

# SN54150, SN54151A, SN54LS151, SN54S151, SN74150, SN74151A, SN74LS151, SN74S151 DATA SELECTORS/MULTIPLEXERS

DECEMBER 1972—REVISED MARCH 1988

- '150 Selects One-of-Sixteen Data Sources
- Others Select One-of-Eight Data Sources
- All Perform Parallel-to-Serial Conversion
- All Permit Multiplexing from N Lines to One Line
- Also For Use as Boolean Function Generator
- Input-Clamping Diodes Simplify System Design
- Fully Compatible with Most TTL Circuits

| TYPE   | TYPICAL AVERAGE                                  | TYPICAL              |
|--------|--|----------------------|
|        | PROPAGATION DELAY TIME<br>DATA INPUT TO W OUTPUT | POWER<br>DISSIPATION |
| '150   | 13 ns  | 200 mW               |
| '151A  | 8 ns   | 145 mW               |
| 'LS151 | 13 ns  | 30 mW                |
| 'S151  | 4.5 ns   | 225 mW               |

## description

These monolithic data selectors/multiplexers contain full on-chip binary decoding to select the desired data source. The '150 selects one-of-sixteen data sources; the '151A, 'LS151, and 'S151 select one-of-eight data sources. The '150, '151A, 'LS151, and 'S151 have a strobe input which must be at a low logic level to enable these devices. A high level at the strobe forces the W output high, and the Y output (as applicable) low.

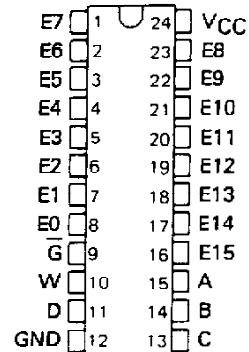
The '150 has only an inverted W output; the '151A, 'LS151, and 'S151 feature complementary W and Y outputs.

The '151A and '152A incorporate address buffers that have symmetrical propagation delay times through the complementary paths. This reduces the possibility of transients occurring at the output(s) due to changes made at the select inputs, even when the '151A outputs are enabled (i.e., strobe low).

### SN54150 . . . J OR W PACKAGE

#### SN74150 . . . N PACKAGE

(TOP VIEW)

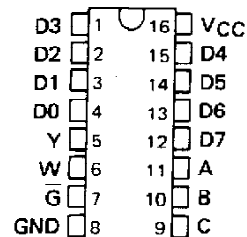


### SN54151A, SN54LS151, SN54S151 . . . J OR W PACKAGE

#### SN74151A . . . N PACKAGE

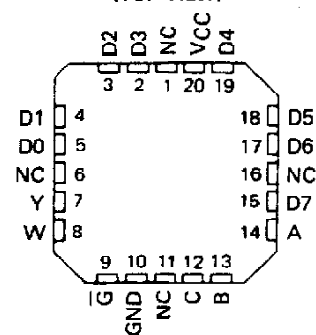
#### SN74LS151, SN74S151 . . . D OR N PACKAGE

(TOP VIEW)



### SN54LS151, SN54S151 . . . FK PACKAGE

(TOP VIEW)



NC - No internal connection

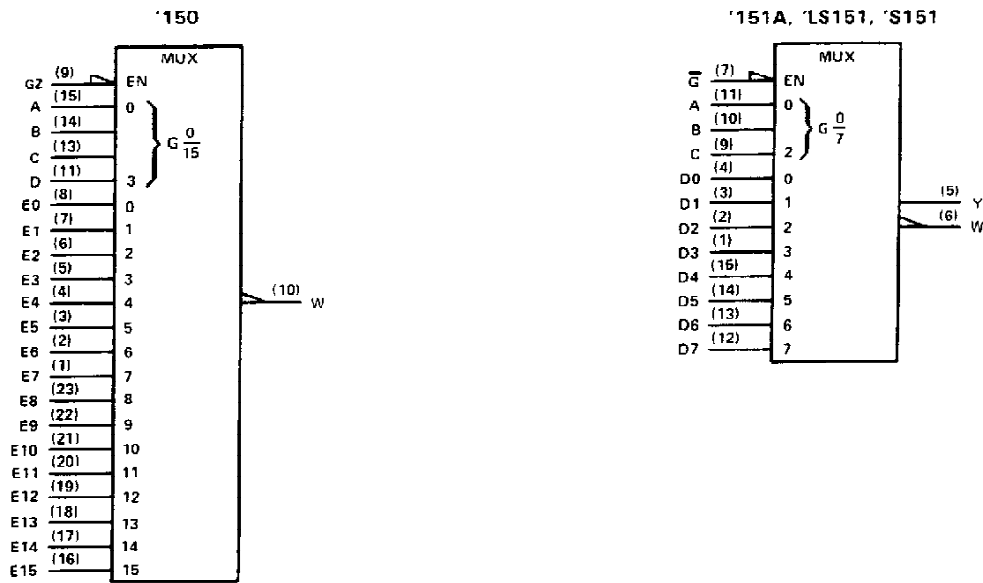
PRODUCTION DATA documents contain information current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

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**SN54150, SN54151A, SN54LS151, SN54S151,  
SN74150, SN74151A, SN74LS151, SN74S151  
DATA SELECTORS/MULTIPLEXERS**

logic symbols†



†These symbols are in accordance with ANSI/IEEE Std. 91-1984 and IEC Publication 617-12. Pin numbers shown are D, J, N, and W packages.

**'150  
FUNCTION TABLE**

| INPUTS |   |   |   |   | STROBE<br>$\bar{G}$ | OUTPUT<br>W |
|--------|---|---|---|---|---------------------|-------------|
| SELECT |   |   |   |   |                     |             |
| D      | C | B | A |   |                     |             |
| X      | X | X | X | H | H                   |             |
| L      | L | L | L | L | $\bar{E0}$          |             |
| L      | L | L | H | L | $\bar{E1}$          |             |
| L      | L | H | L | L | $\bar{E2}$          |             |
| L      | L | H | H | L | $\bar{E3}$          |             |
| L      | H | L | L | L | $\bar{E4}$          |             |
| L      | H | L | H | L | $\bar{E5}$          |             |
| L      | H | H | L | L | $\bar{E6}$          |             |
| L      | H | H | H | L | $\bar{E7}$          |             |
| H      | L | L | L | L | $\bar{E8}$          |             |
| H      | L | L | H | L | $\bar{E9}$          |             |
| H      | L | H | L | L | $\bar{E10}$         |             |
| H      | L | H | H | L | $\bar{E11}$         |             |
| H      | H | L | L | L | $\bar{E12}$         |             |
| H      | H | L | H | L | $\bar{E13}$         |             |
| H      | H | H | L | L | $\bar{E14}$         |             |
| H      | H | H | H | L | $\bar{E15}$         |             |

