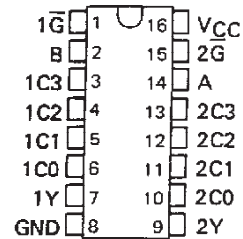


**SN54153, SN54LS153, SN54S153**  
**SN74153, SN74LS153, SN74S153**  
**DUAL 4-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS**  
 SDLS055A – DECEMBER 1972 – REVISED MAY 2007

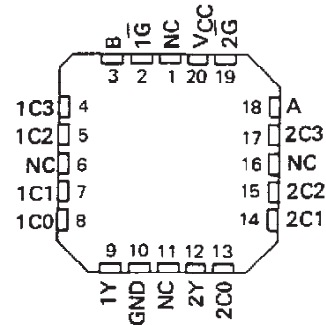
- Permits Multiplexing from N lines to 1 line
- Performs Parallel-to-Serial Conversion
- Strobe (Enable) Line Provided for Cascading (N lines to n lines)
- High-Fan-Out, Low-Impedance, Totem-Pole Outputs
- Fully Compatible with most TTL Circuits

SN54153, SN54LS153, SN54S153 . . . J OR W PACKAGE<sup>(1)</sup>  
 SN74153 . . . N PACKAGE  
 SN74LS153, SN74S153 . . . D OR N PACKAGE  
 (TOP VIEW)



| TYPE  | TYPICAL AVERAGE PROPAGATION DELAY TIMES |             |             | TYPICAL POWER DISSIPATION |
|-------|---|-------------|-------------|---------------------------|
|       | FROM DATA                               | FROM STROBE | FROM SELECT |                           |
| '153  | 14 ns                                   | 17 ns       | 22 ns       | 180 mW                    |
| LS153 | 14 ns                                   | 19 ns       | 22 ns       | 31 mW                     |
| 'S153 | 6 ns                                    | 9.5 ns      | 12 ns       | 225 mW                    |

SN54LS153, SN54S153 . . . FK PACKAGE<sup>(1)</sup>  
 (TOP VIEW)



**description**

Each of these monolithic, data selectors/multiplexers contains inverters and drivers to supply fully complementary, on-chip, binary decoding data selection to the AND-OR gates. Separate strobe inputs are provided for each of the two four-line sections.

FUNCTION TABLE

| SELECT INPUTS |   | DATA INPUTS |    |    |    | STROBE    | OUTPUT |
|---------------|---|-------------|----|----|----|-----------|--------|
| B             | A | C0          | C1 | C2 | C3 | $\bar{G}$ | Y      |
| X             | X | X           | X  | X  | X  | H         | L      |
| L             | L | L           | X  | X  | X  | L         | L      |
| L             | L | H           | X  | X  | X  | L         | H      |
| L             | H | X           | L  | X  | X  | L         | L      |
| L             | H | X           | H  | X  | X  | L         | H      |
| H             | L | X           | X  | L  | X  | L         | L      |
| H             | L | X           | X  | H  | X  | L         | H      |
| H             | H | X           | X  | X  | L  | L         | L      |
| H             | H | X           | X  | X  | H  | L         | H      |

Select inputs A and B are common to both sections.  
 H = high level, L = low level, X = irrelevant

NC - No internal connection

<sup>(1)</sup> SN54S153, SN74153, and SN74S153 are obsolete.

**absolute maximum ratings over operating free-air temperature range (unless otherwise noted)**

|   |                |
|---|----------------|
| Supply voltage, VCC (See Note 1)            | 7 V            |
| Input voltage: '153, 'S153                  | 5.5 V          |
| LS153                                       | 7 V            |
| Operating free-air temperature range: SN54' | -55°C to 125°C |
| SN74'                                       | 0°C to 70°C    |
| Storage temperature range                   | -65°C to 150°C |

NOTE 1: Voltage values are with respect to network ground terminal.

