- **3-State Version of the ′ALS151**
- **3-State Outputs Interface Directly With System Bus**
- **Perform Parallel-to-Serial Conversion**
- **Complementary Outputs Provide True and Inverted Data**
- **Package Options Include Plastic Small-Outline (D) Packages, Ceramic Chip Carriers (FK), and Standard Plastic (N) and Ceramic (J) 300-mil DIPs**

SN54ALS251 . . . J PACKAGE
SN74ALS251 . . . D OR N PACKAGE
(TOP VIEW)

```
         ┌───┬──┬───┐
   D3 ──┤1      16├── V_CC
   D2 ──┤2      15├── D4
   D1 ──┤3      14├── D5
   D0 ──┤4      13├── D6
    Y ──┤5      12├── D7
    W ──┤6      11├── A
   OE ──┤7      10├── B
  GND ──┤8       9├── C
         └──────────┘
```

SN54ALS251 . . . FK PACKAGE
(TOP VIEW)

```
           D2  D3  NC  V_CC  D4

           3   2   1   20   19
   D1 ──┤4                    18├── D5
   D0 ──┤5                    17├── D6
   NC ──┤6                    16├── NC
    Y ──┤7                    15├── D7
    W ──┤8                    14├── A
           9  10  11  12  13

           OE  GND  NC  C  B
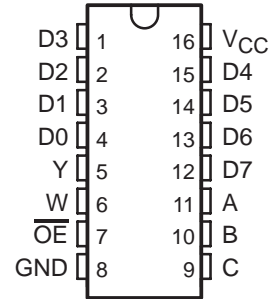```

NC – No internal connection

## description

These data selectors/multiplexers contain full binary decoding to select one-of-eight data sources and feature controlled complementary 3-state outputs.
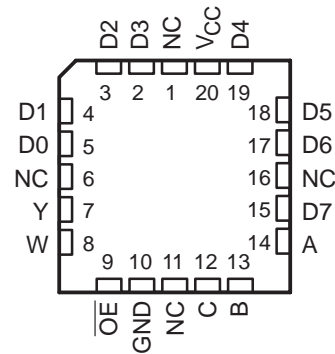
The 3-state outputs can interface with and drive data lines of bus-organized systems. With all but one of the common outputs disabled (at the high-impedance state), the low impedance of the signal-enabled output drives the bus line to a high or low logic level. Both outputs are controlled by the output-enable ($\overline{OE}$) input. The outputs are disabled when $\overline{OE}$ is high.

The SN54ALS251 is characterized for operation over the full military temperature range of −55°C to 125°C. The SN74ALS251 is characterized for operation from 0°C to 70°C.

**FUNCTION TABLE**

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

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

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**TEXAS INSTRUMENTS**

## logic symbol†



† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.
Pin numbers shown are for the D, J, and N packages.

