.       | MAX. | MIN.        | MAX. |       |
| High-Level Input Voltage<br>V <sub>IH</sub>                                                             |                                                                               |                        | 4.5 to 5.5             | 2                                          | —    | 2          | —    | 2           | —    | V     |
| Low-Level Input Voltage<br>V <sub>IL</sub>                                                              |                                                                               |                        | 4.5 to 5.5             | —                                          | 0.8  | —          | 0.8  | —           | 0.8  | V     |
| High-Level Output Voltage<br>V <sub>OH</sub>                                                            | V <sub>IH</sub> or V <sub>IL</sub><br>#, *                                    | -0.05                  | 4.5                    | 4.4                                        | —    | 4.4        | —    | 4.4         | —    | V     |
|                                                                                                         |                                                                               | -24                    | 4.5                    | 3.94                                       | —    | 3.8        | —    | 3.7         | —    |       |
|                                                                                                         |                                                                               | -75                    | 5.5                    | —                                          | —    | 3.85       | —    | —           | —    |       |
|                                                                                                         |                                                                               | -50                    | 5.5                    | —                                          | —    | —          | —    | 3.85        | —    |       |
| Low-Level Output Voltage<br>V <sub>OL</sub>                                                             | V <sub>IH</sub> or V <sub>IL</sub><br>#, *                                    | 0.05                   | 4.5                    | —                                          | 0.1  | —          | 0.1  | —           | 0.1  | V     |
|                                                                                                         |                                                                               | 24                     | 4.5                    | —                                          | 0.36 | —          | 0.44 | —           | 0.5  |       |
|                                                                                                         |                                                                               | 75                     | 5.5                    | —                                          | —    | —          | 1.65 | —           | —    |       |
|                                                                                                         |                                                                               | 50                     | 5.5                    | —                                          | —    | —          | —    | —           | 1.65 |       |
| Input Leakage Current<br>I <sub>I</sub>                                                                 | V <sub>CC</sub> or GND                                                        |                        | 5.5                    | —                                          | ±0.1 | —          | ±1   | —           | ±1   | μA    |
| 3-State Leakage Current<br>I <sub>OZ</sub>                                                              | V <sub>IH</sub> or V <sub>IL</sub><br>V <sub>O</sub> = V <sub>CC</sub> or GND |                        | 5.5                    | —                                          | ±0.5 | —          | ±5   | —           | ±10  | μA    |
| Quiescent Supply Current, MSI<br>I <sub>CC</sub>                                                        | V <sub>CC</sub> or GND                                                        | 0                      | 5.5                    | —                                          | 8    | —          | 80   | —           | 160  | μA    |
| Additional Quiescent Supply Current per Input Pin<br>TTL Inputs High<br>1 Unit Load<br>ΔI <sub>CC</sub> | V <sub>CC</sub> -2.1                                                          |                        | 4.5 to 5.5             | —                                          | 2.4  | —          | 2.8  | —           | 3    | mA    |

#Test one output at a time for a 1-second maximum duration. Measurement is made by forcing current and measuring voltage to minimize power dissipation.

\*Test verifies a minimum 50-ohm transmission-line-drive capability at +85°C, 75 ohms at +125°C.

**ACT INPUT LOADING TABLE**

| INPUT           | UNIT LOAD* |        |
|-----------------|------------|--------|
|                 | ACT373     | ACT533 |
| $\overline{OE}$ | 0.87       | 0.87   |
| $\overline{Dn}$ | 0.5        | 0.5    |
| $\overline{LE}$ | 0.8        | 0.8    |

\*Unit load is  $\Delta I_{CC}$  limit specified in Static Characteristics Chart, e.g., 2.4 mA max. @ 25°C.

# **CD54/74AC373, CD54/74AC533** **CD54/74ACT373, CD54/74ACT533**

**PREREQUISITE FOR SWITCHING: AC Series**

| CHARACTERISTICS          | SYMBOL          | V <sub>cc</sub><br>(V) | AMBIENT TEMPERATURE (T <sub>A</sub> ) - °C |             |                |             | UNITS |
|--------------------------|-----------------|------------------------|--------------------------------------------|-------------|----------------|-------------|-------|
|                          |                 |                        | -40 to +85                                 |             | -55 to +125    |             |       |
|                          |                 |                        | MIN.                                       | MAX.        | MIN.           | MAX.        |       |
| LE Pulse Width           | t <sub>w</sub>  | 1.5<br>3.3*<br>5†      | 44<br>4.9<br>3.5                           | —<br>—<br>— | 50<br>5.6<br>4 | —<br>—<br>— | ns    |
| Setup Time<br>Data to LE | t <sub>su</sub> | 1.5<br>3.3<br>5        | 2<br>2<br>2                                | —<br>—<br>— | 2<br>2<br>2    | —<br>—<br>— | ns    |
| Hold Time<br>Data to LE  | t <sub>h</sub>  | 1.5<br>3.3<br>5        | 33<br>3.7<br>2.6                           | —<br>—<br>— | 38<br>4.2<br>3 | —<br>—<br>— | ns    |

