

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 DATA INPUT TO W OUTPUT | POWER 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.

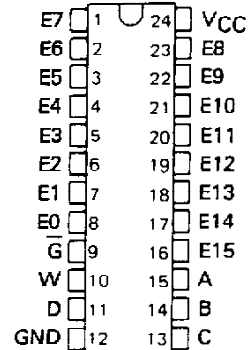
The '150 has only an inverted W output; the '151A, 'LS151, and 'S151 feature complementary W and Y outputs.

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)

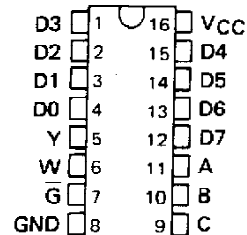


SN54151A, SN54LS151, SN54S151 . . . J OR W PACKAGE

SN74151A . . . N PACKAGE

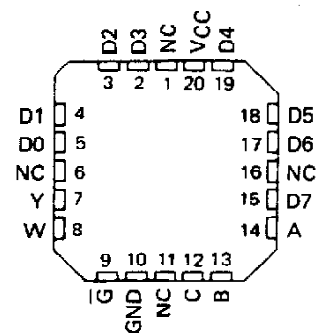
SN74LS151, SN74S151 . . . D OR N PACKAGE

(TOP VIEW)



SN54LS151, SN54S151 . . . FK PACKAGE

(TOP VIEW)



NC - No internal connection

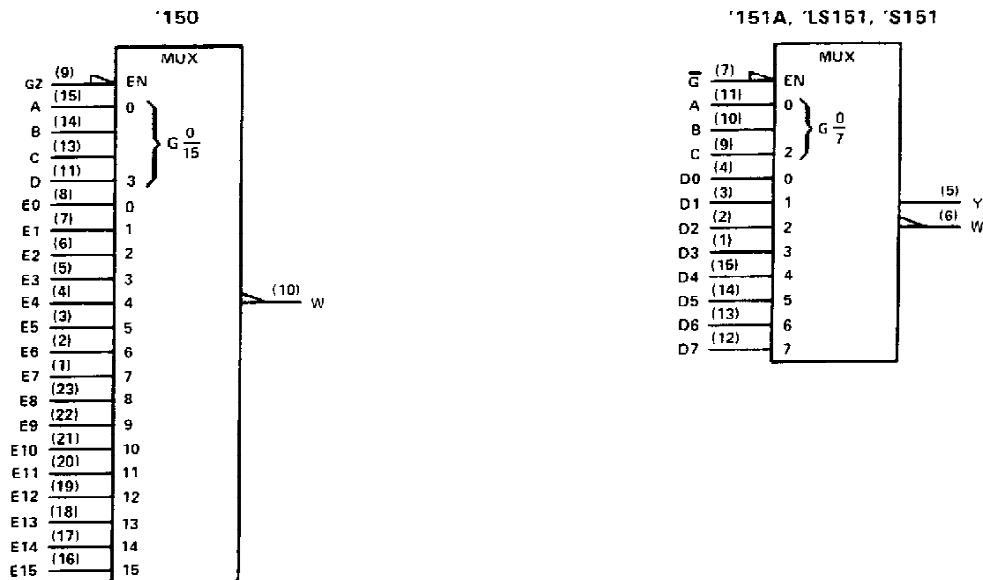
PRODUCTION DATA documents contain information current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

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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 \bar{G} | OUTPUT W |
|--------|---|---|---|---------------------|-------------|
| 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**

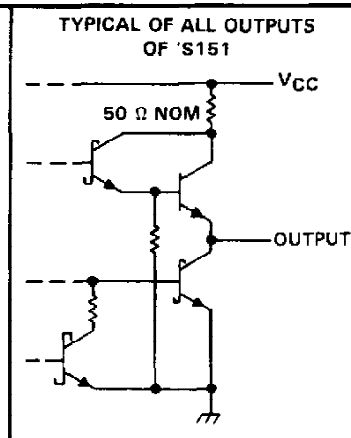
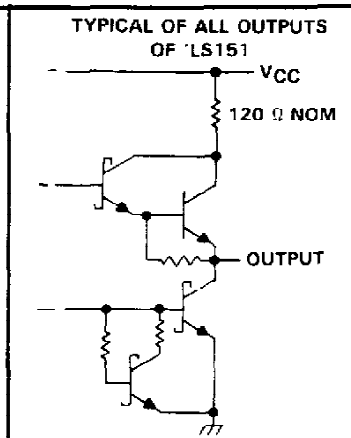
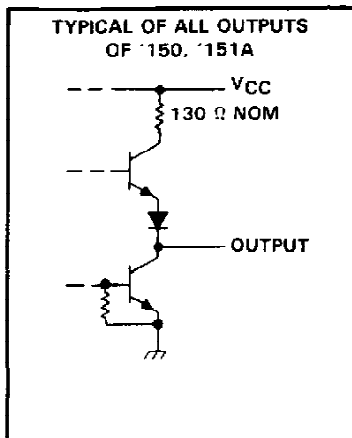
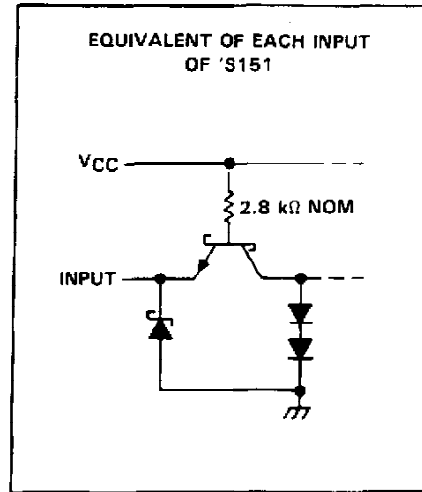
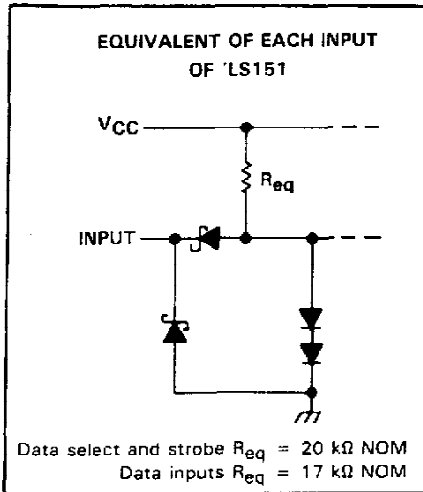
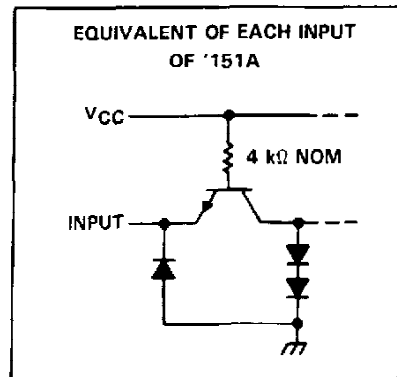
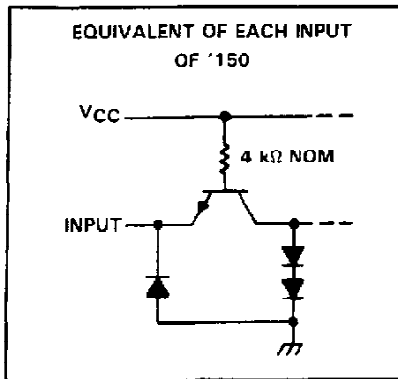
| INPUTS | | | | OUTPUTS | |
|--------|---|---|-----------|---------|------------|
| C | B | A | \bar{G} | Y | W |
| X | X | X | H | L | H |
| L | L | L | L | D0 | $\bar{D0}$ |
| L | L | H | L | D1 | $\bar{D1}$ |
| L | H | L | L | D2 | $\bar{D2}$ |
| L | H | H | L | D3 | $\bar{D3}$ |
| H | L | L | L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

