

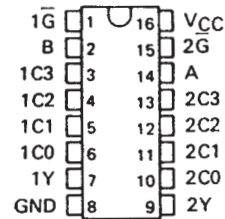
# SN54LS253, SN54S253, SN74LS253, SN74S253 DUAL 4-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS WITH 3-STATE OUTPUTS

SDLS147 – SEPTEMBER 1972 – REVISED MARCH 1988

- Three-State Version of SN54/74LS153, SN54/74S153
- Schottky-Diode-Clamped Transistors
- Permits Multiplexing from N Lines to 1 Line
- Performs Parallel-to-Serial Conversion
- Fully Compatible with Most TTL Circuits
- Low Power Dissipation
  - 'LS253 . . . 35 mW Typical
  - 'S253 . . . 225 mW Typical

SN54LS253, SN54S253 . . . J OR W PACKAGE  
SN74LS253, SN74S253 . . . D OR N PACKAGE

(TOP VIEW)



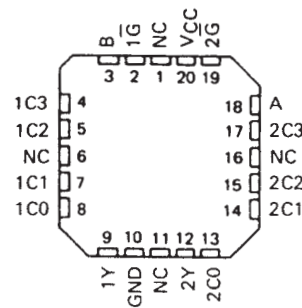
## description

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

The three-state outputs can interface with and drive data lines of bus-organized systems. With all but one of the common outputs disabled (at a high-impedance state) the low-impedance of the single enabled output will drive the bus line to a high or low logic level.

SN54LS253, SN54S253 . . . FK PACKAGE

(TOP VIEW)



NC-No internal connection

FUNCTION TABLE

| SELECT INPUTS |   | DATA INPUTS |    |    |    | OUTPUT CONTROL | OUTPUT |
|---------------|---|-------------|----|----|----|----------------|--------|
| B             | A | C0          | C1 | C2 | C3 | G              | Y      |
| X             | X | X           | X  | X  | X  | H              | Z      |
| 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      |

Address inputs A and B are common to both sections.

H = high level, L = low level, X = irrelevant, Z = high impedance (off)

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

|   |                 |
|---|-----------------|
| Supply voltage, $V_{CC}$ (see Note 1)                     | 7 V             |
| Input voltage: 'LS253                                     | 7 V             |
| 'S253   | 5.5 V           |
| Off-state output voltage                                  | 5.5 V           |
| Operating free-air temperature range: SN54LS253, SN54S253 | - 55°C to 125°C |
| SN74LS253, SN74S253                                       | 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 information is 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.



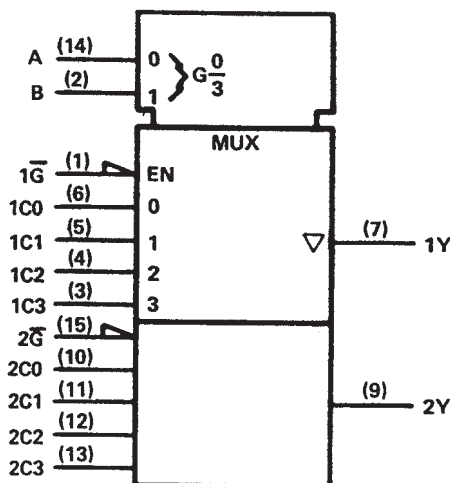
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# SN54LS253, SN54S253, SN74LS253, SN74S253 DUAL 4-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS WITH 3-STATE OUTPUTS