**'151A, 'LS151, 'S151  
FUNCTION TABLE**

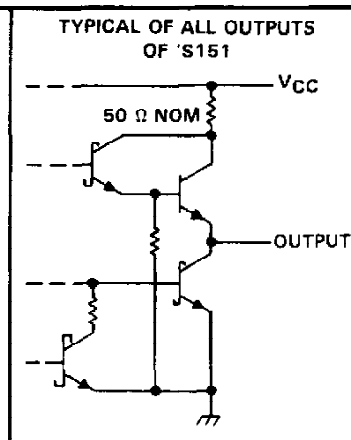
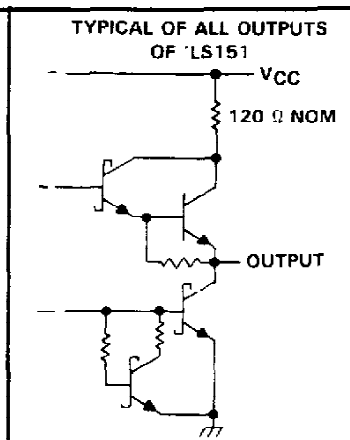
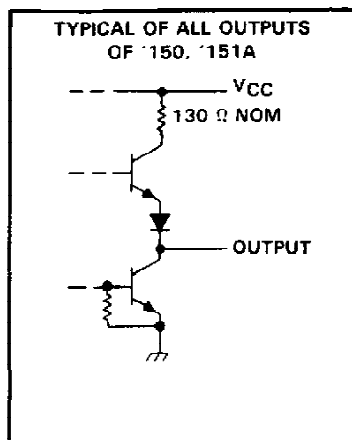
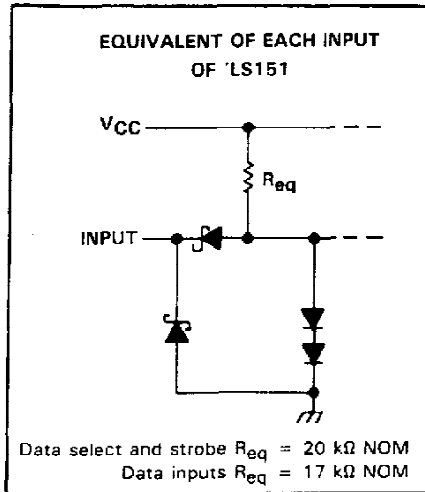
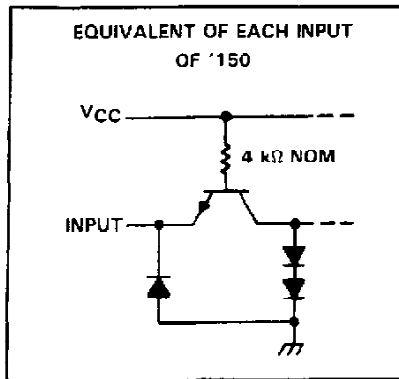
| INPUTS |   |   |                     | OUTPUTS |            |
|--------|---|---|---------------------|---------|------------|
| SELECT |   |   | STROBE<br>$\bar{G}$ | Y       | W          |
| C      | B | A |                     |         |            |
| X      | X | X | H                   | L       | H          |
| L      | L | L | L                   | L       | $\bar{D0}$ |
| L      | L | H | L                   | L       | $\bar{D1}$ |
| L      | H | L | L                   | L       | $\bar{D2}$ |
| L      | H | H | L                   | L       | $\bar{D3}$ |
| H      | L | L | L                   | L       | $\bar{D4}$ |
| H      | L | H | L                   | L       | $\bar{D5}$ |
| H      | H | L | L                   | L       | $\bar{D6}$ |
| H      | H | H | L                   | L       | $\bar{D7}$ |

H = high level, L = low level, X = irrelevant  
 $\bar{E0}, \bar{E1} \dots \bar{E15}$  = the complement of the level of the respective E input  
 $\bar{D0}, \bar{D1} \dots \bar{D7}$  = the level of the D respective input



**SN54150, SN54151A, SN54LS151, SN54S151  
SN74150, SN74151A, SN74LS151, SN74S151  
DATA SELECTORS/MULTIPLEXERS**

schematics of inputs and outputs



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# SN54150, SN54151A, SN74150, SN74151A

## DATA SELECTORS/MULTIPLEXERS

### recommended operating conditions

|                                       | SN54' |     |      | SN74' |     |      | UNIT         |
|---------------------------------------|-------|-----|------|-------|-----|------|--------------|
|                                       | MIN   | NOM | MAX  | MIN   | NOM | MAX  |              |
| Supply voltage, $V_{CC}$              | 4.5   | 5   | 5.5  | 4.75  | 5   | 5.25 | V            |
| High-level output current, $I_{OH}$   |       |     | -800 |       |     | -800 | $\mu$ A      |
| Low-level output current, $I_{OL}$    |       |     | 16   |       |     | 16   | mA           |
| Operating free-air temperature, $T_A$ | -55   |     | 125  | 0     |     | 70   | $^{\circ}$ C |

### electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

| PARAMETER  | TEST CONDITIONS <sup>†</sup>   | '150  |                  |      | '151A |                  |      | UNIT    |
|--|--|-------|------------------|------|-------|------------------|------|---------|
|  |  | MIN   | TYP <sup>‡</sup> | MAX  | MIN   | TYP <sup>‡</sup> | MAX  |         |
| $V_{IH}$ High-level input voltage                  |  | 2     |                  |      | 2     |                  |      | V       |
| $V_{IL}$ Low-level input voltage                   |  |       |                  | 0.8  |       |                  | 0.8  | V       |
| $V_{IK}$ Input clamp voltage                       | $V_{CC} = \text{MIN}$ , $I_I = -8 \text{ mA}$  |       |                  | -1.5 |       |                  | -1.5 | V       |
| $V_{OH}$ High-level output voltage                 | $V_{CC} = \text{MIN}$ , $V_{IH} = 2 \text{ V}$ ,<br>$V_{IL} = 0.8 \text{ V}$ , $I_{OH} = -800 \mu\text{A}$ | 2.4   | 3.4              |      | 2.4   | 3.4              |      | V       |
| $V_{OL}$ Low-level output voltage                  | $V_{CC} = \text{MIN}$ , $V_{IH} = 2 \text{ V}$ ,<br>$V_{IL} = 0.8 \text{ V}$ , $I_{OL} = 16 \text{ mA}$    |       | 0.2              | 0.4  |       | 0.2              | 0.4  | V       |
| $I_I$ Input current at maximum input voltage       | $V_{CC} = \text{MAX}$ , $V_I = 5.5 \text{ V}$  |       |                  | 1    |       |                  | 1    | mA      |
| $I_{IH}$ High-level input current                  | $V_{CC} = \text{MAX}$ , $V_I = 2.4 \text{ V}$  |       |                  | 40   |       |                  | 40   | $\mu$ A |
| $I_{IL}$ Low-level input current                   | $V_{CC} = \text{MAX}$ , $V_I = 0.4 \text{ V}$  |       |                  | -1.6 |       |                  | -1.6 | mA      |
| $I_{OS}$ Short-circuit output current <sup>§</sup> | $V_{CC} = \text{MAX}$  | SN54' | -20              | -55  | -20   | -55              |      | mA      |
|  |  | SN74' | -18              | -55  | -18   | -55              |      |         |
| $I_{CC}$ Supply current                            | $V_{CC} = \text{MAX}$ . See Note 3   |       | 40               | 68   |       | 29               | 48   | mA      |

<sup>†</sup> For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable device type.

<sup>‡</sup> All typical values at  $V_{CC} = 5 \text{ V}$ ,  $T_A = 25^{\circ}\text{C}$ .

<sup>§</sup> Not more than one output of the '151A should be shorted at a time.

NOTE 3:  $I_{CC}$  is measured with the strobe and data select inputs at 4.5 V, all other inputs and outputs open.