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
 D0, D1 ... D7 = the level of the D respective input



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

schematics of inputs and outputs



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 | μ 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 [†] | '150 | | | '151A | | | 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 | $V_{CC} = \text{MIN}$, $I_I = -8 \text{ mA}$ | | | -1.5 | | | -1.5 | V |
| V_{OH} High-level output voltage | $V_{CC} = \text{MIN}$, $V_{IH} = 2 \text{ V}$, $V_{IL} = 0.8 \text{ V}$, $I_{OH} = -800 \mu\text{A}$ | 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 | μ 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 [§] | $V_{CC} = \text{MAX}$ | 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 |

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

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

[§] 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 [¶] | FROM (INPUT) | TO (OUTPUT) | TEST CONDITIONS | '150 | | | '151A | | | UNIT |
|------------------------|-------------------------------|-------------|---|------|-----|-----|-------|-----|-----|------|
| | | | | MIN | TYP | MAX | MIN | TYP | MAX | |
| t_{PLH} | A, B, or C (4 levels) | Y | $C_L = 15 \text{ pF}$, $R_L = 400 \Omega$, See Note 4 i | | | | 25 | 38 | | ns |
| t_{PHL} | | | | | | | 25 | 38 | | |
| t_{PLH} | A, B, C, or D (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 D0 thru D7 | W | 8.5 | 14 | | 8 | 14 | | ns | |
| t_{PHL} | | | 13 | 20 | | 8 | 14 | | | |

[¶] 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 | μA |
| 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 | $V_{CC} = \text{MIN}, V_{IH} = 2 \text{ V}, V_{IL} = V_{ILmax}, I_{OH} = -400 \mu A$ | 2.5 | 3.4 | | 2.7 | 3.4 | | V | |
| V_{OL} Low-level output voltage | $V_{CC} = \text{MIN}, V_{IH} = 2 \text{ V}, V_{IL} = V_{ILmax}$ | | | 0.25 | 0.4 | | 0.25 | 0.4 | V |
| | | | | | | | 0.35 | 0.5 | |
| 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 | μA | |
| 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, 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 | $C_L = 15 \text{ pF}, R_L = 2 \text{ k}\Omega,$ 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 | °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 | $V_{CC} = \text{MIN}$, $V_{IH} = 2 \text{ V}$, $V_{IL} = 0.8 \text{ V}$, $I_{OH} = -1 \text{ mA}$ | SN54S151 | 2.5 | 3.4 | V |
| | | SN74S151 | 2.7 | 3.4 | |
| V_{OL} Low-level output voltage | $V_{CC} = \text{MIN}$, $V_{IH} = 2 \text{ V}$, $V_{IL} = 0.8 \text{ V}$, $I_{OL} = 20 \text{ mA}$ | | | 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_{CC} Supply current | $V_{CC} = \text{MAX}$, All inputs at 4.5 V, All outputs open | | 45 | 70 | 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 $V_{CC} = 5 \text{ V}$, $T_A = 25^\circ \text{C}$.

§ 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† | FROM (INPUT) | TO (OUTPUT) | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|------------|--------------------------|-------------|--|-----|-----|------|------|
| t_{PLH} | A, B, or C (4 levels) | Y | $C_L = 15 \text{ pF}$, $R_L = 280 \text{ k}\Omega$, See Note 4 | | 12 | 18 | ns |
| t_{PHL} | | | | | 12 | 18 | |
| t_{PLH} | A, B, or C (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 | |