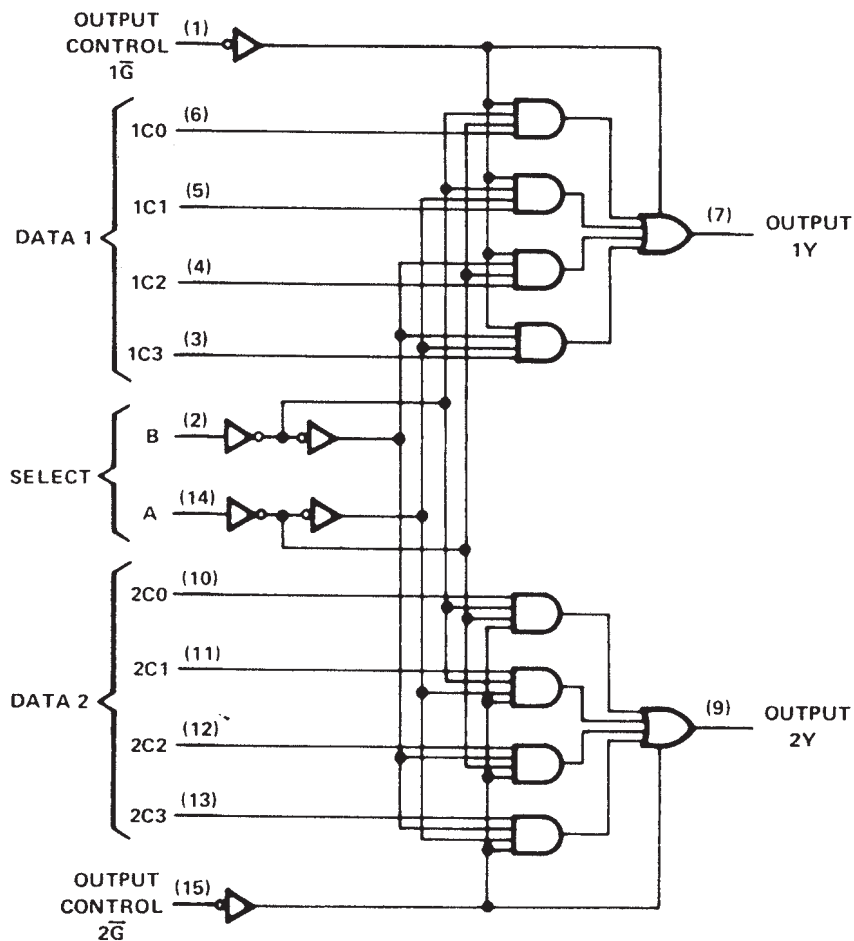
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logic symbol†



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

logic diagram (positive logic)