## logic diagram (positive logic)



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

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

Supply voltage, $V_{CC}$ . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 7 V
Input voltage, $V_I$ . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 7 V
Voltage applied to a disabled 3-state output . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 5.5 V
Operating free-air temperature range, $T_A$: SN54ALS251 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . −55°C to 125°C
SN74ALS251 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 0°C to 70°C
Storage temperature range . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . −65°C to 150°C

† Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only, and
functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not
implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

## recommended operating conditions

|  |  | SN54ALS251 | | | SN74ALS251 | | | UNIT |
|---|---|---|---|---|---|---|---|---|
|  |  | MIN | NOM | MAX | MIN | NOM | MAX |  |
| $V_{CC}$ | Supply voltage | 4.5 | 5 | 5.5 | 4.5 | 5 | 5.5 | 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 |  |  | −1 |  |  | −2.6 | mA |
| $I_{OL}$ | Low-level output current |  |  | 12 |  |  | 24 | 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 | | SN54ALS251 | | | SN74ALS251 | | | UNIT |
|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | MIN | TYP‡ | MAX | MIN | TYP‡ | MAX |  |
| $V_{IK}$ | | $V_{CC} = 4.5$ V, | $I_I = -18$ mA |  |  | −1.5 |  |  | −1.5 | V |
| $V_{OH}$ | | $V_{CC} = 4.5$ V to 5.5 V, | $I_{OH} = -0.4$ mA | $V_{CC} -2$ |  |  | $V_{CC} -2$ |  |  | V |
|  | | $V_{CC} = 4.5$ V | $I_{OH} = -1$ mA | 2.4 | 3.3 |  |  |  |  |  |
|  | | | $I_{OH} = -2.6$ mA |  |  |  | 2.4 | 3.2 |  |  |
| $V_{OL}$ | | $V_{CC} = 4.5$ V | $I_{OL} = 12$ mA |  | 0.25 | 0.4 |  | 0.25 | 0.4 | V |
|  | | | $I_{OL} = 24$ mA |  |  |  |  | 0.35 | 0.5 |  |
| $I_{OZH}$ | | $V_{CC} = 5.5$ V, | $V_O = 2.7$ V |  |  | 20 |  |  | 20 | µA |
| $I_{OZL}$ | | $V_{CC} = 5.5$ V, | $V_O = 0.4$ V |  |  | −20 |  |  | −20 | µA |
| $I_I$ | | $V_{CC} = 5.5$ V, | $V_I = 7$ V |  |  | 0.1 |  |  | 0.1 | mA |
| $I_{IH}$ | | $V_{CC} = 5.5$ V, | $V_I = 2.7$ V |  |  | 20 |  |  | 20 | µA |