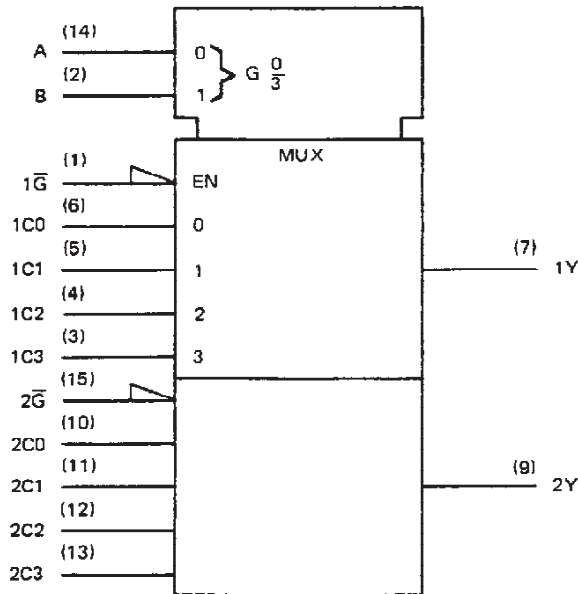
PRODUCTION DATA documents contain information current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.



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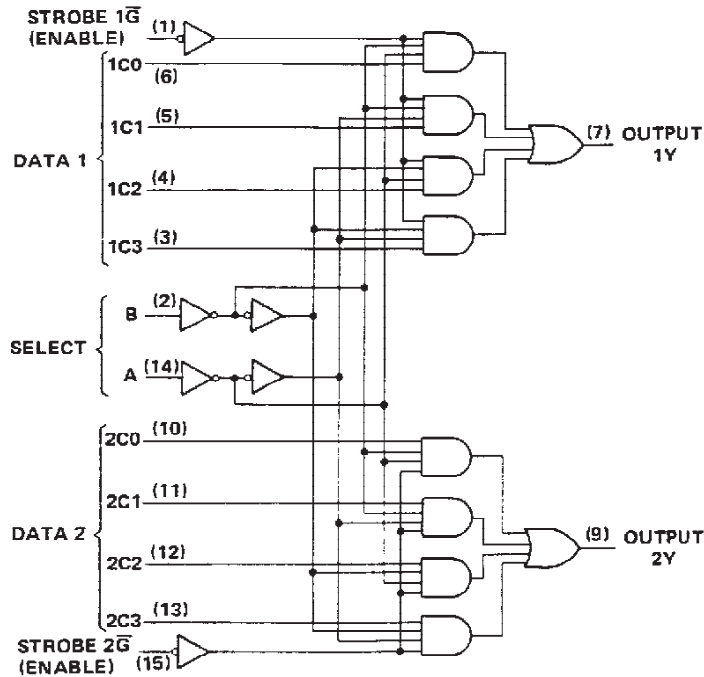
**SN54153, SN54LS153, SN54S153  
 SN74153, SN74LS153, SN74S153  
 DUAL 4-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS**

logic symbol†



†This symbol is in accordance with ANSI/IEEE Std. 91-1984 and IEC Publication 617-12.

logic diagrams (positive logic)