† 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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| Orderable Device | Status ⁽¹⁾ | Package Type | Package Drawing | Pins | Package Qty | Eco Plan ⁽²⁾ | Lead/Ball Finish | MSL Peak Temp ⁽³⁾ |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| SN74LS151DR | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74LS151DRE4 | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74LS151DRE4 | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74LS151J | OBSOLETE | CDIP | J | 16 | | TBD | Call TI | Call TI |
| SN74LS151J | OBSOLETE | CDIP | J | 16 | | TBD | Call TI | Call TI |
| SN74LS151N | ACTIVE | PDIP | N | 16 | 25 | Pb-Free (RoHS) | CU NIPDAU | Level-NC-NC-NC |
| SN74LS151N | ACTIVE | PDIP | N | 16 | 25 | Pb-Free (RoHS) | CU NIPDAU | Level-NC-NC-NC |
| SN74LS151N3 | OBSOLETE | PDIP | N | 16 | | TBD | Call TI | Call TI |
| SN74LS151N3 | OBSOLETE | PDIP | N | 16 | | TBD | Call TI | Call TI |
| SN74LS151NE4 | ACTIVE | PDIP | N | 16 | 25 | Pb-Free (RoHS) | CU NIPDAU | Level-NC-NC-NC |
| SN74LS151NE4 | ACTIVE | PDIP | N | 16 | 25 | Pb-Free (RoHS) | CU NIPDAU | Level-NC-NC-NC |
| SN74LS151NSR | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74LS151NSR | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74LS151NSRE4 | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74LS151NSRE4 | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74S151D | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74S151D | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74S151DE4 | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74S151DE4 | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74S151N | ACTIVE | PDIP | N | 16 | 25 | Pb-Free (RoHS) | CU NIPDAU | Level-NC-NC-NC |
| SN74S151N | ACTIVE | PDIP | N | 16 | 25 | Pb-Free (RoHS) | CU NIPDAU | Level-NC-NC-NC |
| SN74S151N3 | OBSOLETE | PDIP | N | 16 | | TBD | Call TI | Call TI |
| SN74S151N3 | OBSOLETE | PDIP | N | 16 | | TBD | Call TI | Call TI |
| SN74S151NSR | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74S151NSR | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74S151NSRE4 | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
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| SNJ54150J | ACTIVE | CDIP | J | 24 | 1 | TBD | Call TI | Level-NC-NC-NC |
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| 5962-9558001QKA | ACTIVE | CFP | W | 24 | 1 | TBD | A42 | N / A for Pkg Type |
| 5962-9751601Q2A | OBSOLETE | LCCC | FK | 20 | | TBD | Call TI | Call TI |
| 5962-9751601QCA | OBSOLETE | CDIP | J | 14 | | TBD | Call TI | Call TI |
| 5962-9751601QDA | OBSOLETE | CFP | W | 14 | | TBD | Call TI | Call TI |
| 76010012A | ACTIVE | LCCC | FK | 20 | 1 | TBD | POST-PLATE | N / A for Pkg Type |
| 76010012A | ACTIVE | LCCC | FK | 20 | 1 | TBD | POST-PLATE | N / A for Pkg Type |
| 7601001EA | ACTIVE | CDIP | J | 16 | 1 | TBD | A42 SNPB | N / A for Pkg Type |
| 7601001EA | ACTIVE | CDIP | J | 16 | 1 | TBD | A42 SNPB | N / A for Pkg Type |
| 7601001FA | ACTIVE | CFP | W | 16 | 1 | TBD | A42 | N / A for Pkg Type |
| 7601001FA | ACTIVE | CFP | W | 16 | 1 | TBD | A42 | N / A for Pkg Type |
| JM38510/01401BKA | ACTIVE | CFP | W | 24 | 1 | TBD | A42 | N / A for Pkg Type |
| JM38510/01401BKA | ACTIVE | CFP | W | 24 | 1 | TBD | A42 | N / A for Pkg Type |
| JM38510/07901BEA | ACTIVE | CDIP | J | 16 | 1 | TBD | A42 SNPB | N / A for Pkg Type |
| JM38510/07901BFA | ACTIVE | CFP | W | 16 | 1 | TBD | A42 | N / A for Pkg Type |
| JM38510/30901B2A | ACTIVE | LCCC | FK | 20 | 1 | TBD | POST-PLATE | N / A for Pkg Type |
| JM38510/30901B2A | ACTIVE | LCCC | FK | 20 | 1 | TBD | POST-PLATE | N / A for Pkg Type |
| JM38510/30901BEA | ACTIVE | CDIP | J | 16 | 1 | TBD | A42 SNPB | N / A for Pkg Type |
| JM38510/30901BEA | ACTIVE | CDIP | J | 16 | 1 | TBD | A42 SNPB | N / A for Pkg Type |
| JM38510/30901BFA | ACTIVE | CFP | W | 16 | 1 | TBD | A42 | N / A for Pkg Type |
| JM38510/30901BFA | ACTIVE | CFP | W | 16 | 1 | TBD | A42 | N / A for Pkg Type |
| SN54150J | ACTIVE | CDIP | J | 24 | 1 | TBD | Call TI | N / A for Pkg Type |
| SN54150J | ACTIVE | CDIP | J | 24 | 1 | TBD | Call TI | N / A for Pkg Type |
| SN54LS151J | ACTIVE | CDIP | J | 16 | 1 | TBD | A42 SNPB | N / A for Pkg Type |
| SN54LS151J | ACTIVE | CDIP | J | 16 | 1 | TBD | A42 SNPB | N / A for Pkg Type |
| SN54S151J | ACTIVE | CDIP | J | 16 | 1 | TBD | A42 SNPB | N / A for Pkg Type |
| SN54S15J | OBSOLETE | CDIP | J | 14 | | TBD | Call TI | Call TI |
| SN74150N | ACTIVE | PDIP | N | 24 | 15 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type |
| SN74150N | ACTIVE | PDIP | N | 24 | 15 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type |
| SN74150NE4 | ACTIVE | PDIP | N | 24 | 15 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type |
| SN74150NE4 | ACTIVE | PDIP | N | 24 | 15 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type |
| SN74151AN | OBSOLETE | PDIP | N | 16 | | TBD | Call TI | Call TI |
| SN74151AN | OBSOLETE | PDIP | N | 16 | | TBD | Call TI | Call TI |
| SN74LS151D | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74LS151D | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74LS151DE4 | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |

| Orderable Device | Status ⁽¹⁾ | Package Type | Package Drawing | Pins | Package Qty | Eco Plan ⁽²⁾ | Lead/Ball Finish | MSL Peak Temp ⁽³⁾ |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| SN74LS151DE4 | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74LS151DG4 | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74LS151DG4 | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74LS151DR | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74LS151DR | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74LS151DRE4 | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74LS151DRE4 | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74LS151DRG4 | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74LS151DRG4 | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74LS151J | OBSOLETE | CDIP | J | 16 | | TBD | Call TI | Call TI |
| SN74LS151J | OBSOLETE | CDIP | J | 16 | | TBD | Call TI | Call TI |
| SN74LS151N | ACTIVE | PDIP | N | 16 | 25 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type |
| SN74LS151N | ACTIVE | PDIP | N | 16 | 25 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type |
| SN74LS151N3 | OBSOLETE | PDIP | N | 16 | | TBD | Call TI | Call TI |
| SN74LS151N3 | OBSOLETE | PDIP | N | 16 | | TBD | Call TI | Call TI |
| SN74LS151NE4 | ACTIVE | PDIP | N | 16 | 25 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type |
| SN74LS151NE4 | ACTIVE | PDIP | N | 16 | 25 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type |
| SN74LS151NSR | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74LS151NSR | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74LS151NSRE4 | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74LS151NSRE4 | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74LS151NSRG4 | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74LS151NSRG4 | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74S151D | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74S151D | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74S151DE4 | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74S151DE4 | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74S151DG4 | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |

| Orderable Device | Status ⁽¹⁾ | Package Type | Package Drawing | Pins | Package Qty | Eco Plan ⁽²⁾ | Lead/Ball Finish | MSL Peak Temp ⁽³⁾ |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| | | | | | | no Sb/Br) | | |
| SN74S151DG4 | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74S151N | ACTIVE | PDIP | N | 16 | 25 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type |
| SN74S151N | ACTIVE | PDIP | N | 16 | 25 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type |
| SN74S151N3 | OBSOLETE | PDIP | N | 16 | | TBD | Call TI | Call TI |
| SN74S151N3 | OBSOLETE | PDIP | N | 16 | | TBD | Call TI | Call TI |
| SN74S151NE4 | ACTIVE | PDIP | N | 16 | 25 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type |
| SN74S151NE4 | ACTIVE | PDIP | N | 16 | 25 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type |
| SN74S151NSR | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74S151NSR | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74S151NSRE4 | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74S151NSRE4 | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74S151NSRG4 | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74S151NSRG4 | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SNJ54150J | ACTIVE | CDIP | J | 24 | 1 | TBD | Call TI | N / A for Pkg Type |
| SNJ54150J | ACTIVE | CDIP | J | 24 | 1 | TBD | Call TI | N / A for Pkg Type |
| SNJ54150W | ACTIVE | CFP | W | 24 | 1 | TBD | A42 | N / A for Pkg Type |
| SNJ54150W | ACTIVE | CFP | W | 24 | 1 | TBD | A42 | N / A for Pkg Type |
| SNJ54LS151FK | ACTIVE | LCCC | FK | 20 | 1 | TBD | POST-PLATE | N / A for Pkg Type |
| SNJ54LS151FK | ACTIVE | LCCC | FK | 20 | 1 | TBD | POST-PLATE | N / A for Pkg Type |
| SNJ54LS151J | ACTIVE | CDIP | J | 16 | 1 | TBD | A42 SNPB | N / A for Pkg Type |
| SNJ54LS151J | ACTIVE | CDIP | J | 16 | 1 | TBD | A42 SNPB | N / A for Pkg Type |
| SNJ54LS151W | ACTIVE | CFP | W | 16 | 1 | TBD | A42 | N / A for Pkg Type |
| SNJ54LS151W | ACTIVE | CFP | W | 16 | 1 | TBD | A42 | N / A for Pkg Type |
| SNJ54S151FK | ACTIVE | LCCC | FK | 20 | 1 | TBD | POST-PLATE | N / A for Pkg Type |
| SNJ54S151J | ACTIVE | CDIP | J | 16 | 1 | TBD | A42 SNPB | N / A for Pkg Type |
| SNJ54S151W | ACTIVE | CFP | W | 16 | 1 | TBD | A42 | N / A for Pkg Type |
| SNJ54S15FK | OBSOLETE | LCCC | FK | 20 | | TBD | Call TI | Call TI |
| SNJ54S15J | OBSOLETE | CDIP | J | 14 | | TBD | Call TI | Call TI |
| SNJ54S15W | OBSOLETE | CFP | W | 14 | | TBD | Call TI | Call TI |

⁽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.

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OTHER QUALIFIED VERSIONS OF SN54150, SN54LS151, SN54S15, SN54S151, SN74150, SN74LS151, SN74S151 :

- Catalog: [SN74S15](#)

NOTE: Qualified Version Definitions:

- Catalog - TI's standard catalog product

TAPE AND REEL INFORMATION



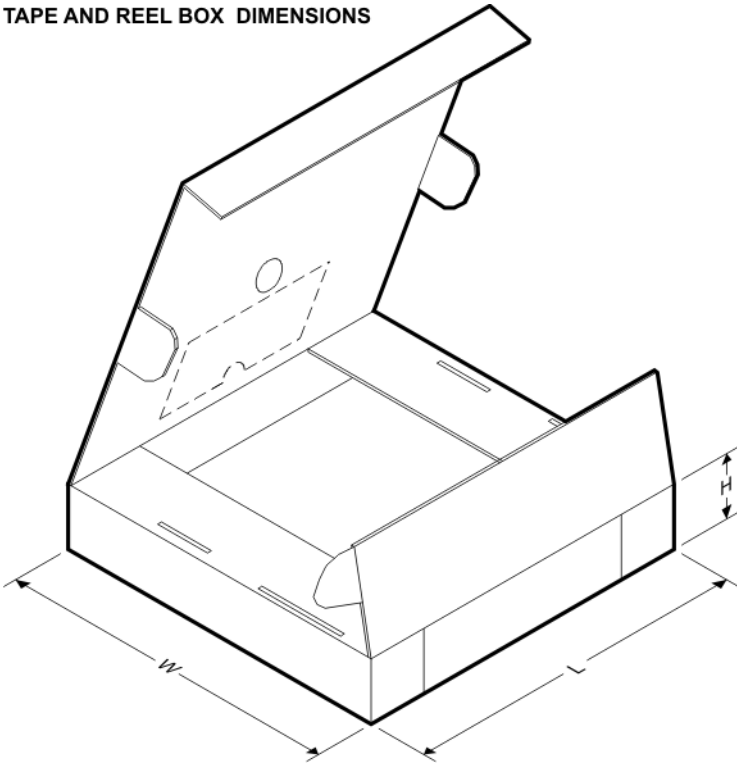
QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*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 |
|--------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| 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 |
| SN74S151NSR | SO | NS | 16 | 2000 | 330.0 | 16.4 | 8.2 | 10.5 | 2.5 | 12.0 | 16.0 | Q1 |