### switching characteristics, $V_{CC} = 5 \text{ V}$ , $T_A = 25^{\circ}\text{C}$

| PARAMETER <sup>¶</sup> | FROM (INPUT)                  | TO (OUTPUT) | TEST CONDITIONS   | '150 |     |     | '151A |     |     | UNIT |
|------------------------|-------------------------------|-------------|---|------|-----|-----|-------|-----|-----|------|
|                        |                               |             |   | MIN  | TYP | MAX | MIN   | TYP | MAX |      |
| $t_{PLH}$              | A, B, or C<br>(4 levels)      | Y           | $C_L = 15 \text{ pF}$ ,<br>$R_L = 400 \Omega$ ,<br>See Note 4 i |      |     |     | 25    | 38  |     | ns   |
| $t_{PHL}$              |                               |             |   |      |     |     | 25    | 38  |     |      |
| $t_{PLH}$              | A, B, C, or D<br>(3 levels)   | W           |   | 23   | 35  |     | 17    | 26  |     | ns   |
| $t_{PHL}$              |                               |             |   | 22   | 33  |     | 19    | 30  |     |      |
| $t_{PLH}$              | Strobe $\bar{G}$              | Y           |   |      |     |     | 21    | 33  |     | ns   |
| $t_{PHL}$              |                               |             |   |      |     |     | 22    | 33  |     |      |
| $t_{PLH}$              | Strobe $\bar{G}$              | W           |   | 15.5 | 24  |     | 14    | 21  |     | ns   |
| $t_{PHL}$              |                               |             |   | 21   | 30  |     | 15    | 23  |     |      |
| $t_{PLH}$              | D0 thru D7                    | Y           |   |      |     |     | 13    | 20  |     | ns   |
| $t_{PHL}$              |                               |             |   |      |     |     | 18    | 27  |     |      |
| $t_{PLH}$              | E0 thru E15, or<br>D0 thru D7 | W           | 8.5   | 14   |     | 8   | 14    |     | ns  |      |
| $t_{PHL}$              |                               |             | 13  | 20   |     | 8   | 14    |     |     |      |

<sup>¶</sup> $t_{PLH}$  = propagation delay time, low-to-high-level output

$t_{PHL}$  = propagation delay time, high-to-low-level output

NOTE 4: Load circuits and voltage waveforms are shown in Section 1.

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# SN54LS151, SN74LS151 DATA SELECTORS/MULTIPLEXERS

## recommended operating conditions

|                                       | SN54LS151 |     |      | SN74LS151 |     |      | UNIT        |
|---------------------------------------|-----------|-----|------|-----------|-----|------|-------------|
|                                       | MIN       | NOM | MAX  | MIN       | NOM | MAX  |             |
| Supply voltage, $V_{CC}$              | 4.5       | 5   | 5.5  | 4.75      | 5   | 5.25 | V           |
| High-level output current, $I_{OH}$   |           |     | -400 |           |     | -400 | $\mu A$     |
| Low-level output current, $I_{OL}$    |           |     | 4    |           |     | 8    | mA          |
| Operating free-air temperature, $T_A$ | -55       |     | 125  | 0         |     | 70   | $^{\circ}C$ |

## electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

| PARAMETER                                    | TEST CONDITIONS†   | SN54LS151 |      |      | SN74LS151 |      |      | UNIT    |
|--|--|-----------|------|------|-----------|------|------|---------|
|  |  | MIN       | TYP‡ | MAX  | MIN       | TYP‡ | MAX  |         |
| $V_{IH}$ High-level input voltage            |  | 2         |      |      | 2         |      |      | V       |
| $V_{IL}$ Low-level input voltage             |  |           |      | 0.7  |           |      | 0.8  | V       |
| $V_{IK}$ Input clamp voltage                 | $V_{CC} = \text{MIN}, I_I = -18 \text{ mA}$  |           |      | -1.5 |           |      | -1.5 | V       |
| $V_{OH}$ High-level output voltage           | $V_{CC} = \text{MIN}, V_{IH} = 2 \text{ V}, V_{IL} = V_{IL\text{max}}, I_{OH} = -400 \mu A$                              | 2.5       | 3.4  |      | 2.7       | 3.4  |      | V       |
| $V_{OL}$ Low-level output voltage            | $V_{CC} = \text{MIN}, V_{IH} = 2 \text{ V}, V_{IL} = V_{IL\text{max}}, I_{OL} = 4 \text{ mA}$<br>$I_{OL} = 8 \text{ mA}$ |           | 0.25 | 0.4  |           | 0.25 | 0.4  | V       |
| $I_I$ Input current at maximum input voltage | $V_{CC} = \text{MAX}, V_I = 7 \text{ V}$   |           |      | 0.1  |           |      | 0.1  | mA      |
| $I_{IH}$ High-level input current            | $V_{CC} = \text{MAX}, V_I = 2.7 \text{ V}$   |           |      | 20   |           |      | 20   | $\mu A$ |
| $I_{IL}$ Low-level input current             | $V_{CC} = \text{MAX}, V_I = 0.4 \text{ V}$   |           |      | -0.4 |           |      | -0.4 | mA      |
| $I_{OS}$ Short-circuit output current‡       | $V_{CC} = \text{MAX}$  | -20       |      | -100 | -20       |      | -100 | mA      |
| $I_{CC}$ Supply current                      | $V_{CC} = \text{MAX},$ Outputs open,<br>All inputs at 4.5 V  |           | 6.0  | 10   |           | 6.0  | 10   | mA      |

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable device type.

‡ All typical values are at  $V_{CC} = 5 \text{ V}, T_A = 25^{\circ}C$ .

§ Not more than one output should be shorted at a time and duration of short-circuit should not exceed one second.

## switching characteristics, $V_{CC} = 5 \text{ V}, T_A = 25^{\circ}C$

| PARAMETER† | FROM (INPUT)          | TO (OUTPUT) | TEST CONDITIONS  | MIN | TYP | MAX | UNIT |
|------------|-----------------------|-------------|--|-----|-----|-----|------|
| $t_{PLH}$  | A, B, or C (4 levels) | Y           | $C_L = 15 \text{ pF},$<br>$R_L = 2 \text{ k}\Omega,$<br>See Note 4 |     | 27  | 43  | ns   |
| $t_{PHL}$  |                       |             |  |     | 18  | 30  |      |
| $t_{PLH}$  | A, B, or C (3 levels) | W           |  |     | 14  | 23  | ns   |
| $t_{PHL}$  |                       |             |  |     | 20  | 32  |      |
| $t_{PLH}$  | Strobe $\bar{G}$      | Y           |  |     | 26  | 42  | ns   |
| $t_{PHL}$  |                       |             |  |     | 20  | 32  |      |
| $t_{PLH}$  | Strobe $\bar{G}$      | W           |  |     | 15  | 24  | ns   |
| $t_{PHL}$  |                       |             |  |     | 18  | 30  |      |
| $t_{PLH}$  | Any D                 | Y           |  |     | 20  | 32  | ns   |
| $t_{PHL}$  |                       |             |  |     | 16  | 26  |      |
| $t_{PLH}$  | Any D                 | W           |  | 13  | 21  | ns  |      |
| $t_{PHL}$  |                       |             |  | 12  | 20  |     |      |

†  $t_{PLH}$  = propagation delay time, low-to-high-level output

$t_{PHL}$  = propagation delay time, high-to-low-level output

NOTE 4: Load circuits and voltage waveforms are shown in Section 1.

  
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# SN54S151, SN74S151 DATA SELECTORS/MULTIPLEXERS

## recommended operating conditions

|                                       | SN54S151 |     |     | SN74S151 |     |      | UNIT         |
|---------------------------------------|----------|-----|-----|----------|-----|------|--------------|
|                                       | MIN      | NOM | MAX | MIN      | NOM | MAX  |              |
| Supply voltage, $V_{CC}$              | 4.5      | 5   | 5.5 | 4.75     | 5   | 5.25 | V            |
| High-level output current, $I_{OH}$   |          |     | -1  |          |     | -1   | mA           |
| Low-level output current, $I_{OL}$    |          |     | 20  |          |     | 20   | mA           |
| Operating free-air temperature, $T_A$ | -55      |     | 125 | 0        |     | 70   | $^{\circ}$ C |

## electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

| PARAMETER  | TEST CONDITIONS <sup>†</sup>  | MIN      | TYP <sup>‡</sup> | MAX  | UNIT    |
|--|---|----------|------------------|------|---------|
| $V_{IH}$ High-level input voltage                  |   | 2        |                  |      | V       |
| $V_{IL}$ Low-level input voltage                   |   |          |                  | 0.8  | V       |
| $V_{IK}$ Input clamp voltage                       | $V_{CC} = \text{MIN}$ , $I_I = -18 \text{ mA}$  |          |                  | -1.2 | V       |
| $V_{OH}$ High-level output voltage                 | $V_{CC} = \text{MIN}$ , $V_{IH} = 2 \text{ V}$ ,<br>$V_{IL} = 0.8 \text{ V}$ , $I_{OH} = -1 \text{ mA}$ | SN54S151 | 2.5              | 3.4  | V       |
|  |   | SN74S151 | 2.7              | 3.4  |         |
| $V_{OL}$ Low-level output voltage                  | $V_{CC} = \text{MIN}$ , $V_{IH} = 2 \text{ V}$ ,<br>$V_{IL} = 0.8 \text{ V}$ , $I_{OL} = 20 \text{ mA}$ |          |                  | 0.5  | V       |
| $I_I$ Input current at maximum input voltage       | $V_{CC} = \text{MAX}$ , $V_I = 5.5 \text{ V}$   |          |                  | 1    | mA      |
| $I_{IH}$ High-level input current                  | $V_{CC} = \text{MAX}$ , $V_I = 2.7 \text{ V}$   |          |                  | 50   | $\mu$ A |
| $I_{IL}$ Low-level input current                   | $V_{CC} = \text{MAX}$ , $V_I = 0.5 \text{ V}$   |          |                  | -2   | mA      |
| $I_{OS}$ Short-circuit output current <sup>§</sup> | $V_{CC} = \text{MAX}$   | -40      |                  | -100 | mA      |
| $I_{CC}$ Supply current                            | $V_{CC} = \text{MAX}$ , All inputs at 4.5 V,<br>All outputs open  |          | 45               | 70   | mA      |

<sup>†</sup>For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable device type.

<sup>‡</sup>All typical values are at  $V_{CC} = 5 \text{ V}$ ,  $T_A = 25^{\circ}\text{C}$ .

<sup>§</sup>Not more than one output should be shorted at a time, and duration of the short-circuit should not exceed one second.

## switching characteristics, $V_{CC} = 5 \text{ V}$ , $T_A = 25^{\circ}\text{C}$

| PARAMETER <sup>†</sup> | FROM (INPUT)             | TO (OUTPUT) | TEST CONDITIONS  | MIN | TYP | MAX  | UNIT |
|------------------------|--------------------------|-------------|--|-----|-----|------|------|
| $t_{PLH}$              | A, B, or C<br>(4 levels) | Y           | $C_L = 15 \text{ pF}$ ,<br>$R_L = 280 \text{ k}\Omega$ ,<br>See Note 4 |     | 12  | 18   | ns   |
| $t_{PHL}$              |                          |             |  |     | 12  | 18   |      |
| $t_{PLH}$              | A, B, or C<br>(3 levels) | W           |  |     | 10  | 15   | ns   |
| $t_{PHL}$              |                          |             |  |     | 9   | 13.5 |      |
| $t_{PLH}$              | Any D                    | Y           |  |     | 8   | 12   | ns   |
| $t_{PHL}$              |                          |             |  |     | 8   | 12   |      |
| $t_{PLH}$              | Any D                    | W           |  |     | 4.5 | 7    | ns   |
| $t_{PHL}$              |                          |             |  |     | 4.5 | 7    |      |
| $t_{PLH}$              | Strobe $\bar{G}$         | Y           |  |     | 11  | 16.5 | ns   |
| $t_{PHL}$              |                          |             |  |     | 12  | 18   |      |
| $t_{PLH}$              | Strobe $\bar{G}$         | W           |  |     | 9   | 13   | ns   |
| $t_{PHL}$              |                          |             |  |     | 8.5 | 12   |      |

<sup>†</sup> $t_{PLH}$  = propagation delay time, low-to-high-level output

$t_{PHL}$  = propagation delay time, high-to-low-level output

NOTE 4: Load circuits and voltage waveforms are shown in Section 1.

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**PACKAGING INFORMATION**

| Orderable Device | Status<br>(1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan<br>(2) | Lead/Ball Finish<br>(6) | MSL Peak Temp<br>(3) | Op Temp (°C) | Device Marking<br>(4/5)          | Samples                 |
|------------------|---------------|--------------|-----------------|------|-------------|-----------------|-------------------------|----------------------|--------------|----------------------------------|-------------------------|
| 5962-9558001QJA  | ACTIVE        | CDIP         | J               | 24   | 1           | TBD             | Call TI                 | N / A for Pkg Type   | -55 to 125   | 5962-9558001QJ<br>A<br>SNJ54150J | <a href="#">Samples</a> |
| 5962-9558001QKA  | ACTIVE        | CFP          | W               | 24   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | 5962-9558001QK<br>A<br>SNJ54150W | <a href="#">Samples</a> |
| 5962-9558001QKA  | ACTIVE        | CFP          | W               | 24   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | 5962-9558001QK<br>A<br>SNJ54150W | <a href="#">Samples</a> |
| 5962-9751601QCA  | OBSOLETE      | CDIP         | J               | 14   |             | TBD             | Call TI                 | Call TI              | -55 to 125   |                                  |                         |
| 76010012A        | ACTIVE        | LCCC         | FK              | 20   | 1           | TBD             | POST-PLATE              | N / A for Pkg Type   | -55 to 125   | 76010012A<br>SNJ54LS<br>151FK    | <a href="#">Samples</a> |
| 76010012A        | ACTIVE        | LCCC         | FK              | 20   | 1           | TBD             | POST-PLATE              | N / A for Pkg Type   | -55 to 125   | 76010012A<br>SNJ54LS<br>151FK    | <a href="#">Samples</a> |
| 7601001EA        | ACTIVE        | CDIP         | J               | 16   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | 7601001EA<br>SNJ54LS151J         | <a href="#">Samples</a> |
| 7601001EA        | ACTIVE        | CDIP         | J               | 16   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | 7601001EA<br>SNJ54LS151J         | <a href="#">Samples</a> |
| 7601001FA        | OBSOLETE      | CFP          | W               | 16   |             | TBD             | Call TI                 | Call TI              | -55 to 125   | 7601001FA<br>SNJ54LS151W         |                         |
| 7601001FA        | OBSOLETE      | CFP          | W               | 16   |             | TBD             | Call TI                 | Call TI              | -55 to 125   | 7601001FA<br>SNJ54LS151W         |                         |
| JM38510/01401BKA | ACTIVE        | CFP          | W               | 24   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>01401BKA             | <a href="#">Samples</a> |
| JM38510/01401BKA | ACTIVE        | CFP          | W               | 24   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>01401BKA             | <a href="#">Samples</a> |
| JM38510/07901BEA | ACTIVE        | CDIP         | J               | 16   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>07901BEA             | <a href="#">Samples</a> |
| JM38510/07901BFA | ACTIVE        | CFP          | W               | 16   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>07901BFA             | <a href="#">Samples</a> |
| JM38510/30901B2A | ACTIVE        | LCCC         | FK              | 20   | 1           | TBD             | POST-PLATE              | N / A for Pkg Type   | -55 to 125   | JM38510/<br>30901B2A             | <a href="#">Samples</a> |