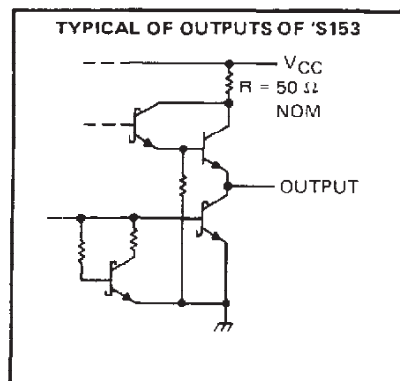
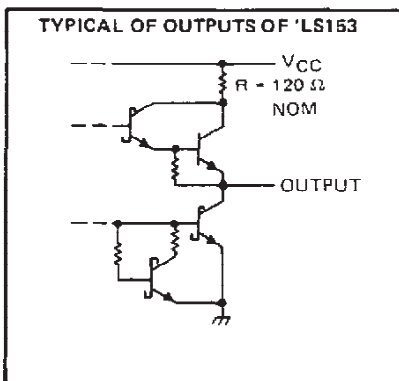
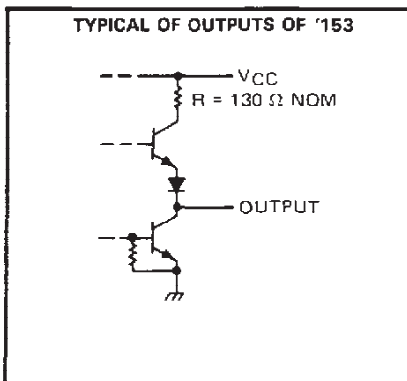
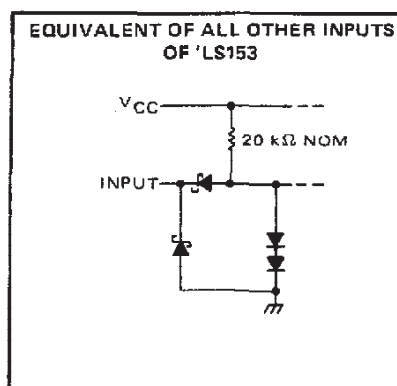
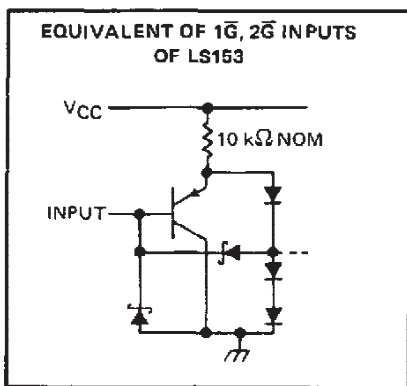
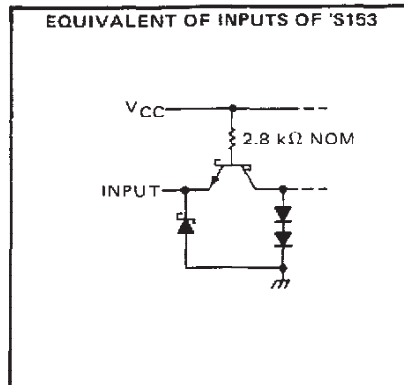
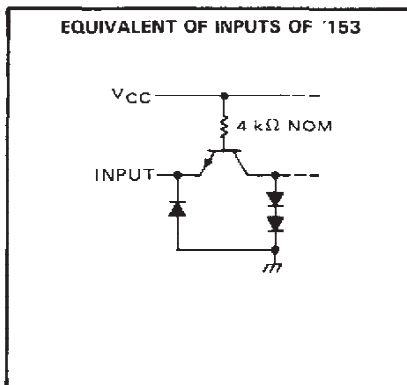
Pin numbers shown are for D, J, N, and W packages.

**TEXAS  
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**SN54153, SN54LS153, SN54S153  
SN74153, SN74LS153, SN74S153  
DUAL 4-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS**

schematics of inputs and outputs



# SN54153, SN74153

## DUAL 4-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS

### recommended operating conditions

|                                       | SN54153 |     |      | SN74153 |     |      | 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>   | SN54153 |                  |      | SN74153 |                  |      | 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                       | $V_{CC} = \text{MIN}, I_I = -12 \text{ mA}$  |         |                  | -1.5 |         |                  | -1.5 | V       |
| $V_{OH}$ High-level output voltage                 | $V_{CC} = \text{MIN}, V_{IH} = 2 \text{ V}, V_{IL} = 0.8 \text{ V}, I_{OH} = -800 \mu\text{A}$ | 2.4     | 3.4              |      | 2.4     | 3.4              |      | V       |
| $V_{OL}$ Low-level output voltage                  | $V_{CC} = \text{MIN}, V_{IH} = 2 \text{ V}, V_{IL} = 0.8 \text{ V}, I_{OL} = 16 \text{ mA}$    |         | 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> | $V_{CC} = \text{MAX}$  | -20     |                  | -55  | -18     |                  | -57  | mA      |
| $I_{CCL}$ Supply current, output low               | $V_{CC} = \text{MAX}, \text{ See Note 2}$  |         | 36               | 52   |         | 36               | 60   | mA      |

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

<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.

NOTE 2:  $I_{CCL}$  is measured with the outputs open and all inputs grounded.