TAPE AND REEL BOX DIMENSIONS

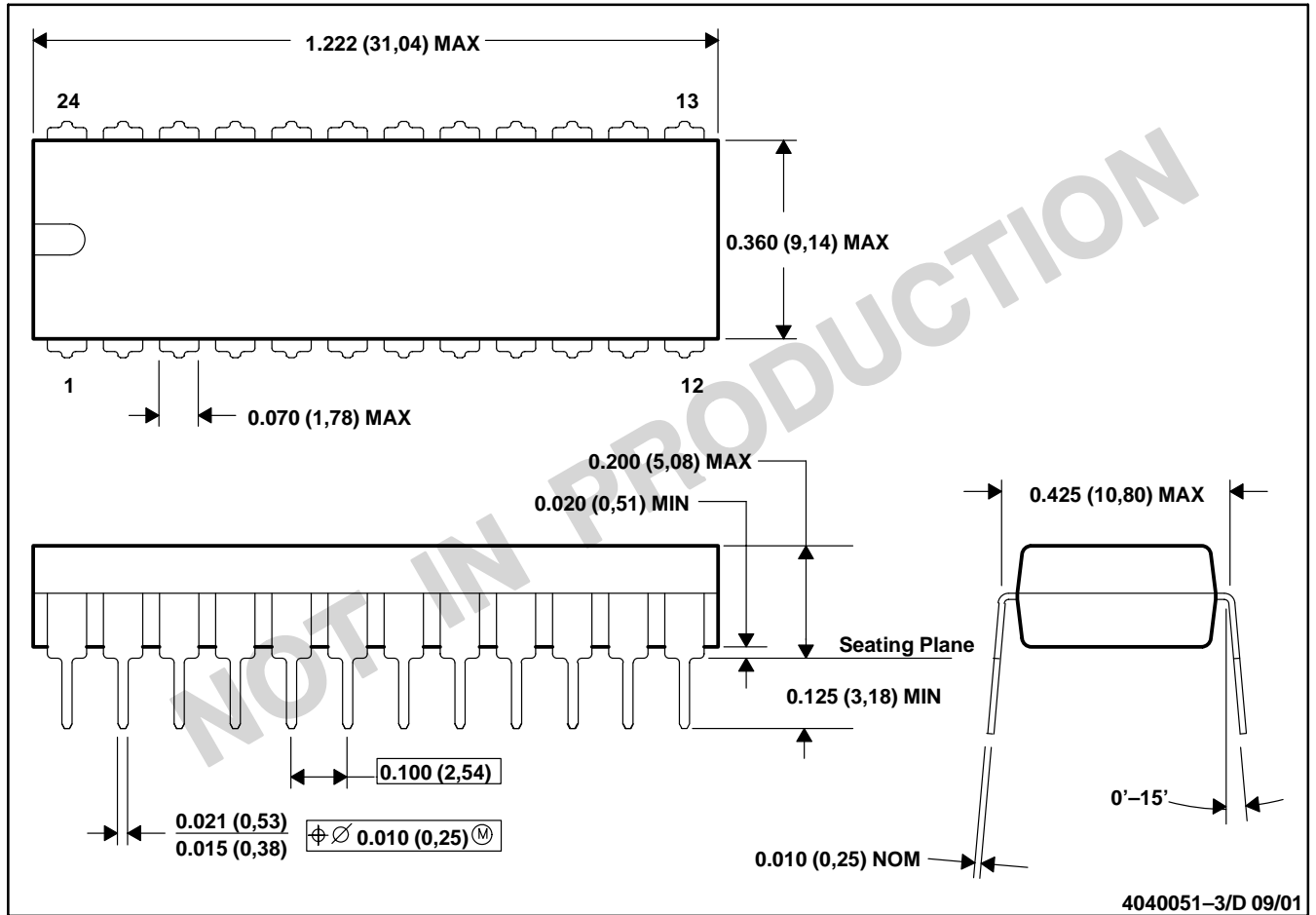


*All dimensions are nominal

| 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 | 346.0 | 346.0 | 33.0 |
| SN74S151NSR | SO | NS | 16 | 2000 | 346.0 | 346.0 | 33.0 |

N (R-PDIP-T24)

PLASTIC DUAL-IN-LINE

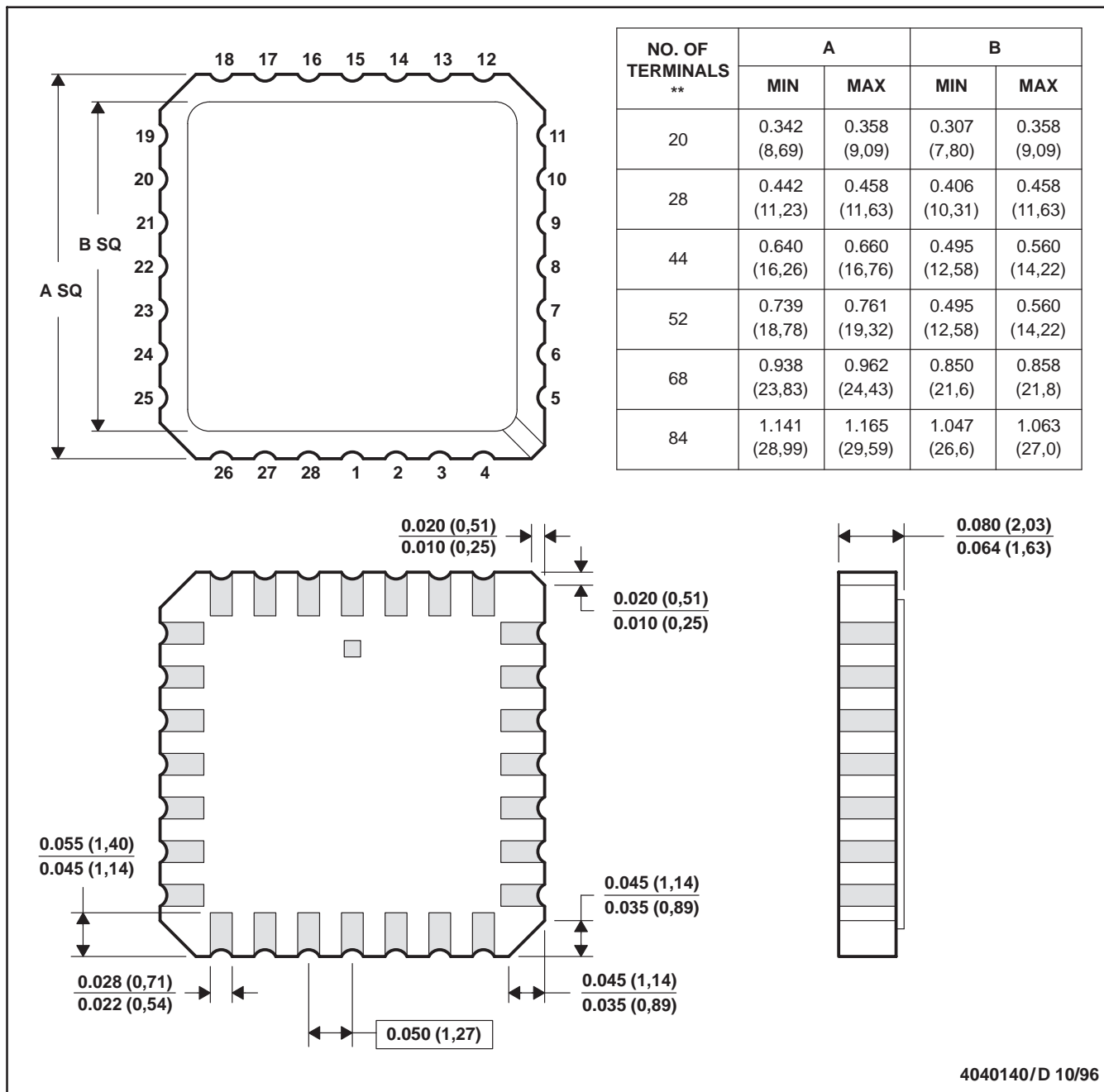


- NOTES: A. All linear dimensions are in inches (millimeters).
 B. This drawing is subject to change without notice.
 C. Falls within JEDEC MS-010

FK (S-CQCC-N**)

LEADLESS CERAMIC CHIP CARRIER

28 TERMINAL SHOWN



4040140/D 10/96

- 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

J (R-GDIP-T**)

14 LEADS SHOWN

CERAMIC DUAL IN-LINE PACKAGE



| 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) |



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.

