- 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

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

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

```
       _
    1G [ 1    16 ] V_CC
     B [ 2    15 ] 2G
   1C3 [ 3    14 ] A
   1C2 [ 4    13 ] 2C3
   1C1 [ 5    12 ] 2C2
   1C0 [ 6    11 ] 2C1
    1Y [ 7    10 ] 2C0
   GND [ 8     9 ] 2Y
```

SN54LS153, SN54S153 . . . FK PACKAGE (1)
(TOP VIEW)

```
           _             _
        B  1G  NC V_CC  2G
        3   2   1  20  19
  1C3 [ 4              18 ] A
  1C2 [ 5              17 ] 2C3
   NC [ 6              16 ] NC
  1C1 [ 7              15 ] 2C2
  1C0 [ 8              14 ] 2C1
        9  10  11  12  13
        1Y GND NC  2Y 2C0
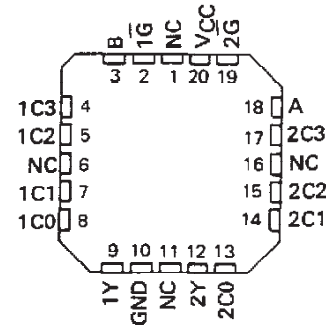```

NC – No internal connection

## 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.

(1) SN54S153, SN74153, and SN74S153 are obsolete.

### FUNCTION TABLE

| SELECT INPUTS | | DATA INPUTS | | | | STROBE | OUTPUT |
|---|---|---|---|---|---|---|---|
| B | A | C0 | C1 | C2 | C3 | $\overline{G}$ | 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

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

| | |
|---|---|
| Supply voltage, $V_{CC}$ (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 |

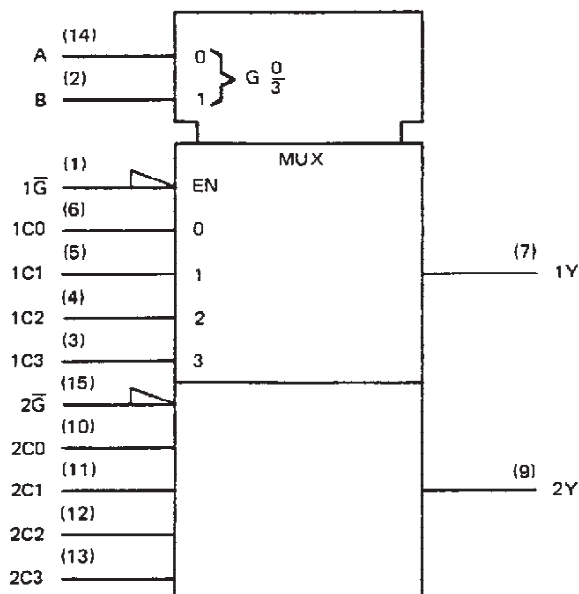NOTE 1: Voltage values are with respect to network ground terminal.

## logic symbol[†]



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

## logic diagrams (positive logic)
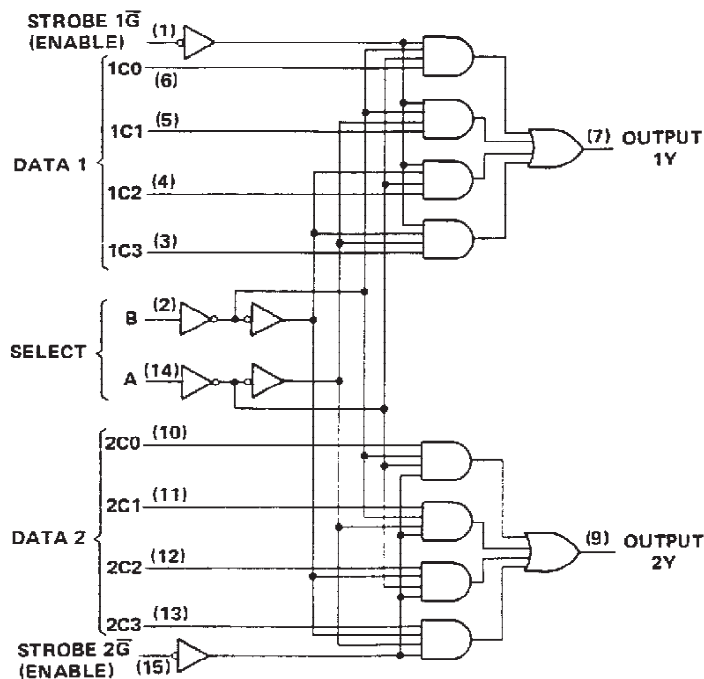


Pin numbers shown are for D, J, N, and W packages.