### 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 |
|------------------------|------------------|-------------|--|-----|-----|-----|------|
| $t_{PLH}$              | Data             | Y           | $C_L = 30 \text{ pF}, R_L = 400 \Omega,$<br>See Note 3 |     | 12  | 18  | ns   |
| $t_{PHL}$              | Data             | Y           |  |     | 15  | 23  | ns   |
| $t_{PLH}$              | Select           | Y           |  |     | 22  | 34  | ns   |
| $t_{PHL}$              | Select           | Y           |  |     | 22  | 34  | ns   |
| $t_{PLH}$              | Strobe $\bar{G}$ | Y           |  |     | 19  | 30  | ns   |
| $t_{PHL}$              | Strobe $\bar{G}$ | Y           |  |     | 15  | 23  | ns   |

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

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

NOTE 3: Load circuits and voltage waveforms are shown in Section 1.

TEXAS  
INSTRUMENTS

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# SN54LS153, SN74LS153 DUAL 4-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS

## recommended operating conditions

|   | SN54LS153 |     |      | SN74LS153 |     |      | UNIT |
|---|-----------|-----|------|-----------|-----|------|------|
|   | MIN       | NOM | MAX  | MIN       | NOM | MAX  |      |
| V <sub>CC</sub> Supply voltage                | 4.5       | 5   | 5.5  | 4.75      | 5   | 5.25 | V    |
| V <sub>IH</sub> High-level input voltage      | 2         |     |      | 2         |     |      | V    |
| V <sub>IL</sub> Low-level input voltage       |           |     | 0.7  |           |     | 0.8  | V    |
| I <sub>OH</sub> High-level output current     |           |     | -0.4 |           |     | -0.4 | mA   |
| I <sub>OL</sub> Low-level output current      |           |     | 4    |           |     | 8    | mA   |
| T <sub>A</sub> Operating free-air temperature | -55       |     | 125  | 0         |     | 70   | °C   |

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

| PARAMETER         | TEST CONDITIONS †  | SN54LS153 |       | SN74LS153 |      | UNIT |
|-------------------|--|-----------|-------|-----------|------|------|
|                   |  | MIN       | TYP ‡ | MAX       | MIN  |      |
| V <sub>IK</sub>   | V <sub>CC</sub> = MIN, I <sub>I</sub> = -18 mA   |           | -1.5  |           | -1.5 | V    |
| V <sub>OH</sub>   | V <sub>CC</sub> = MIN, V <sub>IH</sub> = 2 V, V <sub>IL</sub> = MAX<br>I <sub>OH</sub> = -0.4 mA | 2.5       | 3.4   | 2.7       | 3.4  | V    |
| V <sub>OL</sub>   | V <sub>CC</sub> = MIN, V <sub>IH</sub> = 2 V, V <sub>IL</sub> = MAX,<br>I <sub>OL</sub> = 4 mA   | 0.25      | 0.4   | 0.25      | 0.4  | V    |
|                   |  |           |       | 0.35      | 0.5  |      |
| I <sub>I</sub>    | V <sub>CC</sub> = MAX, V <sub>I</sub> = 7 V  |           | 0.1   |           | 0.1  | mA   |
| I <sub>IH</sub>   | V <sub>CC</sub> = MAX, V <sub>I</sub> = 2.7 V  |           | 20    |           | 20   | µA   |
| I <sub>IL</sub>   | V <sub>CC</sub> = MAX, V <sub>I</sub> = 0.4 V  | -0.2      |       | -0.2      |      | mA   |
|                   |  |           |       | -0.4      |      |      |
| I <sub>OS</sub> § | V <sub>CC</sub> = MAX  | -20       | -100  | -20       | -100 | mA   |
| I <sub>CCL</sub>  | V <sub>CC</sub> = MAX, See Note 2  | 6.2       | 10    | 6.2       | 10   | mA   |

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

‡ All typical values are at V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C.

§ Not more than one output should be shorted at a time.

NOTE 2: I<sub>CCL</sub> is measured with the outputs open and all inputs grounded.

## switching characteristics, V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C

| PARAMETER †      | FROM (INPUT)     | TO (OUTPUT) | TEST CONDITIONS   | MIN | TYP | MAX | UNIT |
|------------------|------------------|-------------|---|-----|-----|-----|------|
| t <sub>PLH</sub> | Data             | Y           | C <sub>L</sub> = 15 pF,<br>R <sub>L</sub> = 2 kΩ,<br>See Note 3 |     | 10  | 15  | ns   |
| t <sub>PHL</sub> | Data             | Y           |   | 17  | 26  | ns  |      |
| t <sub>PLH</sub> | Select           | Y           |   | 19  | 29  | ns  |      |
| t <sub>PHL</sub> | Select           | Y           |   | 25  | 38  | ns  |      |
| t <sub>PLH</sub> | Strobe $\bar{G}$ | Y           |   | 16  | 24  | ns  |      |
| t <sub>PHL</sub> | Strobe $\bar{G}$ | Y           |   | 21  | 32  | ns  |      |

† t<sub>PLH</sub> = propagation delay time, low-to-high-level output

t<sub>PHL</sub> = propagation delay time, high-to-low-level output

NOTE 3: Load circuits and voltage waveforms are shown in Section 1.