| $I_{IL}$ | | $V_{CC} = 5.5$ V, | $V_I = 0.4$ V |  |  | −0.1 |  |  | −0.1 | mA |
| $I_O$§ | | $V_{CC} = 5.5$ V, | $V_O = 4.5$ V | −20 |  | −112 | −30 |  | −112 | mA |
| $I_{CC}$ | Enabled | $V_{CC} = 5.5$ V | Inputs at GND |  | 7 | 10 |  | 7 | 10 | mA |
|  | Disabled | | Inputs at 4.5 V |  | 9.4 | 14 |  | 9.4 | 14 |  |

‡ All typical values are at $V_{CC} = 5$ V, $T_A = 25$°C.
§ The output conditions have been chosen to produce a current that closely approximates one half of the true short-circuit output current, $I_{OS}$.
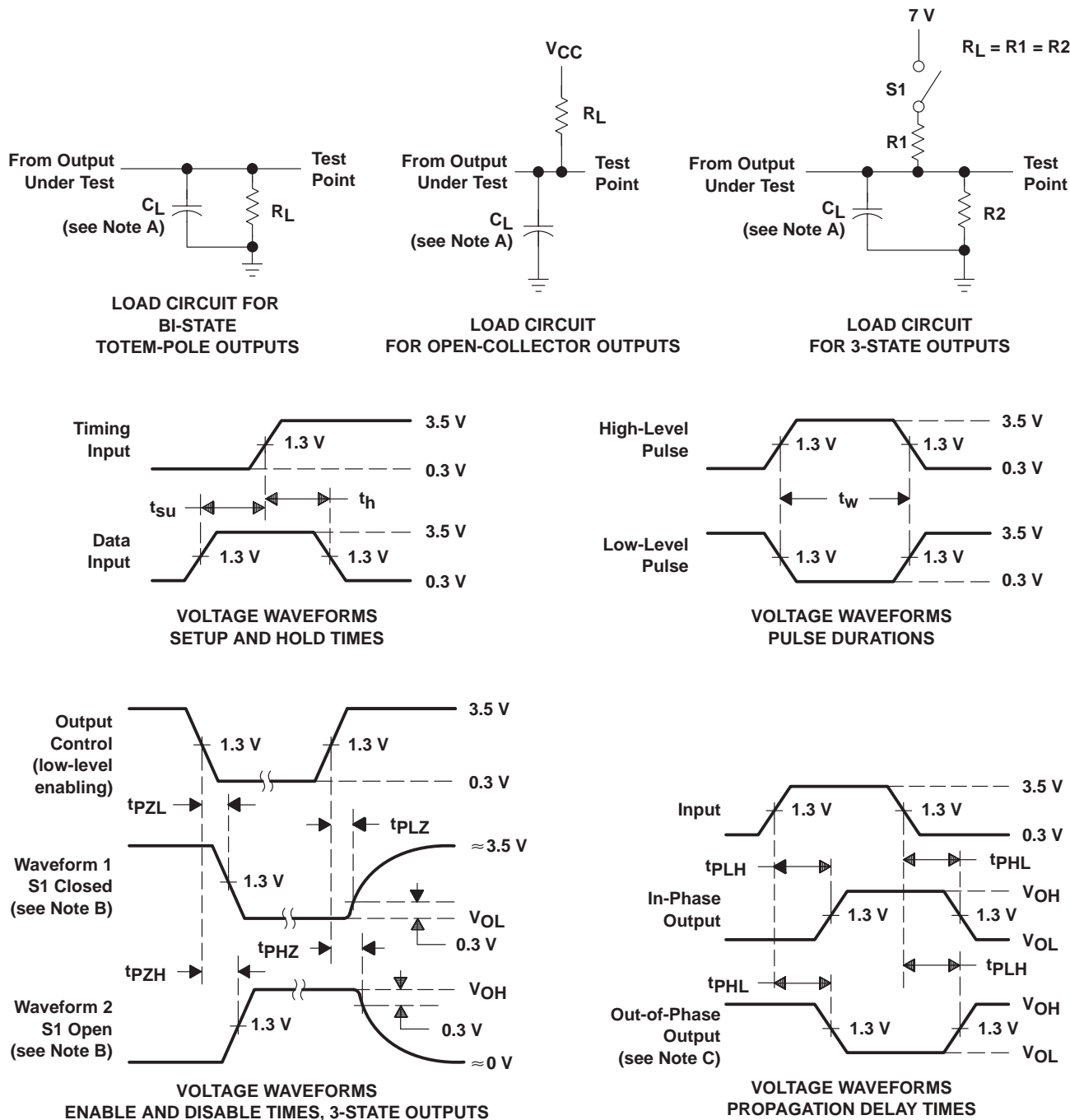
## switching characteristics (see Figure 1)

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | $V_{CC}$ = 4.5 V to 5.5 V, $C_L$ = 50 pF, R1 = 500 $\Omega$, R2 = 500 $\Omega$, $T_A$ = MIN to MAX† | | | | UNIT |
|---|---|---|---|---|---|---|---|
| | | | SN54ALS251 | | SN74ALS251 | | |
| | | | MIN | MAX | MIN | MAX | |
| $t_{PLH}$ | A, B, or C | Y | 1 | 21 | 5 | 18 | ns |
| $t_{PHL}$ | | | 7 | 34 | 8 | 24 | |
| $t_{PLH}$ | A, B, or C | W | 5 | 38 | 8 | 24 | ns |
| $t_{PHL}$ | | | 7 | 26 | 7 | 23 | |
| $t_{PLH}$ | Any D | Y | 2 | 15 | 2 | 10 | ns |
| $t_{PHL}$ | | | 3 | 23 | 3 | 15 | |
| $t_{PLH}$ | Any D | W | 3 | 25 | 3 | 15 | ns |
| $t_{PHL}$ | | | 3 | 20 | 3 | 15 | |
| $t_{PZH}$ | $\overline{OE}$ | Y | 3 | 21 | 3 | 15 | ns |
| $t_{PZL}$ | | | 3 | 19 | 3 | 15 | |
| $t_{PZH}$ | $\overline{OE}$ | W | 3 | 21 | 3 | 15 | ns |
| $t_{PZL}$ | | | 3 | 19 | 3 | 15 | |
| $t_{PZH}$ | $\overline{OE}$ | Y | 2 | 12 | 2 | 10 | ns |
| $t_{PZL}$ | | | 1 | 18 | 1 | 10 | |
| $t_{PZH}$ | $\overline{OE}$ | W | 2 | 12 | 2 | 10 | ns |
| $t_{PZL}$ | | | 1 | 18 | 1 | 10 | |

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

TEXAS
INSTRUMENTS

## PARAMETER MEASUREMENT INFORMATION
## SERIES 54ALS/74ALS AND 54AS/74AS DEVICES



**LOAD CIRCUIT FOR
BI-STATE
TOTEM-POLE OUTPUTS**

**LOAD CIRCUIT
FOR OPEN-COLLECTOR OUTPUTS**

**LOAD CIRCUIT
FOR 3-STATE OUTPUTS**

$R_L = R1 = R2$

**VOLTAGE WAVEFORMS
SETUP AND HOLD TIMES**

**VOLTAGE WAVEFORMS
PULSE DURATIONS**

**VOLTAGE WAVEFORMS
ENABLE AND DISABLE TIMES, 3-STATE OUTPUTS**

**VOLTAGE WAVEFORMS
PROPAGATION DELAY TIMES**

NOTES: A. $C_L$ includes probe and jig capacitance.
B. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control.
Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.
C. When measuring propagation delay items of 3-state outputs, switch S1 is open.
D. All input pulses have the following characteristics: PRR ≤ 1 MHz, $t_r = t_f = 2$ ns, duty cycle = 50%.
E. The outputs are measured one at a time with one transition per measurement.

**Figure 1. Load Circuits and Voltage Waveforms**

![Texas Instruments logo] **TEXAS INSTRUMENTS**

## PACKAGING INFORMATION

| Orderable Device | Status [1] | Package Type | Package Drawing | Pins | Package Qty | Eco Plan [2] | Lead/Ball Finish | MSL Peak Temp [3] |
|---|---|---|---|---|---|---|---|---|
| 84135012A | ACTIVE | LCCC | FK | 20 | 1 | TBD | POST-PLATE | N / A for Pkg Type |
| 8413501EA | ACTIVE | CDIP | J | 16 | 1 | TBD | A42 SNPB | N / A for Pkg Type |
| 8413501FA | ACTIVE | CFP | W | 16 | 1 | TBD | A42 | N / A for Pkg Type |
| SN54ALS251J | ACTIVE | CDIP | J | 16 | 1 | TBD | A42 SNPB | N / A for Pkg Type |
| SN74ALS251D | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74ALS251DE4 | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74ALS251DG4 | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74ALS251DR | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74ALS251DRE4 | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74ALS251DRG4 | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74ALS251N | ACTIVE | PDIP | N | 16 | 25 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type |
| SN74ALS251NE4 | ACTIVE | PDIP | N | 16 | 25 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type |
| SN74ALS251NSR | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74ALS251NSRE4 | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74ALS251NSRG4 | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SNJ54ALS251FK | ACTIVE | LCCC | FK | 20 | 1 | TBD | POST-PLATE | N / A for Pkg Type |
| SNJ54ALS251J | ACTIVE | CDIP | J | 16 | 1 | TBD | A42 SNPB | N / A for Pkg Type |
| SNJ54ALS251W | ACTIVE | CFP | W | 16 | 1 | TBD | A42 | N / A for Pkg Type |

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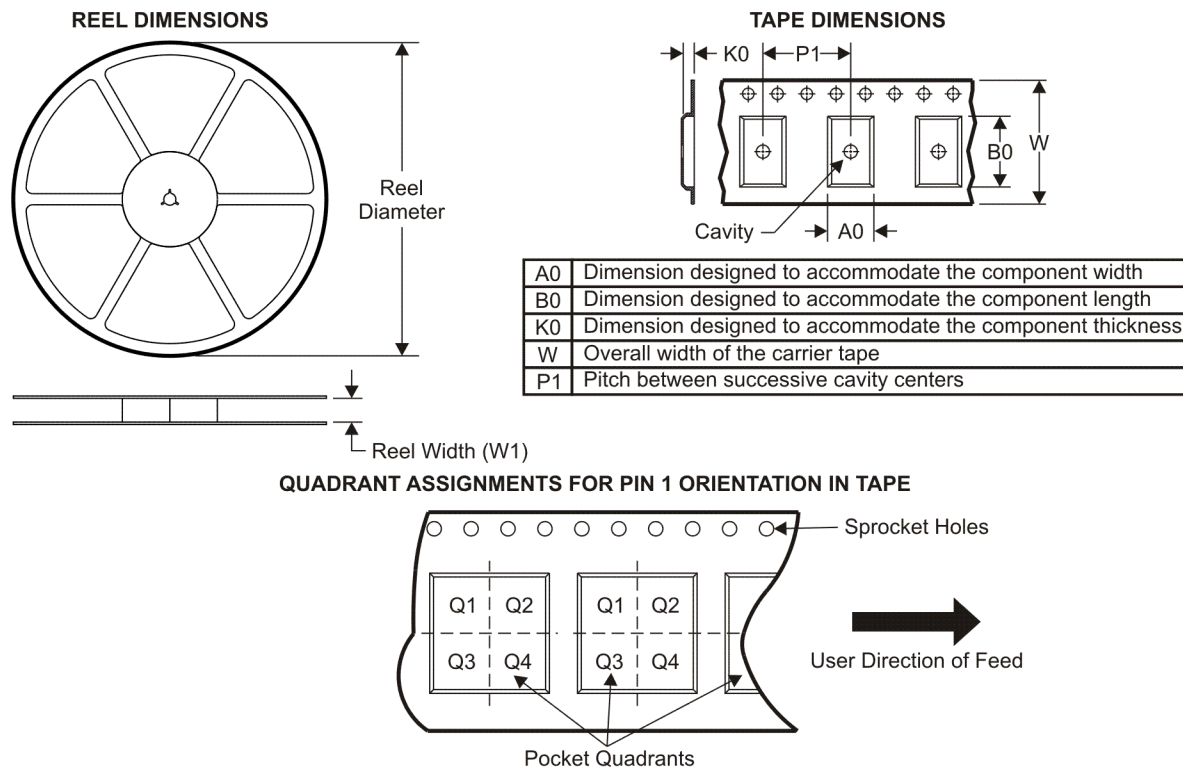**Green (RoHS & no Sb/Br):** TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

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