schematics of inputs and outputs



EQUIVALENT OF INPUTS OF '153



EQUIVALENT OF INPUTS OF 'S153



EQUIVALENT OF 1G̅, 2G̅ INPUTS OF LS153



EQUIVALENT OF ALL OTHER INPUTS OF 'LS153



TYPICAL OF OUTPUTS OF '153



TYPICAL OF OUTPUTS OF 'LS153



TYPICAL OF OUTPUTS OF 'S153
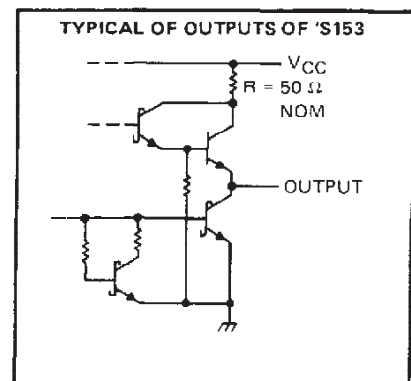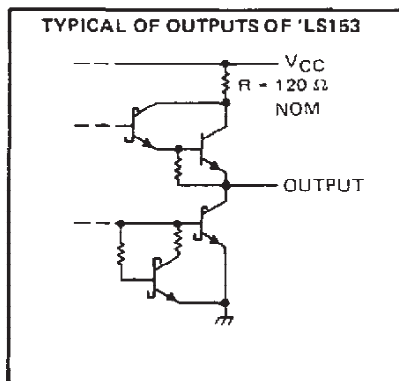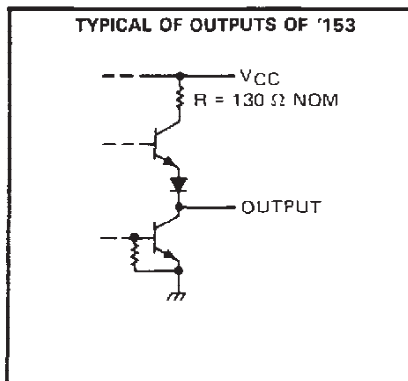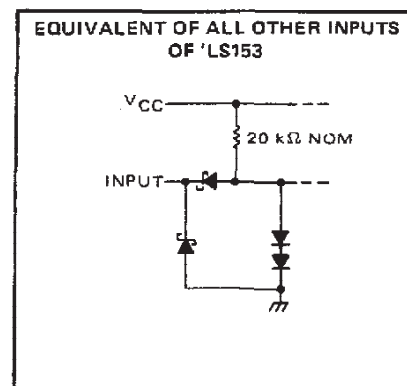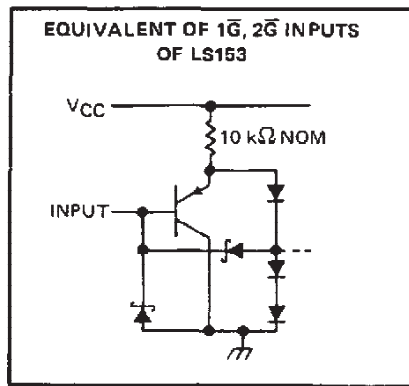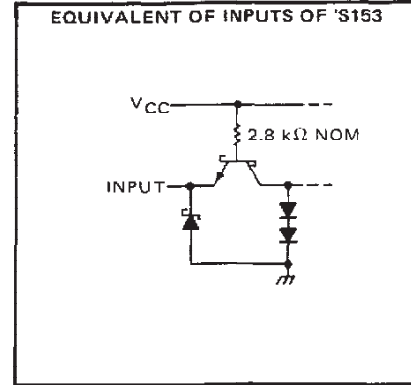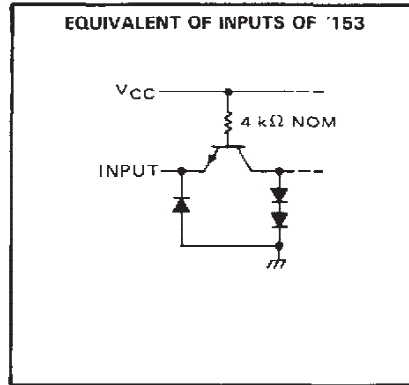
TEXAS
INSTRUMENTS
POST OFFICE BOX 655012 • DALLAS, TEXAS 75265

## 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 | °C |

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

| PARAMETER | | TEST CONDITIONS[†] | SN54153 | | | SN74153 | | | UNIT |
|---|---|---|---|---|---|---|---|---|---|
| | | | MIN | TYP[‡] | MAX | MIN | TYP[‡] | 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 | $V_{CC}$ = MIN, $I_I$ = −12 mA | | | −1.5 | | | −1.5 | V |
| $V_{OH}$ | High-level output voltage | $V_{CC}$ = MIN, $V_{IH}$ = 2 V, $V_{IL}$ = 0.8 V, $I_{OH}$ = −800 $\mu$A | 2.4 | 3.4 | | 2.4 | 3.4 | | V |
| $V_{OL}$ | Low-level output voltage | $V_{CC}$ = MIN, $V_{IH}$ = 2 V, $V_{IL}$ = 0.8 V, $I_{OL}$ = 16 mA | | 0.2 | 0.4 | | 0.2 | 0.4 | V |
| $I_I$ | Input current at maximum input voltage | $V_{CC}$ = MAX, $V_I$ = 5.5 V | | | 1 | | | 1 | mA |
| $I_{IH}$ | High-level input current | $V_{CC}$ = MAX, $V_I$ = 2.4 V | | | 40 | | | 40 | $\mu$A |
| $I_{IL}$ | Low-level input current | $V_{CC}$ = MAX, $V_I$ = 0.4 V | | | −1.6 | | | −1.6 | mA |
| $I_{OS}$ | Short-circuit output current[§] | $V_{CC}$ = MAX | −20 | | −55 | −18 | | −57 | mA |
| $I_{CCL}$ | Supply current, output low | $V_{CC}$ = MAX, See Note 2 | | 36 | 52 | | 36 | 60 | 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 V, $T_A$ = 25°C.