  
**TEXAS  
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# SN54S153, SN74S153 DUAL 4-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS

## recommended operating conditions

|                                       | SN54S153 |     |     | SN74S153 |     |      | 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   | °C   |

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

| PARAMETER                                    | TEST CONDITIONS†  | MIN | TYP‡                                   | 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>$V_{IL} = 0.8 \text{ V}$ , $I_{OH} = -1 \text{ mA}$ |     | Series 54S<br>2.5<br>Series 74S<br>3.4 |      | V    |
| $V_{OL}$ Low-level output voltage            | $V_{CC} = \text{MIN}$ , $V_{IH} = 2 \text{ V}$ ,<br>$V_{IL} = 0.8 \text{ V}$ , $I_{OL} = 20 \text{ mA}$ |     |  | 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   | µA   |
| $I_{IL}$ Low-level input current             | $V_{CC} = \text{MAX}$ , $V_I = 0.5 \text{ V}$   |     |  | -2   | mA   |
| $I_{OS}$ Short-circuit output current§       | $V_{CC} = \text{MAX}$   | -40 |  | -100 | mA   |
| $I_{CCL}$ Supply current, low-level output   | $V_{CC} = \text{MAX}$ , See Note 2  |     | 45                                     | 70   | mA   |

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

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

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

NOTE 2:  $I_{CCL}$  is measured with the outputs open and all inputs grounded.

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

| PARAMETER¶ | FROM (INPUT)          | TO (OUTPUT) | TEST CONDITIONS  | MIN | TYP  | MAX  | UNIT |
|------------|-----------------------|-------------|--|-----|------|------|------|
| $t_{PLH}$  | Data                  | Y           | $C_L = 15 \text{ pF}$ , $R_L = 280 \Omega$ ,<br>See Note 3 |     | 6    | 9    | ns   |
| $t_{PHL}$  | Data                  | Y           |  |     | 6    | 9    | ns   |
| $t_{PLH}$  | Select                | Y           |  |     | 11.5 | 18   | ns   |
| $t_{PHL}$  | Select                | Y           |  |     | 12   | 18   | ns   |
| $t_{PLH}$  | Strobe $\overline{G}$ | Y           |  |     | 10   | 15   | ns   |
| $t_{PHL}$  | Strobe $\overline{G}$ | Y           |  |     | 9    | 13.5 | ns   |

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

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

NOTE 3: Load circuits and voltage waveforms are shown in Section 1.