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

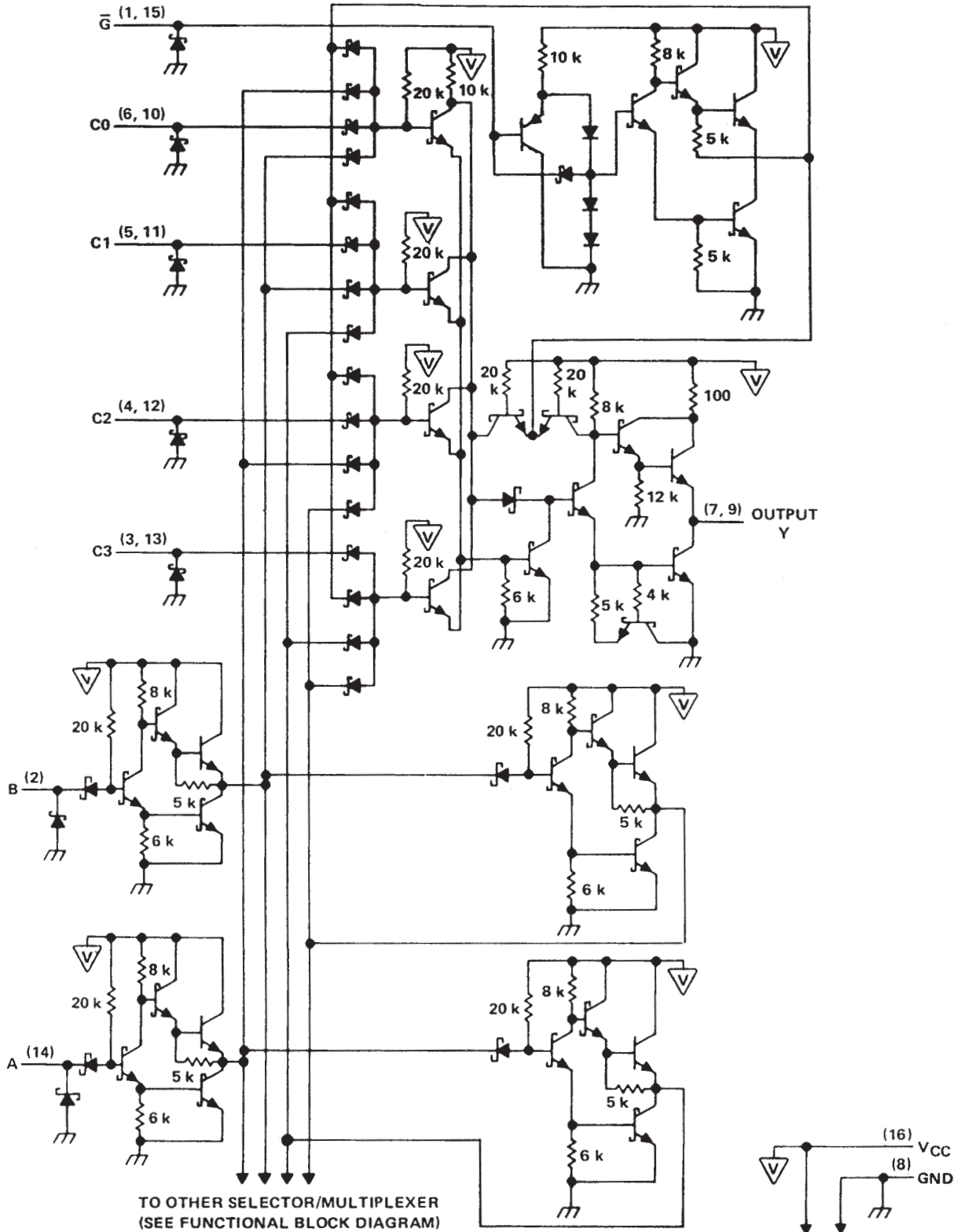


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# SN54LS253, SN54S253, SN74LS253, SN74S253 DUAL 4-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS WITH 3-STATE OUTPUTS

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schematic (each selector/multiplexer, and the common select section)



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

 **TEXAS  
INSTRUMENTS**

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# SN54LS253, SN54S253, SN74LS253, SN74S253 DUAL 4-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS WITH 3-STATE OUTPUTS

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## recommended operating conditions

|   | SN54LS253 |     |     | SN74LS253 |     |      | 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     |           |     | -1  |           |     | -2.6 | 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†   | SN54LS253              |       | SN74LS253 |          | 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, I <sub>OH</sub> = MAX | 2.4                    | 3.4   | 2.4       | 3.1      | V    |
| V <sub>OL</sub>   | V <sub>CC</sub> = MIN, V <sub>IH</sub> = 2 V, V <sub>IL</sub> = MAX                        | I <sub>OL</sub> = 4 mA |       | 0.25      | 0.4      | V    |
|                   |  | I <sub>OL</sub> = 8 mA |       |           | 0.25 0.5 |      |
| I <sub>OZ</sub>   | V <sub>CC</sub> = MAX, V <sub>IH</sub> = 2 V   | V <sub>O</sub> = 2.7 V |       | 20        | 20       | μA   |
|                   |  | V <sub>O</sub> = 0.4 V |       | -20       | -20      |      |
| 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  | G̅                     |       | -0.2      | -0.2     | mA   |
|                   |  | All other              |       | -0.4      | -0.4     |      |
| I <sub>OS</sub> § | V <sub>CC</sub> = MAX  | -30                    | -130  | -30       | -130     | mA   |
| I <sub>CC</sub>   | V <sub>CC</sub> = MAX, See Note 2  | Condition A            |       | 7         | 12       | mA   |
|                   |  | Condition B            |       | 8.5       | 14       |      |

† 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, and duration for the short-circuit should exceed one second.

NOTE 2: I<sub>CC</sub> is measured with the outputs open under the following conditions:

- A. All inputs grounded.
- B. Output control at 4.5 V, 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, R <sub>L</sub> = 2 kΩ,<br>See Note 3 | 17  | 25  | ns  |      |
| t <sub>PHL</sub> |                |             |  | 13  | 20  |     |      |
| t <sub>PLH</sub> | Select         | Y           |  | 30  | 45  | ns  |      |
| t <sub>PHL</sub> |                |             |  | 21  | 32  |     |      |
| t <sub>PZH</sub> | Output Control | Y           |  | 15  | 28  | ns  |      |
| t <sub>PZL</sub> |                |             |  | 15  | 23  |     |      |
| t <sub>PHZ</sub> | Output Control | Y           | C <sub>L</sub> = 5 pF, R <sub>L</sub> = 2 kΩ,<br>See Note 3  | 27  | 41  | ns  |      |
| t <sub>PLZ</sub> |                |             |  | 18  | 27  |     |      |

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



# SN54LS253, SN54S253, SN74LS253, SN74S253 DUAL 4-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS WITH 3-STATE OUTPUTS

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## recommended operating conditions

|   | SN54S253 |     |     | SN74S253 |     |      | 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       | 0.8      |     |     | 0.8      |     |      | V    |    |
| I <sub>OH</sub> High-level output current     | -2       |     |     | -6.5     |     |      | mA   |    |
| I <sub>OL</sub> Low-level output current      | 20       |     |     | 20       |     |      | mA   |    |
| T <sub>A</sub> Operating free-air temperature | -55      |     |     | 0        |     |      | 70   | °C |