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## 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 |

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



User Direction of Feed

*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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SN74ALS251DR | SOIC | D | 16 | 2500 | 330.0 | 16.4 | 6.5 | 10.3 | 2.1 | 8.0 | 16.0 | Q1 |
| SN74ALS251NSR | SO | NS | 16 | 2000 | 330.0 | 16.4 | 8.2 | 10.5 | 2.5 | 12.0 | 16.0 | Q1 |

**TAPE AND REEL BOX DIMENSIONS**
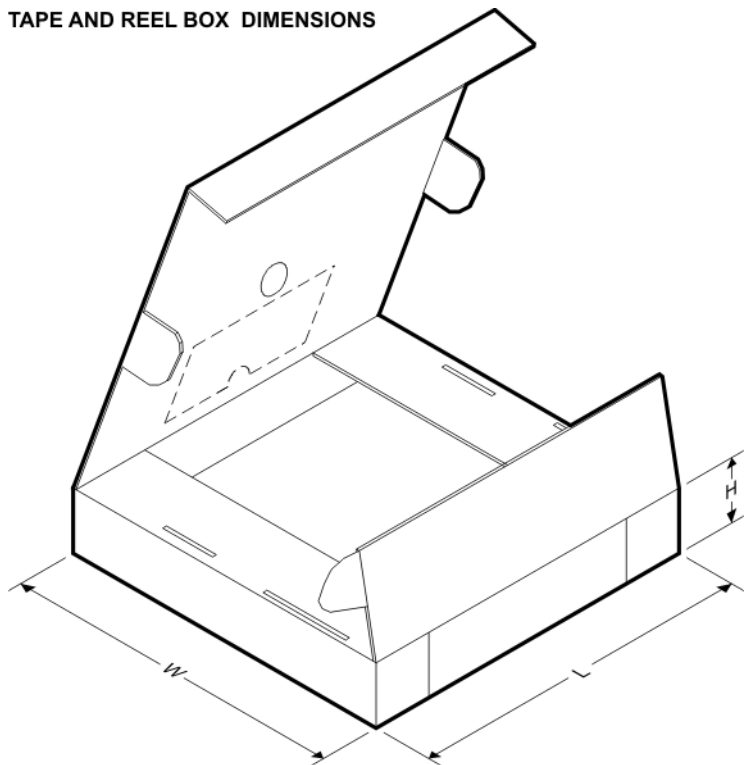


*All dimensions are nominal

| Device | Package Type | Package Drawing | Pins | SPQ | Length (mm) | Width (mm) | Height (mm) |
|---|---|---|---|---|---|---|---|
| SN74ALS251DR | SOIC | D | 16 | 2500 | 333.2 | 345.9 | 28.6 |
| SN74ALS251NSR | SO | NS | 16 | 2000 | 346.0 | 346.0 | 33.0 |

**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°–10°

0,25

1,05 / 0,55

0,15 / 0,05

2,00 MAX

Seating Plane

⊿ 0,10
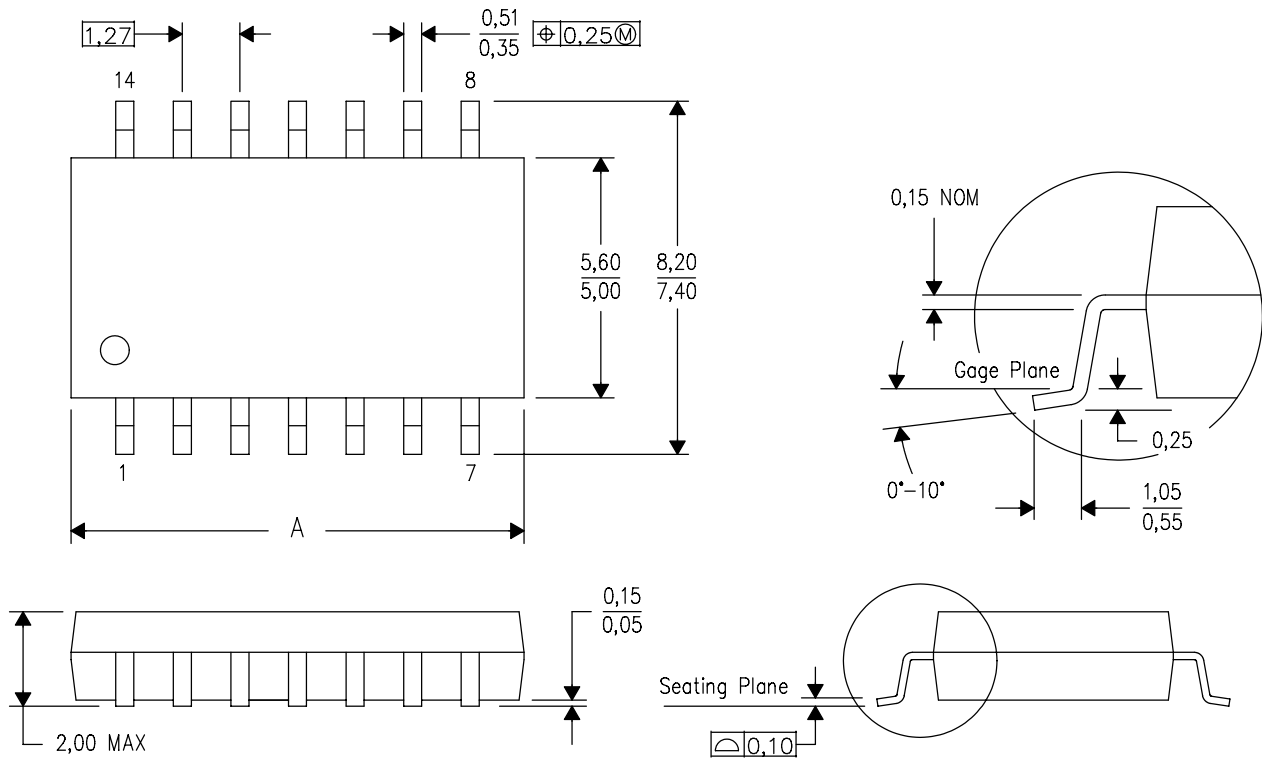
| DIM \ PINS ** | 14 | 16 | 20 | 24 |
|---|---|---|---|---|
| A   MAX | 10,50 | 10,50 | 12,90 | 15,30 |
| A   MIN | 9,90 | 9,90 | 12,30 | 14,70 |

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.