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**PACKAGING INFORMATION**

| Orderable Device | Status <sup>(1)</sup> | Package Type | Package Drawing | Pins | Package Qty | Eco Plan <sup>(2)</sup> | Lead/Ball Finish | MSL Peak Temp <sup>(3)</sup> |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| 76011012A        | ACTIVE                | LCCC         | FK              | 20   | 1           | TBD                     | POST-PLATE       | N / A for Pkg Type           |
| 7601101EA        | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | A42 SNPB         | N / A for Pkg Type           |
| 7601101FA        | ACTIVE                | CFP          | W               | 16   | 1           | TBD                     | A42              | N / A for Pkg Type           |
| JM38510/07902BEA | OBSOLETE              | CDIP         | J               | 16   |             | TBD                     | Call TI          | Call TI                      |
| JM38510/07902BFA | OBSOLETE              | CFP          | W               | 16   |             | TBD                     | Call TI          | Call TI                      |
| JM38510/30902B2A | ACTIVE                | LCCC         | FK              | 20   | 1           | TBD                     | POST-PLATE       | N / A for Pkg Type           |
| JM38510/30902BEA | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | A42 SNPB         | N / A for Pkg Type           |
| SN54153J         | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | A42 SNPB         | N / A for Pkg Type           |
| SN54LS153J       | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | A42 SNPB         | N / A for Pkg Type           |
| SN54S153J        | OBSOLETE              | CDIP         | J               | 16   |             | TBD                     | Call TI          | Call TI                      |
| SN74153N         | OBSOLETE              | PDIP         | N               | 16   |             | TBD                     | Call TI          | Call TI                      |
| SN74LS153D       | ACTIVE                | SOIC         | D               | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS153DE4     | ACTIVE                | SOIC         | D               | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS153DG4     | ACTIVE                | SOIC         | D               | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS153DR      | ACTIVE                | SOIC         | D               | 16   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS153DRE4    | ACTIVE                | SOIC         | D               | 16   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS153DRG4    | ACTIVE                | SOIC         | D               | 16   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS153J       | OBSOLETE              | CDIP         | J               | 16   |             | TBD                     | Call TI          | Call TI                      |
| SN74LS153N       | ACTIVE                | PDIP         | N               | 16   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | N / A for Pkg Type           |
| SN74LS153N3      | OBSOLETE              | PDIP         | N               | 16   |             | TBD                     | Call TI          | Call TI                      |
| SN74LS153NE4     | ACTIVE                | PDIP         | N               | 16   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | N / A for Pkg Type           |
| SN74LS153NSR     | ACTIVE                | SO           | NS              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS153NSRE4   | ACTIVE                | SO           | NS              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS153NSRG4   | ACTIVE                | SO           | NS              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74S153D        | OBSOLETE              | SOIC         | D               | 16   |             | TBD                     | Call TI          | Call TI                      |
| SN74S153N        | OBSOLETE              | PDIP         | N               | 16   |             | TBD                     | Call TI          | Call TI                      |
| SN74S153N3       | OBSOLETE              | PDIP         | N               | 16   |             | TBD                     | Call TI          | Call TI                      |
| SNJ54153J        | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | A42 SNPB         | N / A for Pkg Type           |
| SNJ54153W        | ACTIVE                | CFP          | W               | 16   | 1           | TBD                     | A42              | N / A for Pkg Type           |
| SNJ54LS153FK     | ACTIVE                | LCCC         | FK              | 20   | 1           | TBD                     | POST-PLATE       | N / A for Pkg Type           |
| SNJ54LS153J      | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | A42 SNPB         | N / A for Pkg Type           |
| SNJ54LS153W      | ACTIVE                | CFP          | W               | 16   | 1           | TBD                     | A42              | N / A for Pkg Type           |
| SNJ54S153FK      | OBSOLETE              | LCCC         | FK              | 20   |             | TBD                     | Call TI          | Call TI                      |
| SNJ54S153J       | OBSOLETE              | CDIP         | J               | 16   |             | TBD                     | Call TI          | Call TI                      |

| Orderable Device | Status <sup>(1)</sup> | Package Type | Package Drawing | Pins | Package Qty | Eco Plan <sup>(2)</sup> | Lead/Ball Finish | MSL Peak Temp <sup>(3)</sup> |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| SNJ54S153W       | OBSOLETE              | CFP          | W               | 16   |             | TBD                     | Call TI          | Call TI                      |

<sup>(1)</sup> 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.

<sup>(2)</sup> 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)

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

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**TAPE AND REEL INFORMATION**



**QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE**



\*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 |
|--------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| SN74LS153DR  | SOIC         | D               | 16   | 2500 | 330.0              | 16.4               | 6.5     | 10.3    | 2.1     | 8.0     | 16.0   | Q1            |
| SN74LS153NSR | 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) |
|--------------|--------------|-----------------|------|------|-------------|------------|-------------|
| SN74LS153DR  | SOIC         | D               | 16   | 2500 | 333.2       | 345.9      | 28.6        |
| SN74LS153NSR | SO           | NS              | 16   | 2000 | 346.0       | 346.0      | 33.0        |

## 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.

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

LEADLESS CERAMIC CHIP CARRIER

28 TERMINAL SHOWN



- 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 metal lid.
  - D. The terminals are gold plated.
  - E. Falls within JEDEC MS-004

W (R-GDFP-F16)