\*3.3 V: min. is @ 3 V

†5 V: min. is @ 4.5 V

**SWITCHING CHARACTERISTICS: AC Series; t<sub>r</sub>, t<sub>f</sub> = 3 ns, C<sub>L</sub> = 50 pF**

| CHARACTERISTICS                                                                                         | SYMBOL                               | V <sub>CC</sub><br>(V) | AMBIENT TEMPERATURE (T <sub>A</sub> ) - °C |                     |                 |                     | UNITS |
|---------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------|--------------------------------------------|---------------------|-----------------|---------------------|-------|
|                                                                                                         |                                      |                        | -40 to +85                                 |                     | -55 to +125     |                     |       |
|                                                                                                         |                                      |                        | MIN.                                       | MAX.                | MIN.            | MAX.                |       |
| Propagation Delays:<br>Data to Q <sub>n</sub><br>373                                                    | t <sub>PLH</sub><br>t <sub>PHL</sub> | 1.5<br>3.3*<br>5†      | —<br>3.1<br>2.2                            | 96<br>10.8<br>7.7   | —<br>3<br>2.1   | 106<br>11.9<br>8.5  | ns    |
| 533                                                                                                     | t <sub>PLH</sub><br>t <sub>PHL</sub> | 1.5<br>3.3<br>5        | —<br>3.8<br>2.7                            | 119<br>13.4<br>9.5  | —<br>3.7<br>2.6 | 131<br>14.7<br>10.5 | ns    |
| LE on Q <sub>n</sub><br>373                                                                             | t <sub>PLH</sub><br>t <sub>PHL</sub> | 1.5<br>3.3<br>5        | —<br>4.3<br>3.1                            | 136<br>15.2<br>10.9 | —<br>4.2<br>3   | 150<br>16.8<br>12   | ns    |
| 533                                                                                                     | t <sub>PLH</sub><br>t <sub>PHL</sub> | 1.5<br>3.3<br>5        | —<br>4.3<br>3.1                            | 136<br>15.3<br>10.9 | —<br>4.2<br>3   | 150<br>16.8<br>12   | ns    |
| Output Enable Times                                                                                     | t <sub>PZL</sub><br>t <sub>PZH</sub> | 1.5<br>3.3<br>5        | —<br>4.1<br>2.7                            | 119<br>14.4<br>9.5  | —<br>4<br>2.6   | 131<br>15.8<br>10.5 | ns    |
| Output Disable Times                                                                                    | t <sub>PLZ</sub><br>t <sub>PHZ</sub> | 1.5<br>3.3<br>5        | —<br>3.7<br>3                              | 131<br>13.1<br>10.5 | —<br>3.6<br>2.9 | 144<br>14.4<br>11.5 | ns    |
| Power Dissipation Capacitance                                                                           | C <sub>PD</sub> §                    | —                      | 63 Typ.                                    |                     | 63 Typ.         |                     | pF    |
| Min. (Valley) V <sub>OH</sub><br>During Switching of Other Outputs<br>(Output Under Test Not Switching) | V <sub>OHV</sub><br>See<br>Fig. 1    | 5                      | 4 Typ. @ 25°C                              |                     |                 |                     | V     |
| Max. (Peak) V <sub>OL</sub><br>During Switching of Other Outputs<br>(Output Under Test Not Switching)   | V <sub>OLP</sub><br>See<br>Fig. 1    | 5                      | 1 Typ. @ 25°C                              |                     |                 |                     | V     |
| Input Capacitance                                                                                       | C <sub>I</sub>                       | —                      | —                                          | 10                  | —               | 10                  | pF    |
| 3-State Output Capacitance                                                                              | C <sub>O</sub>                       | —                      | —                                          | 15                  | —               | 15                  | pF    |

\*3.3 V: min. is @ 3.6 V  
max. is @ 3 V

†5 V: min. is @ 5.5 V  
max. is @ 4.5 V

§C<sub>PD</sub> is used to determine the dynamic power consumption, per latch.

P<sub>D</sub> = V<sub>CC</sub><sup>2</sup> f<sub>i</sub> (C<sub>PD</sub> + C<sub>L</sub>) where f<sub>i</sub> = input frequency

C<sub>L</sub> = output load capacitance

V<sub>CC</sub> = supply voltage.