[§]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 V, $T_A$ = 25°C

| PARAMETER[¶] | FROM (INPUT) | TO (OUTPUT) | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|---|
| $t_{PLH}$ | Data | Y | | | 12 | 18 | ns |
| $t_{PHL}$ | Data | Y | | | 15 | 23 | ns |
| $t_{PLH}$ | Select | Y | $C_L$ = 30 pF, $R_L$ = 400 Ω, See Note 3 | | 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 |

[¶]$t_{PLH}$ = 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.

## recommended operating conditions

| | | SN54LS153 | | | SN74LS153 | | | UNIT |
|---|---|---|---|---|---|---|---|---|
| | | MIN | NOM | MAX | MIN | NOM | MAX | |
| $V_{CC}$ | Supply voltage | 4.5 | 5 | 5.5 | 4.75 | 5 | 5.25 | V |
| $V_{IH}$ | High-level input voltage | 2 | | | 2 | | | V |
| $V_{IL}$ | Low-level input voltage | | | 0.7 | | | 0.8 | V |
| $I_{OH}$ | High-level output current | | | −0.4 | | | −0.4 | mA |
| $I_{OL}$ | Low-level output current | | | 4 | | | 8 | mA |
| $T_A$ | 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 | TYP‡ | MAX | |
| $V_{IK}$ | | $V_{CC}$ = MIN, $I_I$ = −18 mA | | | | −1.5 | | | −1.5 | V |
| $V_{OH}$ | | $V_{CC}$ = MIN, $V_{IH}$ = 2 V, $V_{IL}$ = MAX, $I_{OH}$ = −0.4 mA | | 2.5 | 3.4 | | 2.7 | 3.4 | | V |
| $V_{OL}$ | | $V_{CC}$ = MIN, $V_{IH}$ = 2 V, $V_{IL}$ = MAX, | $I_{OL}$ = 4 mA | | 0.25 | 0.4 | | 0.25 | 0.4 | V |
| | | | $I_{OL}$ = 8 mA | | | | | 0.35 | 0.5 | |
| $I_I$ | | $V_{CC}$ = MAX, $V_I$ = 7 V | | | | 0.1 | | | 0.1 | mA |
| $I_{IH}$ | | $V_{CC}$ = MAX, $V_I$ = 2.7 V | | | | 20 | | | 20 | µA |
| $I_{IL}$ | 1G, 2G | $V_{CC}$ = MAX, $V_I$ = 0.4 V | | | | −0.2 | | | −0.2 | mA |
| | All other | | | | | −0.4 | | | −0.4 | |
| $I_{OS}$§ | | $V_{CC}$ = MAX | | −20 | | −100 | −20 | | −100 | mA |
| $I_{CCL}$ | | $V_{CC}$ = 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 $V_{CC}$ = 5 V, $T_A$ = 25°C.