| Orderable Device | Status<br>(1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan<br>(2) | Lead/Ball Finish<br>(6) | MSL Peak Temp<br>(3) | Op Temp (°C) | Device Marking<br>(4/5) | Samples                 |
|------------------|---------------|--------------|-----------------|------|-------------|-----------------|-------------------------|----------------------|--------------|-------------------------|-------------------------|
| JM38510/30901B2A | ACTIVE        | LCCC         | FK              | 20   | 1           | TBD             | POST-PLATE              | N / A for Pkg Type   | -55 to 125   | JM38510/<br>30901B2A    | <a href="#">Samples</a> |
| JM38510/30901BEA | ACTIVE        | CDIP         | J               | 16   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>30901BEA    | <a href="#">Samples</a> |
| JM38510/30901BEA | ACTIVE        | CDIP         | J               | 16   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>30901BEA    | <a href="#">Samples</a> |
| JM38510/30901BFA | ACTIVE        | CFP          | W               | 16   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>30901BFA    | <a href="#">Samples</a> |
| JM38510/30901BFA | ACTIVE        | CFP          | W               | 16   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>30901BFA    | <a href="#">Samples</a> |
| M38510/01401BKA  | ACTIVE        | CFP          | W               | 24   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>01401BKA    | <a href="#">Samples</a> |
| M38510/01401BKA  | ACTIVE        | CFP          | W               | 24   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>01401BKA    | <a href="#">Samples</a> |
| M38510/07901BEA  | ACTIVE        | CDIP         | J               | 16   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>07901BEA    | <a href="#">Samples</a> |
| M38510/07901BFA  | ACTIVE        | CFP          | W               | 16   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>07901BFA    | <a href="#">Samples</a> |
| M38510/30901B2A  | ACTIVE        | LCCC         | FK              | 20   | 1           | TBD             | POST-PLATE              | N / A for Pkg Type   | -55 to 125   | JM38510/<br>30901B2A    | <a href="#">Samples</a> |
| M38510/30901B2A  | ACTIVE        | LCCC         | FK              | 20   | 1           | TBD             | POST-PLATE              | N / A for Pkg Type   | -55 to 125   | JM38510/<br>30901B2A    | <a href="#">Samples</a> |
| M38510/30901BEA  | ACTIVE        | CDIP         | J               | 16   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>30901BEA    | <a href="#">Samples</a> |
| M38510/30901BEA  | ACTIVE        | CDIP         | J               | 16   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>30901BEA    | <a href="#">Samples</a> |
| M38510/30901BFA  | ACTIVE        | CFP          | W               | 16   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>30901BFA    | <a href="#">Samples</a> |
| M38510/30901BFA  | ACTIVE        | CFP          | W               | 16   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>30901BFA    | <a href="#">Samples</a> |
| SN54150J         | ACTIVE        | CDIP         | J               | 24   | 1           | TBD             | Call TI                 | N / A for Pkg Type   | -55 to 125   | SN54150J                | <a href="#">Samples</a> |
| SN54150J         | ACTIVE        | CDIP         | J               | 24   | 1           | TBD             | Call TI                 | N / A for Pkg Type   | -55 to 125   | SN54150J                | <a href="#">Samples</a> |
| SN54LS151J       | ACTIVE        | CDIP         | J               | 16   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | SN54LS151J              | <a href="#">Samples</a> |



| Orderable Device | Status<br>(1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan<br>(2)         | Lead/Ball Finish<br>(6) | MSL Peak Temp<br>(3) | Op Temp (°C) | Device Marking<br>(4/5) | Samples                 |
|------------------|---------------|--------------|-----------------|------|-------------|-------------------------|-------------------------|----------------------|--------------|-------------------------|-------------------------|
| SN54LS151J       | ACTIVE        | CDIP         | J               | 16   | 1           | TBD                     | A42                     | N / A for Pkg Type   | -55 to 125   | SN54LS151J              | <a href="#">Samples</a> |
| SN54S151J        | ACTIVE        | CDIP         | J               | 16   | 1           | TBD                     | A42                     | N / A for Pkg Type   | -55 to 125   | SN54S151J               | <a href="#">Samples</a> |
| SN54S15J         | OBSOLETE      | CDIP         | J               | 14   |             | TBD                     | Call TI                 | Call TI              | -55 to 125   |                         |                         |
| SN74151AN        | OBSOLETE      | PDIP         | N               | 16   |             | TBD                     | Call TI                 | Call TI              | 0 to 70      |                         |                         |
| SN74151AN        | OBSOLETE      | PDIP         | N               | 16   |             | TBD                     | Call TI                 | Call TI              | 0 to 70      |                         |                         |
| SN74LS151D       | ACTIVE        | SOIC         | D               | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | 0 to 70      | LS151                   | <a href="#">Samples</a> |
| SN74LS151D       | ACTIVE        | SOIC         | D               | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | 0 to 70      | LS151                   | <a href="#">Samples</a> |
| SN74LS151DE4     | ACTIVE        | SOIC         | D               | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | 0 to 70      | LS151                   | <a href="#">Samples</a> |
| SN74LS151DE4     | ACTIVE        | SOIC         | D               | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | 0 to 70      | LS151                   | <a href="#">Samples</a> |
| SN74LS151DR      | ACTIVE        | SOIC         | D               | 16   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | 0 to 70      | LS151                   | <a href="#">Samples</a> |
| SN74LS151DR      | ACTIVE        | SOIC         | D               | 16   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | 0 to 70      | LS151                   | <a href="#">Samples</a> |
| SN74LS151DRE4    | ACTIVE        | SOIC         | D               | 16   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | 0 to 70      | LS151                   | <a href="#">Samples</a> |
| SN74LS151DRE4    | ACTIVE        | SOIC         | D               | 16   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | 0 to 70      | LS151                   | <a href="#">Samples</a> |
| SN74LS151J       | OBSOLETE      | CDIP         | J               | 16   |             | TBD                     | Call TI                 | Call TI              | 0 to 70      |                         |                         |
| SN74LS151J       | OBSOLETE      | CDIP         | J               | 16   |             | TBD                     | Call TI                 | Call TI              | 0 to 70      |                         |                         |
| SN74LS151N       | ACTIVE        | PDIP         | N               | 16   | 25          | Pb-Free (RoHS)          | CU NIPDAU               | N / A for Pkg Type   | 0 to 70      | SN74LS151N              | <a href="#">Samples</a> |
| SN74LS151N       | ACTIVE        | PDIP         | N               | 16   | 25          | Pb-Free (RoHS)          | CU NIPDAU               | N / A for Pkg Type   | 0 to 70      | SN74LS151N              | <a href="#">Samples</a> |
| SN74LS151N3      | OBSOLETE      | PDIP         | N               | 16   |             | TBD                     | Call TI                 | Call TI              | 0 to 70      |                         |                         |
| SN74LS151N3      | OBSOLETE      | PDIP         | N               | 16   |             | TBD                     | Call TI                 | Call TI              | 0 to 70      |                         |                         |
| SN74LS151NE4     | ACTIVE        | PDIP         | N               | 16   | 25          | Pb-Free (RoHS)          | CU NIPDAU               | N / A for Pkg Type   | 0 to 70      | SN74LS151N              | <a href="#">Samples</a> |
| SN74LS151NE4     | ACTIVE        | PDIP         | N               | 16   | 25          | Pb-Free (RoHS)          | CU NIPDAU               | N / A for Pkg Type   | 0 to 70      | SN74LS151N              | <a href="#">Samples</a> |