Technical Data

# CD54/74AC373, CD54/74AC533 CD54/74ACT373, CD54/74ACT533

PREREQUISITE FOR SWITCHING: ACT Series

| CHARACTERISTICS          | SYMBOL          | V <sub>cc</sub><br>(V) | AMBIENT TEMPERATURE (T <sub>A</sub> ) -°C |      |             |      | UNITS |
|--------------------------|-----------------|------------------------|-------------------------------------------|------|-------------|------|-------|
|                          |                 |                        | -40 to +85                                |      | -55 to +125 |      |       |
|                          |                 |                        | MIN.                                      | MAX. | MIN.        | MAX. |       |
| LE Pulse Width           | t <sub>w</sub>  | 5†                     | 3.6                                       | —    | 4           | —    | ns    |
| Setup Time<br>Data to LE | t <sub>su</sub> | 5                      | 2                                         | —    | 2           | —    | ns    |
| Hold Time<br>Data to LE  | t <sub>h</sub>  | 5                      | 2.7                                       | —    | 3           | —    | ns    |

†5 V: min. is @ 4.5 V

SWITCHING CHARACTERISTICS: ACT Series;  $t_r, t_f = 3$  ns,  $C_L = 50$  pF

| CHARACTERISTICS                                                                                         | SYMBOL                               | V <sub>CC</sub><br>(V) | AMBIENT TEMPERATURE (T <sub>A</sub> ) -°C |      |             |      | UNITS |
|---------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------|-------------------------------------------|------|-------------|------|-------|
|                                                                                                         |                                      |                        | -40 to +85                                |      | -55 to +125 |      |       |
|                                                                                                         |                                      |                        | MIN.                                      | MAX. | MIN.        | MAX. |       |
| Propagation Delays:<br>Data to Q <sub>n</sub><br>373                                                    | t <sub>PLH</sub>                     | 5†                     | 2.7                                       | 9.5  | 2.6         | 10.4 | ns    |
| 533                                                                                                     | t <sub>PHL</sub>                     |                        | 3                                         | 10.4 | 2.9         | 11.4 |       |
| LE to Q <sub>n</sub><br>373<br>533                                                                      | t <sub>PLH</sub><br>t <sub>PHL</sub> | 5                      | 3.1                                       | 11.4 | 3           | 12.5 | ns    |
| Output Enable Times                                                                                     | t <sub>PZL</sub><br>t <sub>PZH</sub> | 5                      | 3.5                                       | 12.3 | 3.4         | 13.5 | ns    |
| Output Disable Times                                                                                    | t <sub>PLZ</sub><br>t <sub>PHZ</sub> | 5                      | 3.2                                       | 11.4 | 3.1         | 12.5 | ns    |
| Power Dissipation Capacitance                                                                           | C <sub>PD</sub> §                    | —                      | 63 Typ.                                   |      | 63 Typ.     |      | pF    |
| Min. (Valley) V <sub>OH</sub><br>During Switching of Other Outputs<br>(Output Under Test Not Switching) | V <sub>OHV</sub><br>See Fig. 1       | 5                      | 4 Typ. @ 25°C                             |      |             |      | V     |
| Max. (Peak) V <sub>OL</sub><br>During Switching of Other Outputs<br>(Output Under Test Not Switching)   | V <sub>OLP</sub><br>See Fig. 1       | 5                      | 1 Typ. @ 25°C                             |      |             |      | V     |
| Input Capacitance                                                                                       | C <sub>I</sub>                       | —                      | —                                         | 10   | —           | 10   | pF    |
| 3-State Output Capacitance                                                                              | C <sub>O</sub>                       | —                      | —                                         | 15   | —           | 15   | pF    |

†5 V: min. is @ 5.5 V  
max. is @ 4.5 V

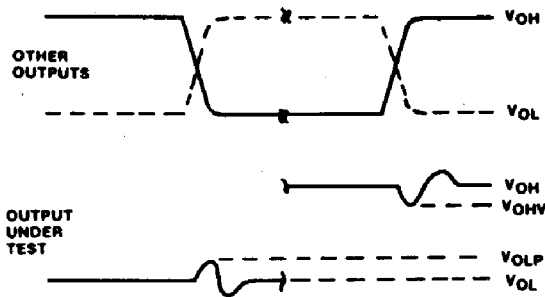
§ $C_{PD}$  is used to determine the dynamic power consumption, per latch.

$P_D = V_{CC}^2 f_i (C_{PD} + C_L) + V_{CC} \Delta I_{CC}$  where  $f_i$  = input frequency  
 $C_L$  = output load capacitance  
 $V_{CC}$  = supply voltage.