§ 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 V, $T_A$ = 25°C

| PARAMETER¶ | FROM (INPUT) | TO (OUTPUT) | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|---|
| $t_{PLH}$ | Data | Y | | | 10 | 15 | ns |
| $t_{PHL}$ | Data | Y | $C_L$ = 15 pF, | | 17 | 26 | ns |
| $t_{PLH}$ | Select | Y | $R_L$ = 2 kΩ, | | 19 | 29 | ns |
| $t_{PHL}$ | Select | Y | See Note 3 | | 25 | 38 | ns |
| $t_{PLH}$ | Strobe $\overline{G}$ | Y | | | 16 | 24 | ns |
| $t_{PHL}$ | Strobe $\overline{G}$ | Y | | | 21 | 32 | 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.

## 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 | $V_{CC}$ = MIN, $I_I$ = −18 mA | | | | −1.2 | V |
| $V_{OH}$ | High-level output voltage | $V_{CC}$ = MIN, $V_{IH}$ = 2 V, | Series 54S | 2.5 | 3.4 | | V |
| | | $V_{IL}$ = 0.8 V, $I_{OH}$ = −1 mA | Series 74S | 2.7 | 3.4 | | |
| $V_{OL}$ | Low-level output voltage | $V_{CC}$ = MIN, $V_{IH}$ = 2 V, $V_{IL}$ = 0.8 V, $I_{OL}$ = 20 mA | | | | 0.5 | V |
| $I_I$ | Input current at maximum input voltage | $V_{CC}$ = MAX, $V_I$ = 5.5 V | | | | 1 | mA |
| $I_{IH}$ | High-level input current | $V_{CC}$ = MAX, $V_I$ = 2.7 V | | | | 50 | µA |
| $I_{IL}$ | Low-level input current | $V_{CC}$ = MAX, $V_I$ = 0.5 V | | | | −2 | mA |
| $I_{OS}$ | Short-circuit output current[§] | $V_{CC}$ = MAX | | −40 | | −100 | mA |
| $I_{CCL}$ | Supply current, low-level output | $V_{CC}$ = 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 V, $T_A$ = 25°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 V, $T_A$ = 25°C

| PARAMETER[¶] | FROM (INPUT) | TO (OUTPUT) | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|---|
| $t_{PLH}$ | Data | Y | | | 6 | 9 | ns |
| $t_{PHL}$ | Data | Y | | | 6 | 9 | ns |
| $t_{PLH}$ | Select | Y | $C_L$ = 15 pF, $R_L$ = 280 Ω, | | 11.5 | 18 | ns |
| $t_{PHL}$ | Select | Y | See Note 3 | | 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.