| Orderable Device | Status<br>(1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan<br>(2)         | Lead/Ball Finish<br>(6) | MSL Peak Temp<br>(3) | Op Temp (°C) | Device Marking<br>(4/5)          | Samples                 |
|------------------|---------------|--------------|-----------------|------|-------------|-------------------------|-------------------------|----------------------|--------------|----------------------------------|-------------------------|
| SN74LS151NSR     | ACTIVE        | SO           | NS              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | 0 to 70      | 74LS151                          | <a href="#">Samples</a> |
| SN74LS151NSR     | ACTIVE        | SO           | NS              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | 0 to 70      | 74LS151                          | <a href="#">Samples</a> |
| SN74S151N        | OBSOLETE      | PDIP         | N               | 16   |             | TBD                     | Call TI                 | Call TI              | 0 to 70      | SN74S151N                        |                         |
| SN74S151N        | OBSOLETE      | PDIP         | N               | 16   |             | TBD                     | Call TI                 | Call TI              | 0 to 70      | SN74S151N                        |                         |
| SN74S151N3       | OBSOLETE      | PDIP         | N               | 16   |             | TBD                     | Call TI                 | Call TI              | 0 to 70      |                                  |                         |
| SN74S151N3       | OBSOLETE      | PDIP         | N               | 16   |             | TBD                     | Call TI                 | Call TI              | 0 to 70      |                                  |                         |
| SNJ54150J        | ACTIVE        | CDIP         | J               | 24   | 1           | TBD                     | Call TI                 | N / A for Pkg Type   | -55 to 125   | 5962-9558001QJ<br>A<br>SNJ54150J | <a href="#">Samples</a> |
| SNJ54150J        | ACTIVE        | CDIP         | J               | 24   | 1           | TBD                     | Call TI                 | N / A for Pkg Type   | -55 to 125   | 5962-9558001QJ<br>A<br>SNJ54150J | <a href="#">Samples</a> |
| SNJ54150W        | ACTIVE        | CFP          | W               | 24   | 1           | TBD                     | A42                     | N / A for Pkg Type   | -55 to 125   | 5962-9558001QK<br>A<br>SNJ54150W | <a href="#">Samples</a> |
| SNJ54150W        | ACTIVE        | CFP          | W               | 24   | 1           | TBD                     | A42                     | N / A for Pkg Type   | -55 to 125   | 5962-9558001QK<br>A<br>SNJ54150W | <a href="#">Samples</a> |
| SNJ54LS151FK     | ACTIVE        | LCCC         | FK              | 20   | 1           | TBD                     | POST-PLATE              | N / A for Pkg Type   | -55 to 125   | 76010012A<br>SNJ54LS<br>151FK    | <a href="#">Samples</a> |
| SNJ54LS151FK     | ACTIVE        | LCCC         | FK              | 20   | 1           | TBD                     | POST-PLATE              | N / A for Pkg Type   | -55 to 125   | 76010012A<br>SNJ54LS<br>151FK    | <a href="#">Samples</a> |
| SNJ54LS151J      | ACTIVE        | CDIP         | J               | 16   | 1           | TBD                     | A42                     | N / A for Pkg Type   | -55 to 125   | 7601001EA<br>SNJ54LS151J         | <a href="#">Samples</a> |
| SNJ54LS151J      | ACTIVE        | CDIP         | J               | 16   | 1           | TBD                     | A42                     | N / A for Pkg Type   | -55 to 125   | 7601001EA<br>SNJ54LS151J         | <a href="#">Samples</a> |
| SNJ54LS151W      | OBSOLETE      | CFP          | W               | 16   |             | TBD                     | Call TI                 | Call TI              | -55 to 125   | 7601001FA<br>SNJ54LS151W         |                         |
| SNJ54LS151W      | OBSOLETE      | CFP          | W               | 16   |             | TBD                     | Call TI                 | Call TI              | -55 to 125   | 7601001FA<br>SNJ54LS151W         |                         |
| SNJ54S151J       | ACTIVE        | CDIP         | J               | 16   | 1           | TBD                     | A42                     | N / A for Pkg Type   | -55 to 125   | SNJ54S151J                       | <a href="#">Samples</a> |

| Orderable Device | Status<br>(1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan<br>(2) | Lead/Ball Finish<br>(6) | MSL Peak Temp<br>(3) | Op Temp (°C) | Device Marking<br>(4/5) | Samples |
|------------------|---------------|--------------|-----------------|------|-------------|-----------------|-------------------------|----------------------|--------------|-------------------------|---------|
| SNJ54S151W       | ACTIVE        | CFP          | W               | 16   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | SNJ54S151W              | Samples |
| SNJ54S15FK       | OBSOLETE      | LCCC         | FK              | 20   |             | TBD             | Call TI                 | Call TI              | -55 to 125   |                         |         |
| SNJ54S15J        | OBSOLETE      | CDIP         | J               | 14   |             | TBD             | Call TI                 | Call TI              | -55 to 125   |                         |         |
| SNJ54S15W        | OBSOLETE      | CFP          | W               | 14   |             | TBD             | Call TI                 | Call TI              | -55 to 125   |                         |         |

(1) The marketing status values are defined as follows:

**ACTIVE:** Product device recommended for new designs.

**LIFEBUY:** TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

**NRND:** Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

**PREVIEW:** Device has been announced but is not in production. Samples may or may not be available.

**OBSOLETE:** TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

**TBD:** The Pb-Free/Green conversion plan has not been defined.

**Pb-Free (RoHS):** TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

**Pb-Free (RoHS Exempt):** This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

**Green (RoHS & no Sb/Br):** TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

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In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

**OTHER QUALIFIED VERSIONS OF SN54LS151, SN54S15, SN54S151, SN74LS151, SN74S151 :**

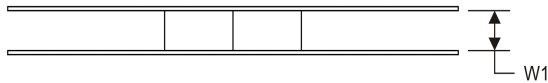
- Catalog: [SN74LS151](#), [SN74S15](#), [SN74S151](#)
- Military: [SN54LS151](#), [SN54S151](#)

NOTE: Qualified Version Definitions:

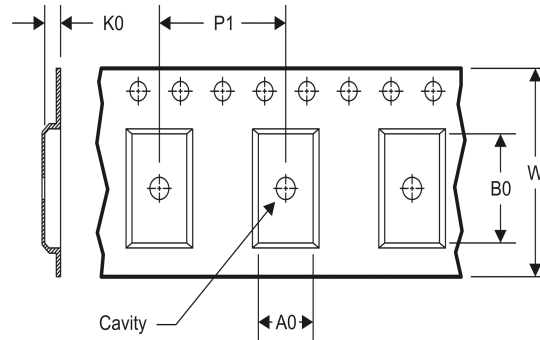
- Catalog - TI's standard catalog product
- Military - QML certified for Military and Defense Applications

**TAPE AND REEL INFORMATION**

**REEL DIMENSIONS**



**TAPE DIMENSIONS**



|    |   |
|----|---|
| A0 | Dimension designed to accommodate the component width     |
| B0 | Dimension designed to accommodate the component length    |
| K0 | Dimension designed to accommodate the component thickness |
| W  | Overall width of the carrier tape                         |
| P1 | Pitch between successive cavity centers                   |

**TAPE AND REEL INFORMATION**

\*All dimensions are nominal

| Device       | Package Type | Package Drawing | Pins | SPQ  | Reel Diameter (mm) | Reel Width W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P1 (mm) | W (mm) | Pin1 Quadrant |
|--------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| SN74LS151DR  | SOIC         | D               | 16   | 2500 | 330.0              | 16.4               | 6.5     | 10.3    | 2.1     | 8.0     | 16.0   | Q1            |
| SN74LS151NSR | SO           | NS              | 16   | 2000 | 330.0              | 16.4               | 8.2     | 10.5    | 2.5     | 12.0    | 16.0   | Q1            |