9

# CD54/74AC373, CD54/74AC533 CD54/74ACT373, CD54/74ACT533

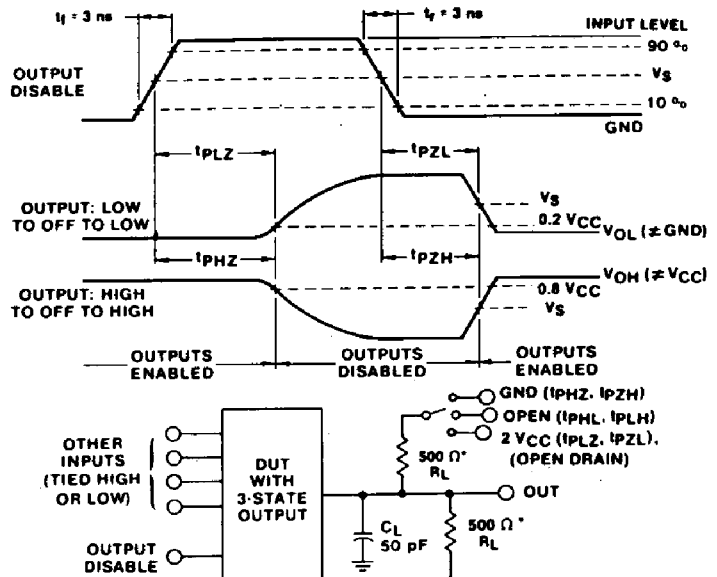
## PARAMETER MEASUREMENT INFORMATION



### NOTES:

1.  $V_{OHV}$  and  $V_{OLP}$  ARE MEASURED WITH RESPECT TO A GROUND REFERENCE NEAR THE OUTPUT UNDER TEST.
2. INPUT PULSES HAVE THE FOLLOWING CHARACTERISTICS:  
PRR  $\leq 1$  MHz,  $t_r = 3$  ns,  $t_f = 3$  ns, SKEW 1 ns.
3. R.F. FIXTURE WITH 700-MHz DESIGN RULES REQUIRED.  
IC SHOULD BE SOLDERED INTO TEST BOARD AND BYPASSED WITH 0.1  $\mu$ F CAPACITOR. SCOPE AND PROBES REQUIRE 700-MHz BANDWIDTH.

92CS-42406

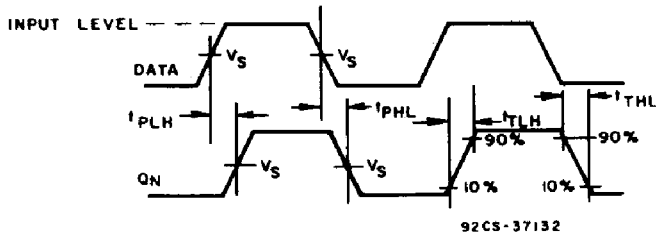


92CM-42405

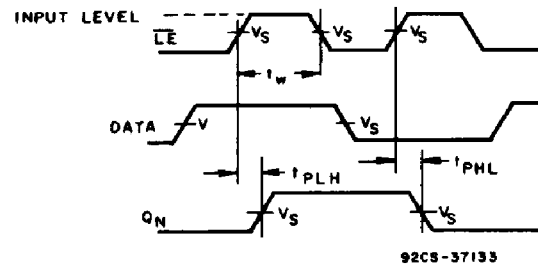
\*FOR AC SERIES ONLY: WHEN  $V_{CC} = 1.5$  V,  $R_L = 1$  k $\Omega$

Fig. 1 - Simultaneous switching transient waveforms.

Fig. 2 - Three-state propagation delay waveforms and test circuit.



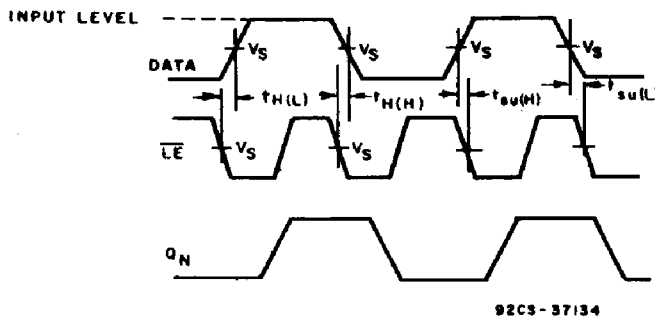
92CS-37132



92CS-37133

Fig. 3 - Data to Qn output propagation delays and output transition times.

Fig. 4 - Latch enable propagation delays.



92CS-37134

Fig. 5 - Latch enable prerequisite times.

|                                 | CD54/74AC    | CD54/74ACT   |
|---------------------------------|--------------|--------------|
| Input Level                     | $V_{CC}$     | 3 V          |
| Input Switching Voltage, $V_S$  | 0.5 $V_{CC}$ | 1.5 V        |
| Output Switching Voltage, $V_S$ | 0.5 $V_{CC}$ | 0.5 $V_{CC}$ |

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