MECHANICAL DATA

NS (R-PDSO-G**)

PLASTIC SMALL-OUTLINE PACKAGE

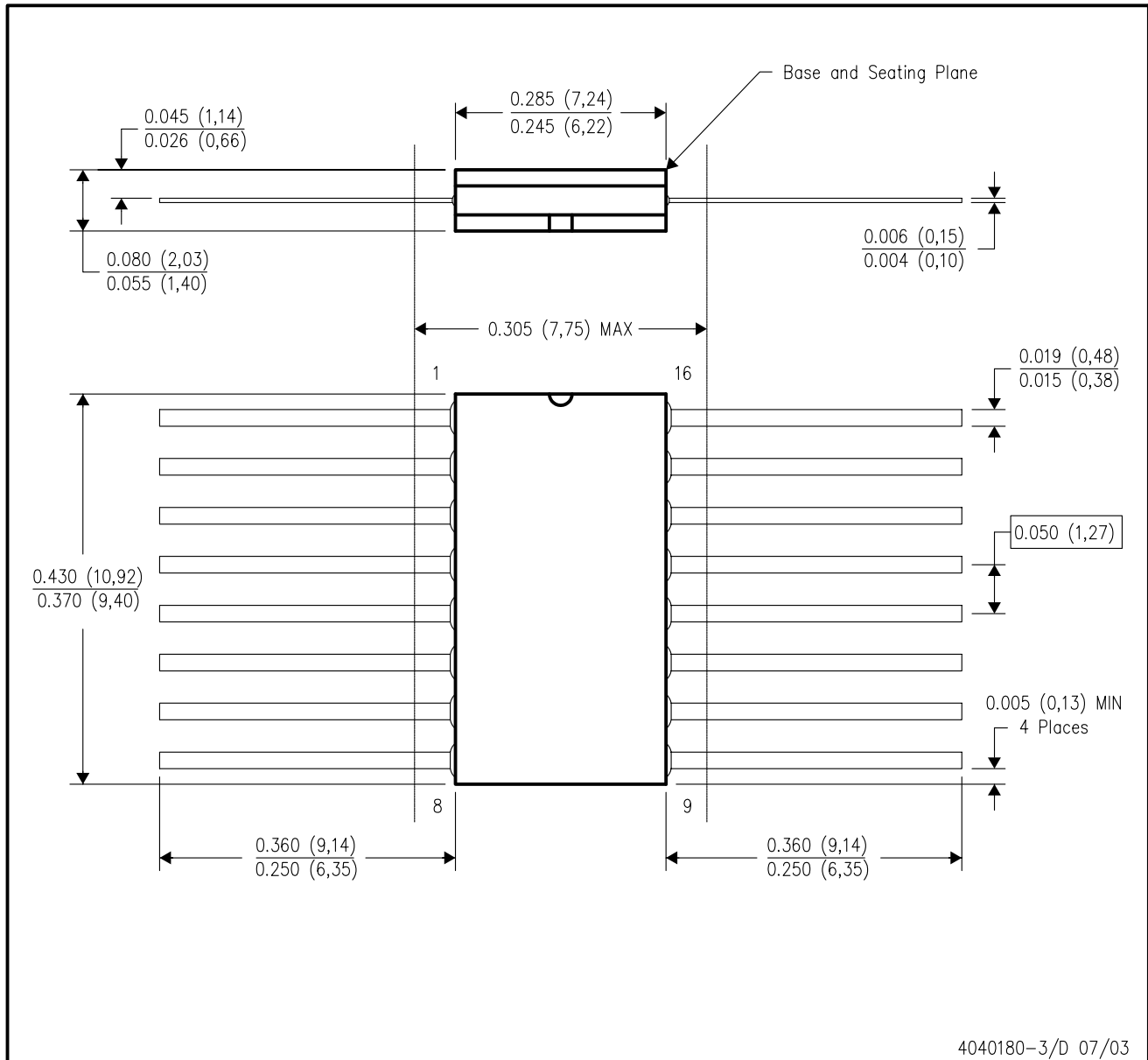
14-PINS SHOWN



- 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.

W (R-GDFP-F16)