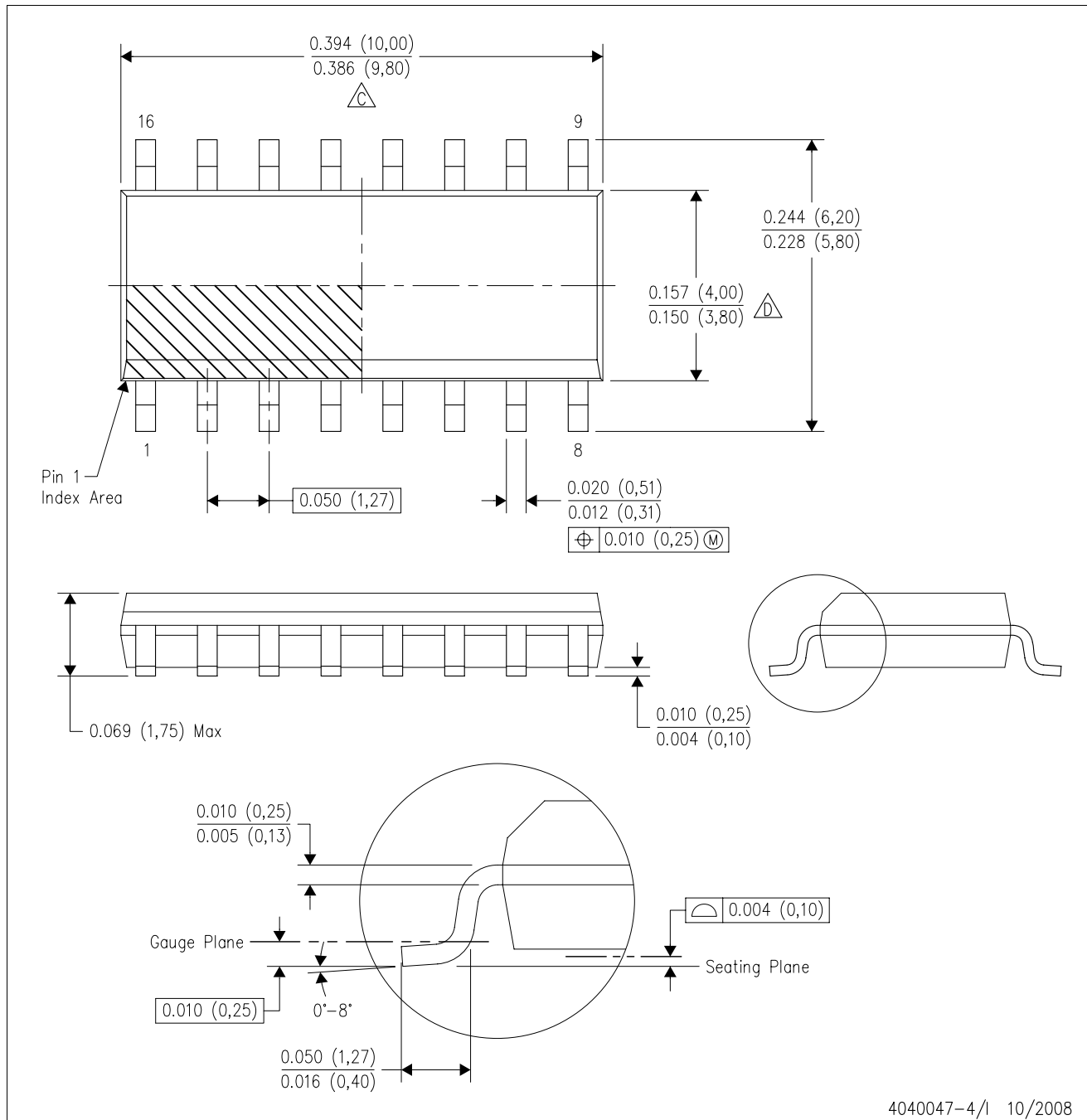
CERAMIC DUAL FLATPACK



- 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 GDFP1-F16 and JEDEC MO-092AC

D (R-PDSO-G16)

PLASTIC SMALL-OUTLINE PACKAGE



- 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 .006 (0,15) per end.
  - D. Body width does not include interlead flash. Interlead flash shall not exceed .017 (0,43) per side.
  - E. Reference JEDEC MS-012 variation AC.

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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