## PACKAGING INFORMATION

| Orderable Device | Status (1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan (2) | Lead/Ball Finish (6) | MSL Peak Temp (3) | Op Temp (°C) | Device Marking (4/5) | Samples |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 76011012A | ACTIVE | LCCC | FK | 20 | 1 | TBD | POST-PLATE | N / A for Pkg Type | -55 to 125 | 76011012A SNJ54LS 153FK | Samples |
| 7601101EA | ACTIVE | CDIP | J | 16 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | 7601101EA SNJ54LS153J | Samples |
| 7601101FA | ACTIVE | CFP | W | 16 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | 7601101FA SNJ54LS153W | Samples |
| JM38510/07902BEA | OBSOLETE | CDIP | J | 16 | | TBD | Call TI | Call TI | -55 to 125 | | |
| JM38510/07902BFA | OBSOLETE | CFP | W | 16 | | TBD | Call TI | Call TI | -55 to 125 | | |
| JM38510/30902BEA | ACTIVE | CDIP | J | 16 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | JM38510/ 30902BEA | Samples |
| M38510/30902BEA | ACTIVE | CDIP | J | 16 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | JM38510/ 30902BEA | Samples |
| SN54153J | ACTIVE | CDIP | J | 16 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | SN54153J | Samples |
| SN54LS153J | ACTIVE | CDIP | J | 16 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | SN54LS153J | Samples |
| SN54S153J | OBSOLETE | CDIP | J | 16 | | TBD | Call TI | Call TI | -55 to 125 | | |
| SN74153N | OBSOLETE | PDIP | N | 16 | | TBD | Call TI | Call TI | 0 to 70 | | |
| SN74LS153D | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | LS153 | Samples |
| SN74LS153DG4 | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | LS153 | Samples |
| SN74LS153DR | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | LS153 | Samples |
| SN74LS153J | OBSOLETE | CDIP | J | 16 | | TBD | Call TI | Call TI | 0 to 70 | | |
| SN74LS153N | ACTIVE | PDIP | N | 16 | 25 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | 0 to 70 | SN74LS153N | Samples |
| SN74LS153N3 | OBSOLETE | PDIP | N | 16 | | TBD | Call TI | Call TI | 0 to 70 | | |
| SN74LS153NE4 | ACTIVE | PDIP | N | 16 | 25 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | 0 to 70 | SN74LS153N | Samples |
| SN74LS153NSR | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 74LS153 | Samples |
| SN74S153D | OBSOLETE | SOIC | D | 16 | | TBD | Call TI | Call TI | 0 to 70 | | |

| Orderable Device | Status (1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan (2) | Lead/Ball Finish (6) | MSL Peak Temp (3) | Op Temp (°C) | Device Marking (4/5) | Samples |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SN74S153N | OBSOLETE | PDIP | N | 16 | | TBD | Call TI | Call TI | 0 to 70 | | |
| SN74S153N3 | OBSOLETE | PDIP | N | 16 | | TBD | Call TI | Call TI | 0 to 70 | | |
| SNJ54153J | ACTIVE | CDIP | J | 16 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | SNJ54153J | Samples |
| SNJ54LS153FK | ACTIVE | LCCC | FK | 20 | 1 | TBD | POST-PLATE | N / A for Pkg Type | -55 to 125 | 76011012A SNJ54LS 153FK | Samples |
| SNJ54LS153J | ACTIVE | CDIP | J | 16 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | 7601101EA SNJ54LS153J | Samples |
| SNJ54LS153W | ACTIVE | CFP | W | 16 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | 7601101FA SNJ54LS153W | Samples |
| SNJ54S153FK | OBSOLETE | LCCC | FK | 20 | | TBD | Call TI | Call TI | -55 to 125 | | |
| SNJ54S153J | OBSOLETE | CDIP | J | 16 | | TBD | Call TI | Call TI | -55 to 125 | | |
| SNJ54S153W | OBSOLETE | CFP | W | 16 | | 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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**OTHER QUALIFIED VERSIONS OF SN54153, SN54LS153, SN54S153, SN74153, SN74LS153, SN74S153 :**

- Catalog: SN74153, SN74LS153, SN74S153