CERAMIC DUAL FLATPACK

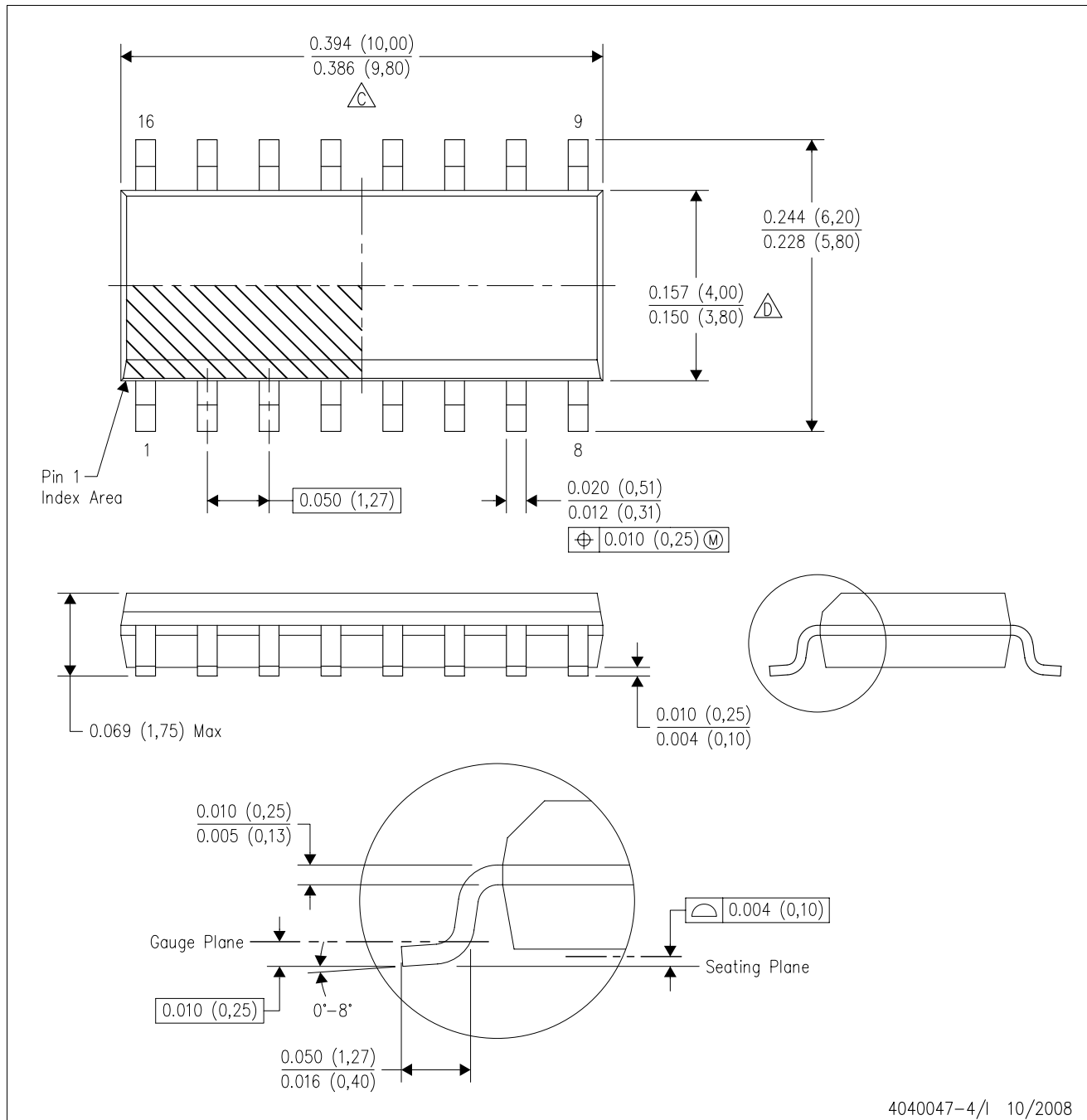


4040180-3/D 07/03

- 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

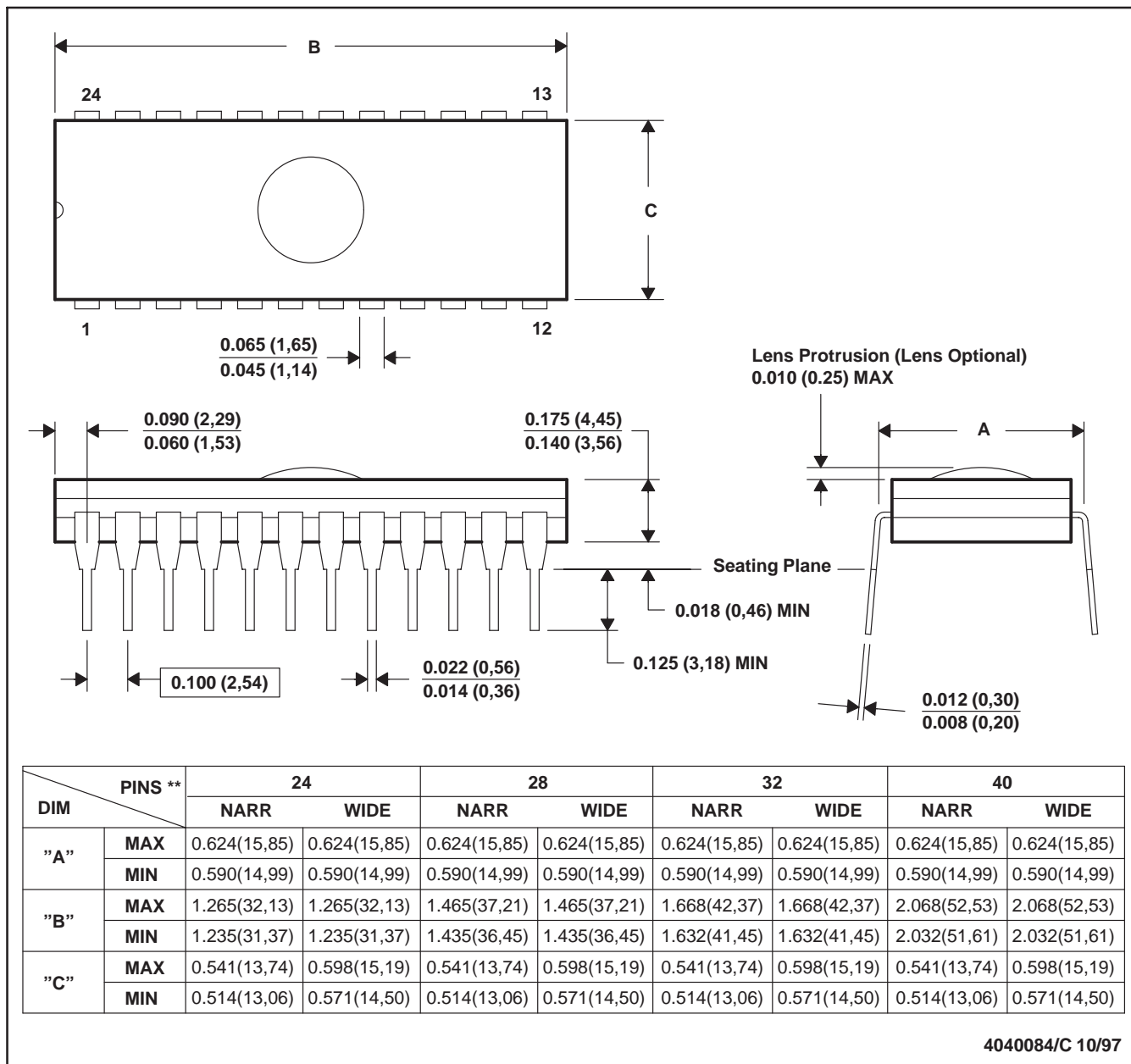


- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed .006 (0,15) per end.
 - D. Body width does not include interlead flash. Interlead flash shall not exceed .017 (0,43) per side.
 - E. Reference JEDEC MS-012 variation AC.

J (R-GDIP-T**)