**TAPE AND REEL BOX DIMENSIONS**



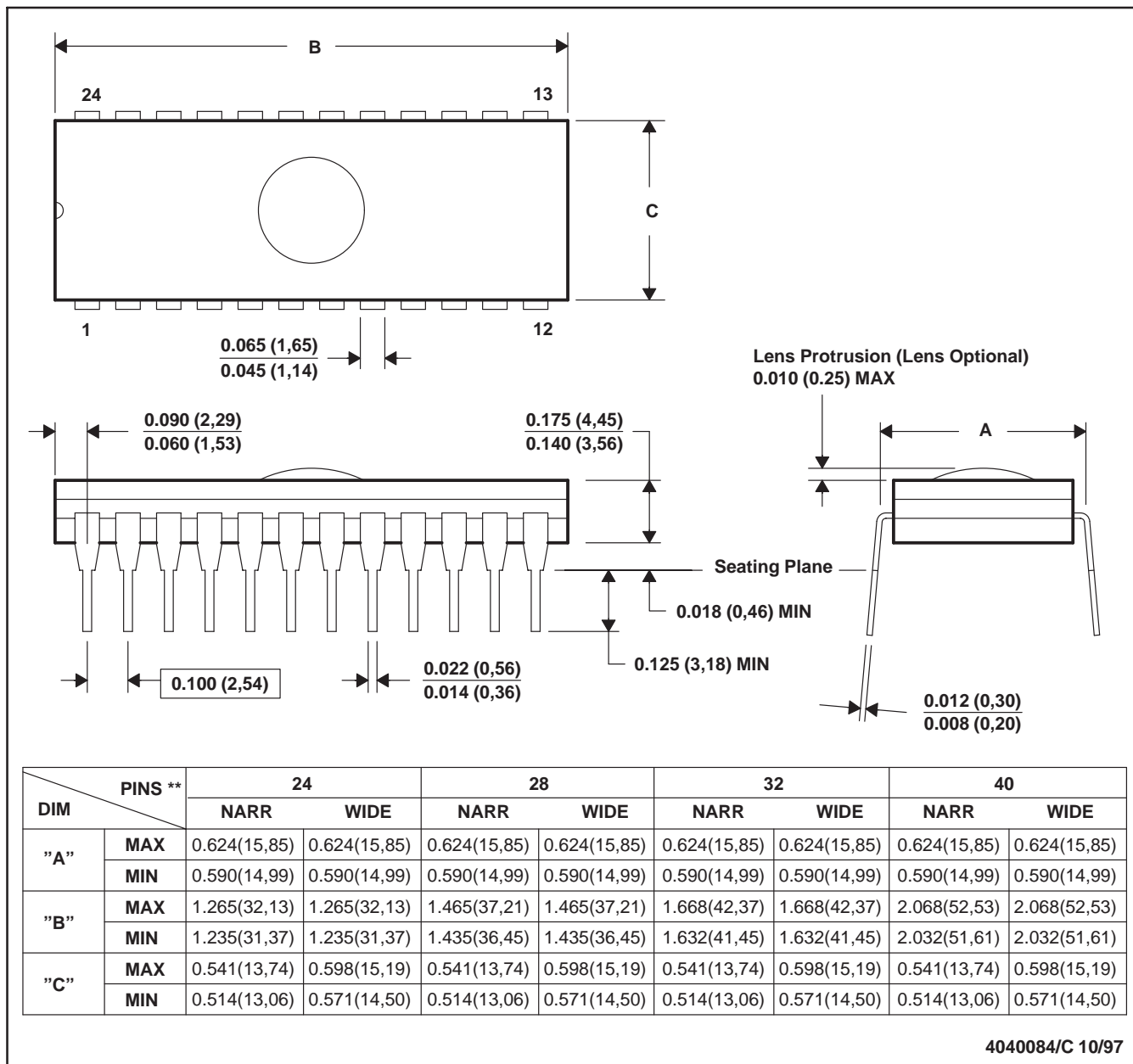
\*All dimensions are nominal

| Device       | Package Type | Package Drawing | Pins | SPQ  | Length (mm) | Width (mm) | Height (mm) |
|--------------|--------------|-----------------|------|------|-------------|------------|-------------|
| SN74LS151DR  | SOIC         | D               | 16   | 2500 | 333.2       | 345.9      | 28.6        |
| SN74LS151NSR | SO           | NS              | 16   | 2000 | 367.0       | 367.0      | 38.0        |

J (R-GDIP-T\*\*)

CERAMIC DUAL-IN-LINE PACKAGE

24 PINS SHOWN



- NOTES: A. All linear dimensions are in inches (millimeters).  
 B. This drawing is subject to change without notice.  
 C. Window (lens) added to this group of packages (24-, 28-, 32-, 40-pin).  
 D. This package can be hermetically sealed with a ceramic lid using glass frit.  
 E. Index point is provided on cap for terminal identification.

FK (S-CQCC-N\*\*)

LEADLESS CERAMIC CHIP CARRIER

28 TERMINAL SHOWN



| NO. OF TERMINALS ** | A                |                  | B                |                  |
|---------------------|------------------|------------------|------------------|------------------|
|                     | MIN              | MAX              | MIN              | MAX              |
| 20                  | 0.342<br>(8,69)  | 0.358<br>(9,09)  | 0.307<br>(7,80)  | 0.358<br>(9,09)  |
| 28                  | 0.442<br>(11,23) | 0.458<br>(11,63) | 0.406<br>(10,31) | 0.458<br>(11,63) |
| 44                  | 0.640<br>(16,26) | 0.660<br>(16,76) | 0.495<br>(12,58) | 0.560<br>(14,22) |
| 52                  | 0.740<br>(18,78) | 0.761<br>(19,32) | 0.495<br>(12,58) | 0.560<br>(14,22) |
| 68                  | 0.938<br>(23,83) | 0.962<br>(24,43) | 0.850<br>(21,6)  | 0.858<br>(21,8)  |
| 84                  | 1.141<br>(28,99) | 1.165<br>(29,59) | 1.047<br>(26,6)  | 1.063<br>(27,0)  |



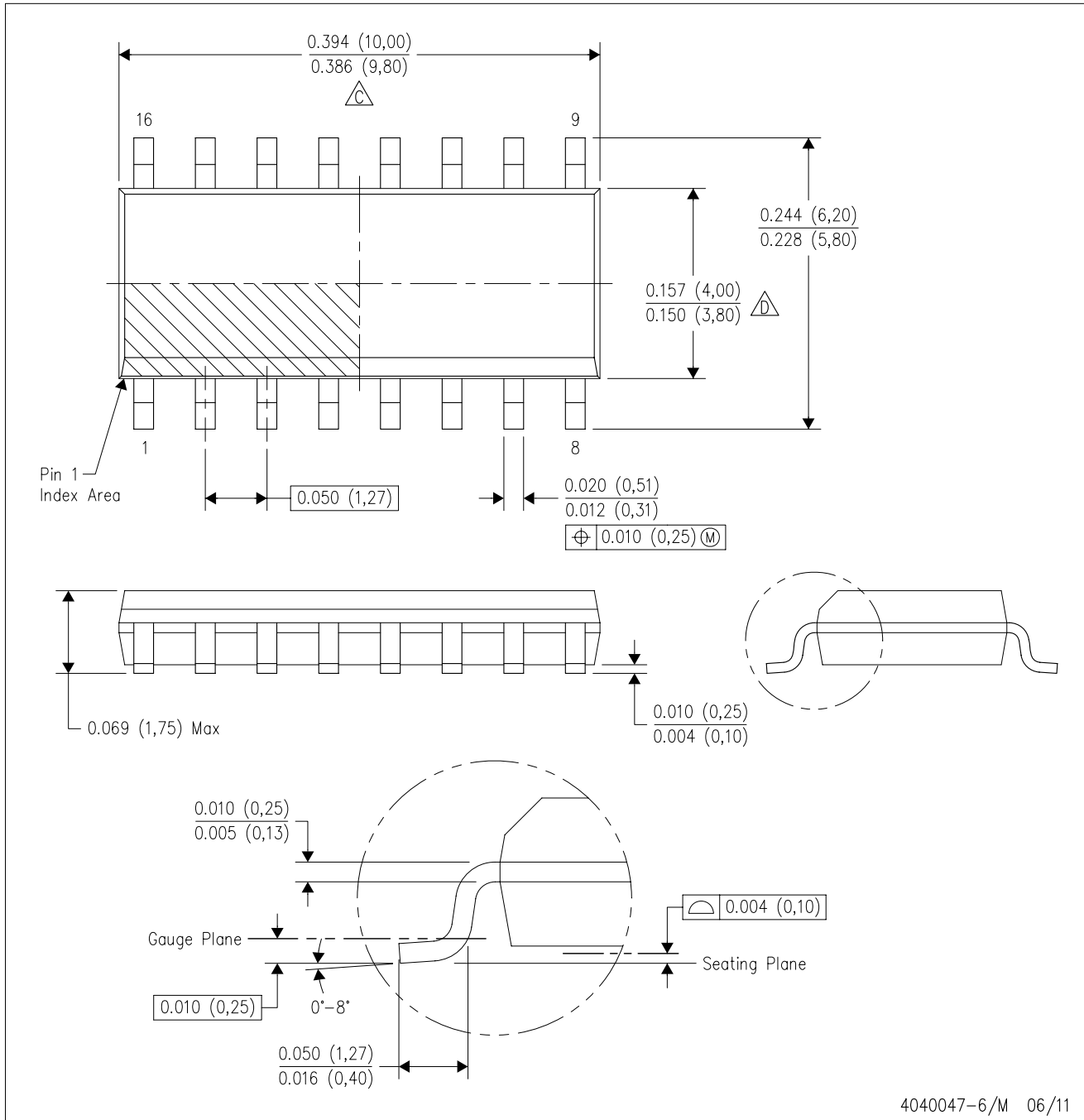
4040140/D 01/11

- NOTES:
- All linear dimensions are in inches (millimeters).
  - This drawing is subject to change without notice.
  - This package can be hermetically sealed with a metal lid.
  - Falls within JEDEC MS-004



D (R-PDSO-G16)

PLASTIC SMALL OUTLINE



4040047-6/M 06/11

- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - C. Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.006 (0,15) each side.
  - D. Body width does not include interlead flash. Interlead flash shall not exceed 0.017 (0,43) each side.
  - E. Reference JEDEC MS-012 variation AC.