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

| PARAMETER        | TEST CONDITIONS†   | MIN                    | TYP‡  | MAX | UNIT |
|------------------|--|------------------------|-------|-----|------|
| V <sub>IK</sub>  | V <sub>CC</sub> = MIN, I <sub>I</sub> = -18 mA   | -1.2                   |       |     | V    |
| V <sub>OH</sub>  | V <sub>CC</sub> = MIN, V <sub>IH</sub> = 2 V, V <sub>IL</sub> = 0.8 V, I <sub>OH</sub> = MAX   | Series 54S             | 2.5   | 3.4 | V    |
|                  |  | Series 74S             | 2.7   | 3.4 |      |
| V <sub>OL</sub>  | V <sub>CC</sub> = MIN, V <sub>IH</sub> = 2 V, V <sub>IL</sub> = 0.8 V, I <sub>OL</sub> = 20 mA | 0.5                    |       |     | V    |
| I <sub>OZ</sub>  | V <sub>CC</sub> = MAX, V <sub>IH</sub> = 2 V   | V <sub>O</sub> = 2.4 V | 50    |     | μA   |
|                  |  | V <sub>O</sub> = 0.5 V | -50   |     |      |
| I <sub>I</sub>   | V <sub>CC</sub> = MAX, V <sub>I</sub> = 5.5 V  | 1                      |       |     | mA   |
| I <sub>IH</sub>  | V <sub>CC</sub> = MAX, V <sub>I</sub> = 2.7 V  | 50                     |       |     | μA   |
| I <sub>IL</sub>  | V <sub>CC</sub> = MAX, V <sub>I</sub> = 0.5 V  | $\bar{G}$ = 0.8 V      | -2    |     | mA   |
|                  |  | $\bar{G}$ = 2 V        | -0.25 |     |      |
| I <sub>OS§</sub> | V <sub>CC</sub> = MAX  | -40                    | -100  |     | mA   |
| I <sub>CC</sub>  | V <sub>CC</sub> = MAX, See Note 2  | Condition A            | 45    | 70  | mA   |
|                  |  | Condition B            | 65    | 85  |      |

† 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 and duration of short-circuit should not exceed one second.

NOTE 2: I<sub>CC</sub> is measured with the outputs open under the following conditions:

- A. All inputs grounded.
- B. Output control at 4.5 V, 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           | R <sub>L</sub> = 280 Ω,<br>See Note 3 | C <sub>L</sub> = 15 pF | 6       | 9    | ns   |
| t <sub>PHL</sub> |              |             |                                       |                        | 6       | 9    |      |
| t <sub>PLH</sub> | Select       | Y           |                                       |                        | 11.5    | 18   | ns   |
| t <sub>PHL</sub> |              |             |                                       |                        | 12      | 18   |      |
| t <sub>PZH</sub> | Output       | Y           |                                       |                        | 11      | 16.5 | ns   |
| t <sub>PZL</sub> | Control      |             |                                       |                        | 12      | 18   |      |
| t <sub>PHZ</sub> | Output       | Y           | R <sub>L</sub> = 280 Ω,<br>See Note 3 | C <sub>L</sub> = 5 pF  | 6.5     | 9.5  | ns   |
| t <sub>PLZ</sub> |              |             |                                       |                        | Control | 10   |      |