CERAMIC DUAL-IN-LINE PACKAGE

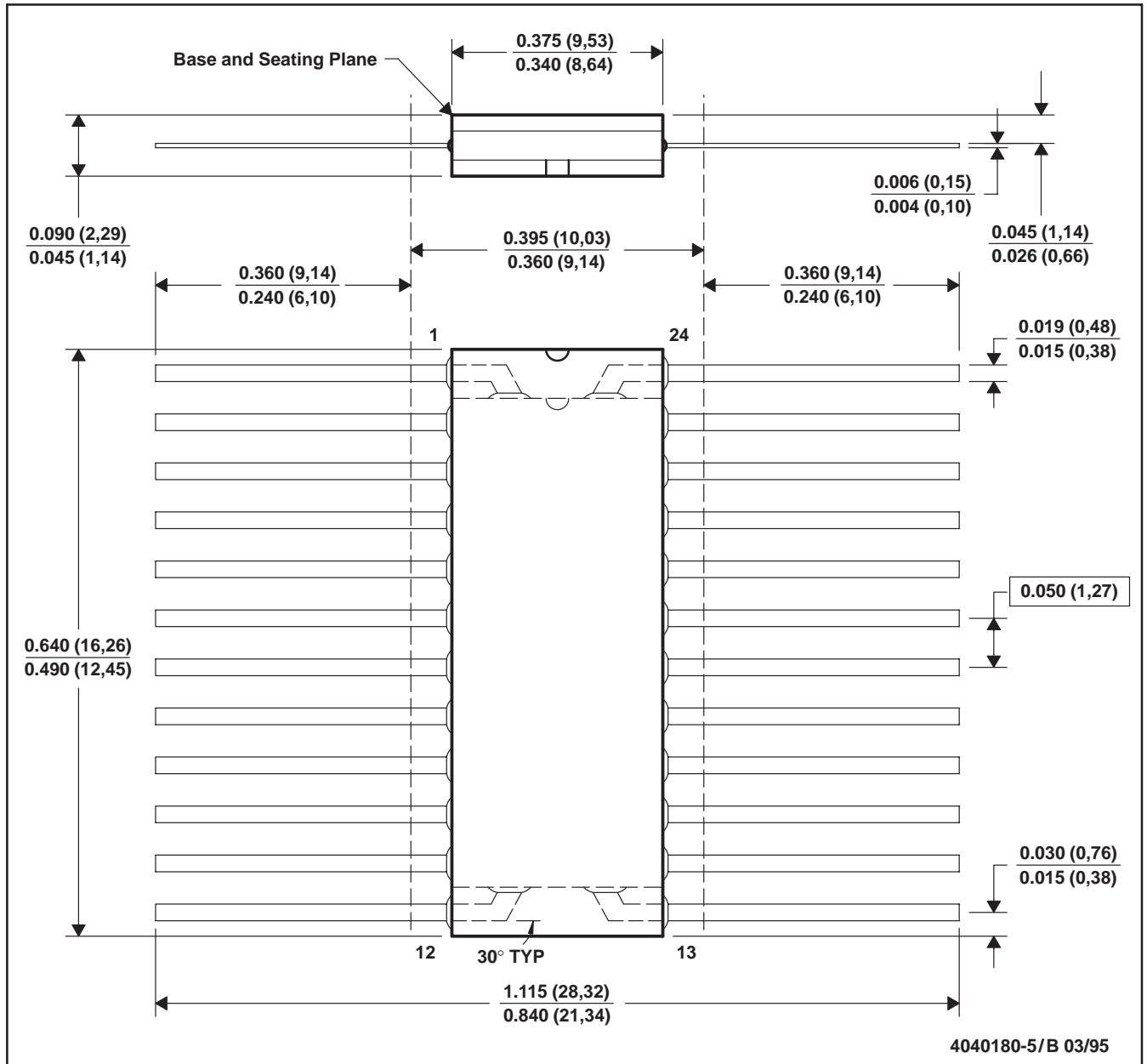
24 PINS SHOWN



- 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.

W (R-GDFP-F24)

CERAMIC DUAL FLATPACK

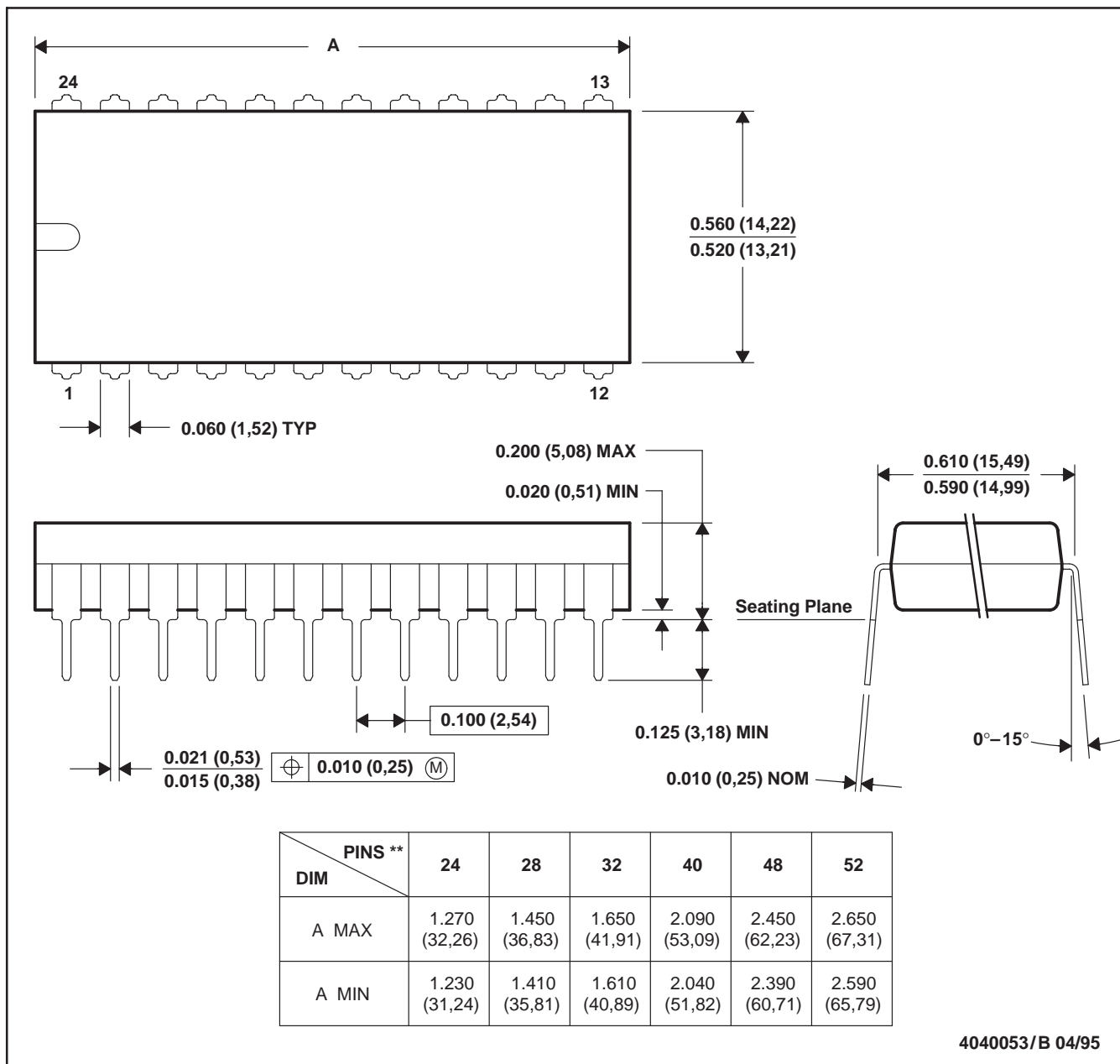


- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. This package can be hermetically sealed with a ceramic lid using glass frit.
 - D. Falls within MIL-STD-1835 GDFP2-F24 and JEDEC MO-070AD
 - E. Index point is provided on cap for terminal identification only.

N (R-PDIP-T)**

PLASTIC DUAL-IN-LINE PACKAGE

24 PIN SHOWN



- NOTES: A. All linear dimensions are in inches (millimeters).
 B. This drawing is subject to change without notice.
 C. Falls within JEDEC MS-011
 D. Falls within JEDEC MS-015 (32 pin only)

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.
 - 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.

4040049/E 12/2002

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