D (R-PDSO-G16)

PLASTIC SMALL OUTLINE



4211283-4/E 08/12

- NOTES:
- A. All linear dimensions are in millimeters.
  - B. This drawing is subject to change without notice.
  - C. Publication IPC-7351 is recommended for alternate designs.
  - D. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525 for other stencil recommendations.
  - E. Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

# MECHANICAL DATA

NS (R-PDSO-G\*\*)

PLASTIC SMALL-OUTLINE PACKAGE

14-PINS SHOWN



- NOTES:
- A. All linear dimensions are in millimeters.
  - B. This drawing is subject to change without notice.
  - C. Body dimensions do not include mold flash or protrusion, not to exceed 0,15.

J (R-GDIP-T\*\*)

14 LEADS SHOWN

CERAMIC DUAL IN-LINE PACKAGE



| DIM \ PINS ** | 14                     | 16                     | 18                     | 20                     |
|---------------|------------------------|------------------------|------------------------|------------------------|
| A             | 0.300<br>(7,62)<br>BSC | 0.300<br>(7,62)<br>BSC | 0.300<br>(7,62)<br>BSC | 0.300<br>(7,62)<br>BSC |
| B MAX         | 0.785<br>(19,94)       | .840<br>(21,34)        | 0.960<br>(24,38)       | 1.060<br>(26,92)       |
| B MIN         | —                      | —                      | —                      | —                      |
| C MAX         | 0.300<br>(7,62)        | 0.300<br>(7,62)        | 0.310<br>(7,87)        | 0.300<br>(7,62)        |
| C MIN         | 0.245<br>(6,22)        | 0.245<br>(6,22)        | 0.220<br>(5,59)        | 0.245<br>(6,22)        |

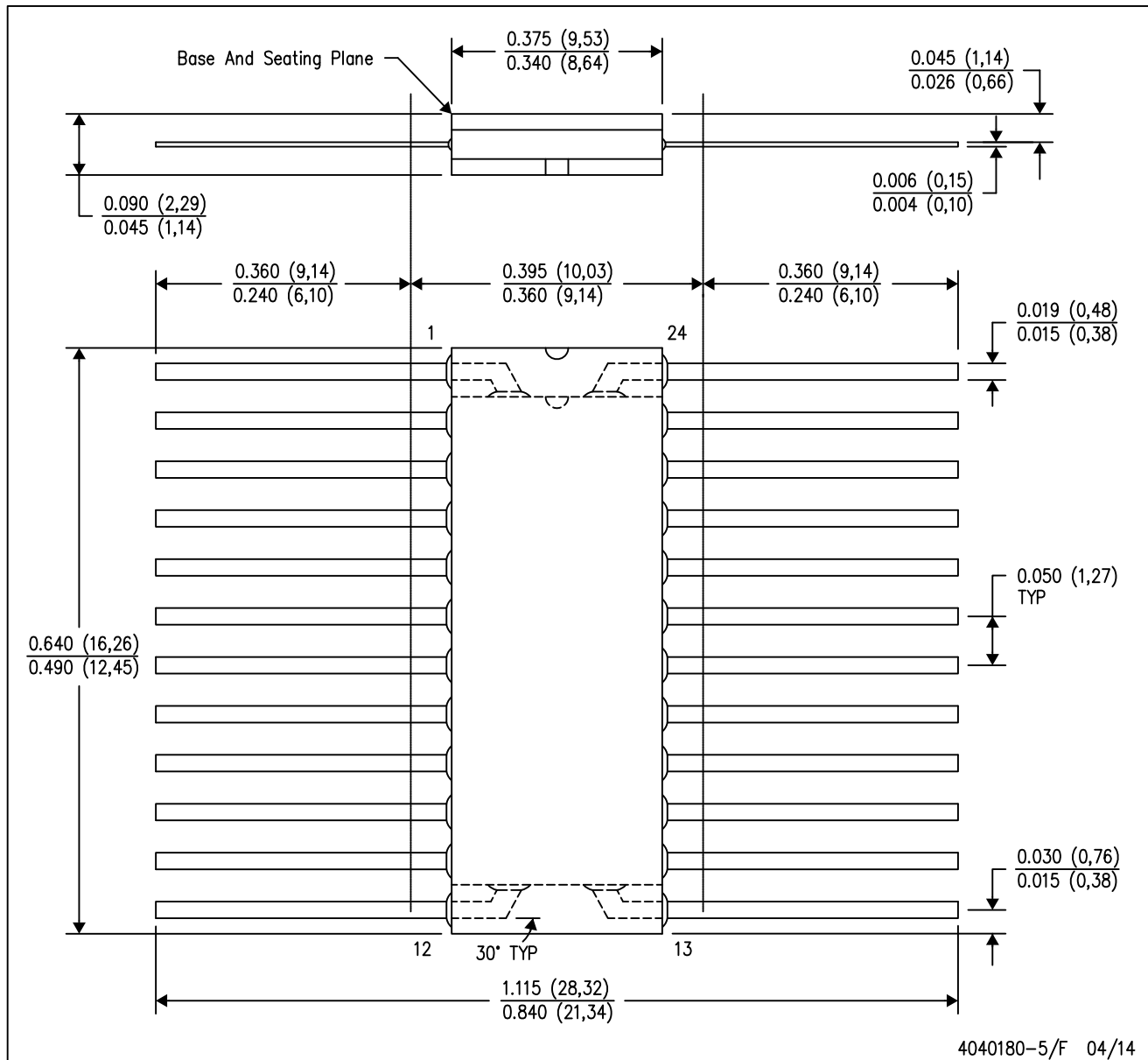


4040083/F 03/03

- NOTES:
- All linear dimensions are in inches (millimeters).
  - This drawing is subject to change without notice.
  - This package is hermetically sealed with a ceramic lid using glass frit.
  - Index point is provided on cap for terminal identification only on press ceramic glass frit seal only.
  - Falls within MIL STD 1835 GDIP1-T14, GDIP1-T16, GDIP1-T18 and GDIP1-T20.

W (R-GDFP-F24)

CERAMIC DUAL FLATPACK



- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - C. This package can be hermetically sealed with a ceramic lid using glass frit.
  - D. Index point is provided on cap for terminal identification only.
  - E. Falls within Mil-Std 1835 GDFP2-F20

W (R-GDFP-F16)

CERAMIC DUAL FLATPACK



- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - C. This package can be hermetically sealed with a ceramic lid using glass frit.
  - D. Index point is provided on cap for terminal identification only.
  - E. Falls within MIL STD 1835 GDFP2-F16

N (R-PDIP-T\*\*)

PLASTIC DUAL-IN-LINE PACKAGE

16 PINS SHOWN



- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - Falls within JEDEC MS-001, except 18 and 20 pin minimum body length (Dim A).
  - The 20 pin end lead shoulder width is a vendor option, either half or full width.

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|                               |  |
|-------------------------------|--|
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