- Military: SN54153, SN54LS153, SN54S153

NOTE: Qualified Version Definitions:

- Catalog - TI's standard catalog product

- Military - QML certified for Military and Defense Applications

![Texas Instruments logo] **PACKAGE MATERIALS INFORMATION**

## 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 367.0 | 367.0 | 38.0 |

J (R−GDIP−T**)                    CERAMIC DUAL IN−LINE PACKAGE
14 LEADS SHOWN

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

B

14                    8

C

1                    7

0.065 (1,65)
0.045 (1,14)

0.005 (0,13) MIN

0.060 (1,52)
0.015 (0,38)

0.200 (5,08) MAX

Seating Plane

0.130 (3,30) MIN

0.026 (0,66)
0.014 (0,36)

0.100 (2,54)

A

0°−15°

0.014 (0,36)
0.008 (0,20)

4040083/F 03/03

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

W (R−GDFP−F16)                    CERAMIC DUAL FLATPACK

0.045 (1,14)
0.026 (0,66)

0.285 (7,24)
0.245 (6,22)

Base and Seating Plane

0.080 (2,03)
0.055 (1,40)

0.008 (0,20)
0.004 (0,10)

0.305 (7,75) MAX

1          16

0.019 (0,48)
0.015 (0,38)

0.430 (10,92)
0.370 (9,40)

0.050 (1,27)

0.005 (0,13) MIN
4 Places

8          9

0.360 (9,14)
0.250 (6,35)

0.360 (9,14)
0.250 (6,35)

4040180−3/F   04/14

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

FK (S−CQCC−N**)                         LEADLESS CERAMIC CHIP CARRIER
28 TERMINAL SHOWN

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

$\dfrac{0.020\ (0,51)}{0.010\ (0,25)}$

$\dfrac{0.020\ (0,51)}{0.010\ (0,25)}$

$\dfrac{0.080\ (2,03)}{0.064\ (1,63)}$

$\dfrac{0.055\ (1,40)}{0.045\ (1,14)}$

$\dfrac{0.045\ (1,14)}{0.035\ (0,89)}$

$\dfrac{0.028\ (0,71)}{0.022\ (0,54)}$

0.050 (1,27)

$\dfrac{0.045\ (1,14)}{0.035\ (0,89)}$

4040140/D 01/11

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.   Falls within JEDEC MS−004

## N (R−PDIP−T**)   PLASTIC DUAL−IN−LINE PACKAGE

16 PINS SHOWN



| DIM \ PINS ** | 14 | 16 | 18 | 20 |
|---|---|---|---|---|
| A MAX | 0.775 (19,69) | 0.775 (19,69) | 0.920 (23,37) | 1.060 (26,92) |
| A MIN | 0.745 (18,92) | 0.745 (18,92) | 0.850 (21,59) | 0.940 (23,88) |
| MS−001 VARIATION | AA | BB | AC | AD |

4040049/E   12/2002

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

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D (R−PDSO−G16)                                  PLASTIC SMALL OUTLINE

0.394 (10,00)
0.386 (9,80)
⚠C

16                                    9

0.244 (6,20)
0.228 (5,80)

0.157 (4,00)
0.150 (3,80) ⚠D

1                                     8

Pin 1
Index Area

0.050 (1,27)

0.020 (0,51)
0.012 (0,31)

⊕ 0.010 (0,25) Ⓜ

0.069 (1,75) Max

0.010 (0,25)
0.004 (0,10)

0.010 (0,25)
0.005 (0,13)

0.004 (0,10)

Gauge Plane

Seating Plane

0.010 (0,25)          0°–8°

0.050 (1,27)
0.016 (0,40)

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.

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D (R−PDSO−G16)  PLASTIC SMALL OUTLINE

Example Board Layout
(Note C)

Stencil Openings
(Note D)

14x1,27

16x0,55

14x1,27

16x1,50

5,40

5.40

Example
Non Soldermask Defined Pad

Example
Pad Geometry
(See Note C)

0,60

1,55

Example
Solder Mask Opening
(See Note E)

0,07

All Around

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.

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

PLASTIC SMALL-OUTLINE PACKAGE

**14-PINS SHOWN**



1,27

0,51
0,35

⊕ 0,25 Ⓜ

14

8

5,60
5,00

8,20
7,40

1

7

A

0,15 NOM

Gage Plane

0,25

0°–10°

1,05
0,55

0,15
0,05

2,00 MAX

Seating Plane

⬠ 0,10

| DIM \ PINS \*\* | 14 | 16 | 20 | 24 |
|---|---|---|---|---|
| A MAX | 10,50 | 10,50 | 12,90 | 15,30 |
| A MIN | 9,90 | 9,90 | 12,30 | 14,70 |

4040062/C 03/03

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.

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