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



**PACKAGING INFORMATION**

| Orderable Device | Status<br>(1) | Package Type | Package<br>Drawing | Pins | Package<br>Qty | Eco Plan<br>(2)            | Lead/Ball Finish<br>(6) | MSL Peak Temp<br>(3) | Op Temp (°C) | Device Marking<br>(4/5)       | Samples                 |
|------------------|---------------|--------------|--------------------|------|----------------|----------------------------|-------------------------|----------------------|--------------|-------------------------------|-------------------------|
| 76017012A        | ACTIVE        | LCCC         | FK                 | 20   | 1              | TBD                        | POST-PLATE              | N / A for Pkg Type   | -55 to 125   | 76017012A<br>SNJ54LS<br>253FK | <a href="#">Samples</a> |
| 7601701EA        | ACTIVE        | CDIP         | J                  | 16   | 1              | TBD                        | A42                     | N / A for Pkg Type   | -55 to 125   | 7601701EA<br>SNJ54LS253J      | <a href="#">Samples</a> |
| 7601701EA        | ACTIVE        | CDIP         | J                  | 16   | 1              | TBD                        | A42                     | N / A for Pkg Type   | -55 to 125   | 7601701EA<br>SNJ54LS253J      | <a href="#">Samples</a> |
| JM38510/30908BEA | ACTIVE        | CDIP         | J                  | 16   | 1              | TBD                        | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>30908BEA          | <a href="#">Samples</a> |
| JM38510/30908BEA | ACTIVE        | CDIP         | J                  | 16   | 1              | TBD                        | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>30908BEA          | <a href="#">Samples</a> |
| JM38510/30908BFA | ACTIVE        | CFP          | W                  | 16   | 1              | TBD                        | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>30908BFA          | <a href="#">Samples</a> |
| JM38510/30908BFA | ACTIVE        | CFP          | W                  | 16   | 1              | TBD                        | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>30908BFA          | <a href="#">Samples</a> |
| M38510/30908BEA  | ACTIVE        | CDIP         | J                  | 16   | 1              | TBD                        | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>30908BEA          | <a href="#">Samples</a> |
| M38510/30908BEA  | ACTIVE        | CDIP         | J                  | 16   | 1              | TBD                        | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>30908BEA          | <a href="#">Samples</a> |
| M38510/30908BFA  | ACTIVE        | CFP          | W                  | 16   | 1              | TBD                        | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>30908BFA          | <a href="#">Samples</a> |
| M38510/30908BFA  | ACTIVE        | CFP          | W                  | 16   | 1              | TBD                        | A42                     | N / A for Pkg Type   | -55 to 125   | JM38510/<br>30908BFA          | <a href="#">Samples</a> |
| SN54LS253J       | ACTIVE        | CDIP         | J                  | 16   | 1              | TBD                        | A42                     | N / A for Pkg Type   | -55 to 125   | SN54LS253J                    | <a href="#">Samples</a> |
| SN54LS253J       | ACTIVE        | CDIP         | J                  | 16   | 1              | TBD                        | A42                     | N / A for Pkg Type   | -55 to 125   | SN54LS253J                    | <a href="#">Samples</a> |
| SN74LS253DR      | ACTIVE        | SOIC         | D                  | 16   | 2500           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | 0 to 70      | LS253                         | <a href="#">Samples</a> |
| SN74LS253DR      | ACTIVE        | SOIC         | D                  | 16   | 2500           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | 0 to 70      | LS253                         | <a href="#">Samples</a> |
| SN74LS253N       | ACTIVE        | PDIP         | N                  | 16   | 25             | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | N / A for Pkg Type   | 0 to 70      | SN74LS253N                    | <a href="#">Samples</a> |
| SN74LS253N       | ACTIVE        | PDIP         | N                  | 16   | 25             | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | N / A for Pkg Type   | 0 to 70      | SN74LS253N                    | <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                 |
|------------------|---------------|--------------|-----------------|------|-------------|-----------------|-------------------------|----------------------|--------------|-------------------------------|-------------------------|
| SNJ54LS253FK     | ACTIVE        | LCCC         | FK              | 20   | 1           | TBD             | POST-PLATE              | N / A for Pkg Type   | -55 to 125   | 76017012A<br>SNJ54LS<br>253FK | <a href="#">Samples</a> |
| SNJ54LS253FK     | ACTIVE        | LCCC         | FK              | 20   | 1           | TBD             | POST-PLATE              | N / A for Pkg Type   | -55 to 125   | 76017012A<br>SNJ54LS<br>253FK | <a href="#">Samples</a> |
| SNJ54LS253J      | ACTIVE        | CDIP         | J               | 16   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | 7601701EA<br>SNJ54LS253J      | <a href="#">Samples</a> |
| SNJ54LS253J      | ACTIVE        | CDIP         | J               | 16   | 1           | TBD             | A42                     | N / A for Pkg Type   | -55 to 125   | 7601701EA<br>SNJ54LS253J      | <a href="#">Samples</a> |

(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) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".

**RoHS Exempt:** TI defines "RoHS Exempt" to mean products that contain lead but are compliant with EU RoHS pursuant to a specific EU RoHS exemption.

**Green:** TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of <=1000ppm threshold. Antimony trioxide based flame retardants must also meet the <=1000ppm threshold requirement.

(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 SN54LS253, SN74LS253 :**

- Catalog: [SN74LS253](#)
- Military: [SN54LS253](#)

NOTE: Qualified Version Definitions:

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



## 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 |
|-------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| SN74LS253DR | SOIC         | D               | 16   | 2500 | 330.0              | 16.4               | 6.5     | 10.3    | 2.1     | 8.0     | 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) |
|-------------|--------------|-----------------|------|------|-------------|------------|-------------|
| SN74LS253DR | SOIC         | D               | 16   | 2500 | 333.2       | 345.9      | 28.6        |

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



- 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



- NOTES:
- All linear dimensions are in millimeters.
  - This drawing is subject to change without notice.
  - Publication IPC-7351 is recommended for alternate designs.
  - 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.
  - Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

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

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.



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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