## FK (S-CQCC-N**)    LEADLESS CERAMIC CHIP CARRIER

**28 TERMINAL SHOWN**
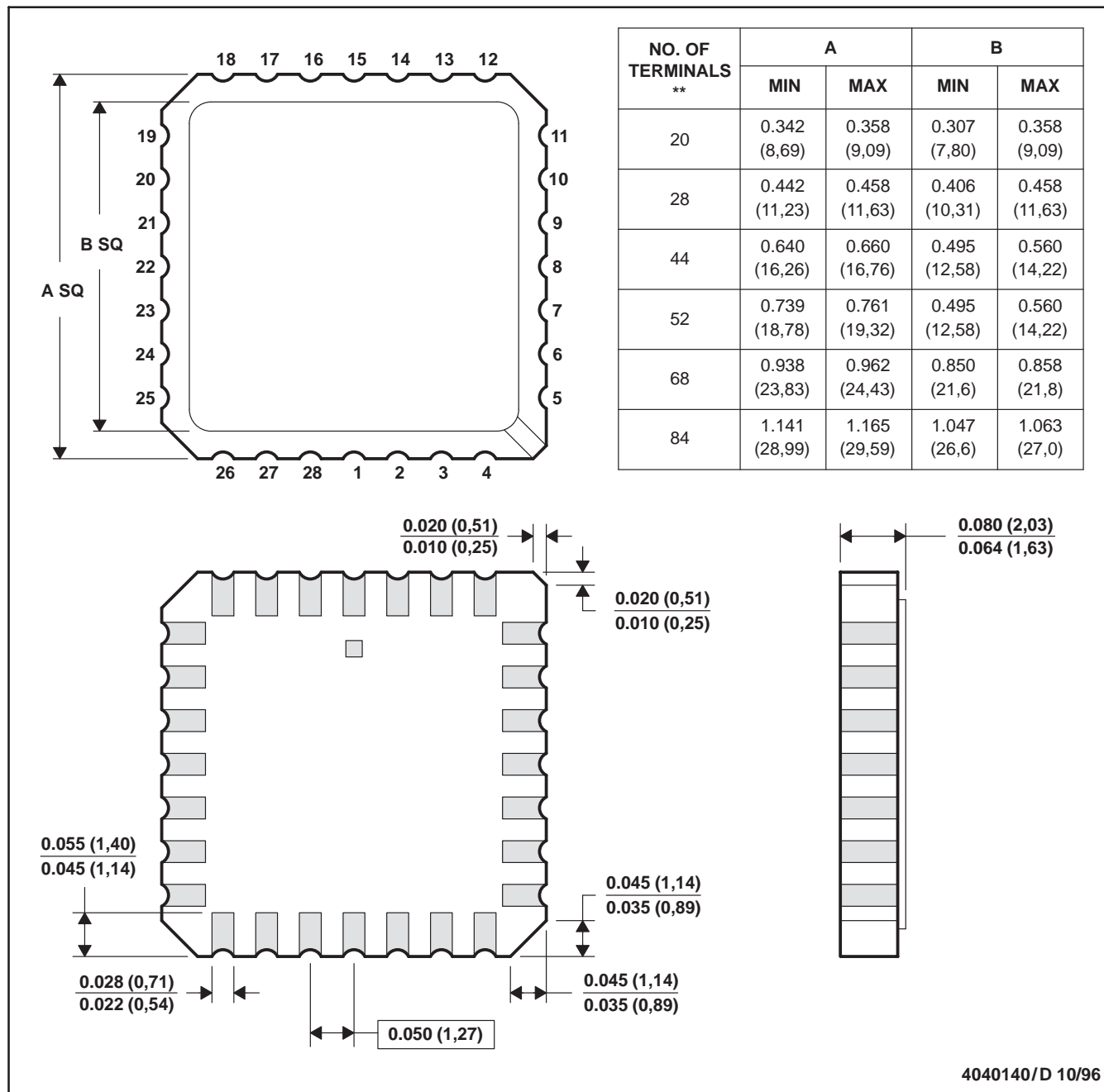
| NO. OF TERMINALS ** | A | | B | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| 20 | 0.342 (8,69) | 0.358 (9,09) | 0.307 (7,80) | 0.358 (9,09) |
| 28 | 0.442 (11,23) | 0.458 (11,63) | 0.406 (10,31) | 0.458 (11,63) |
| 44 | 0.640 (16,26) | 0.660 (16,76) | 0.495 (12,58) | 0.560 (14,22) |
| 52 | 0.739 (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) |

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

TEXAS
INSTRUMENTS
POST OFFICE BOX 655303 ● DALLAS, TEXAS 75265

| 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

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

1          7

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
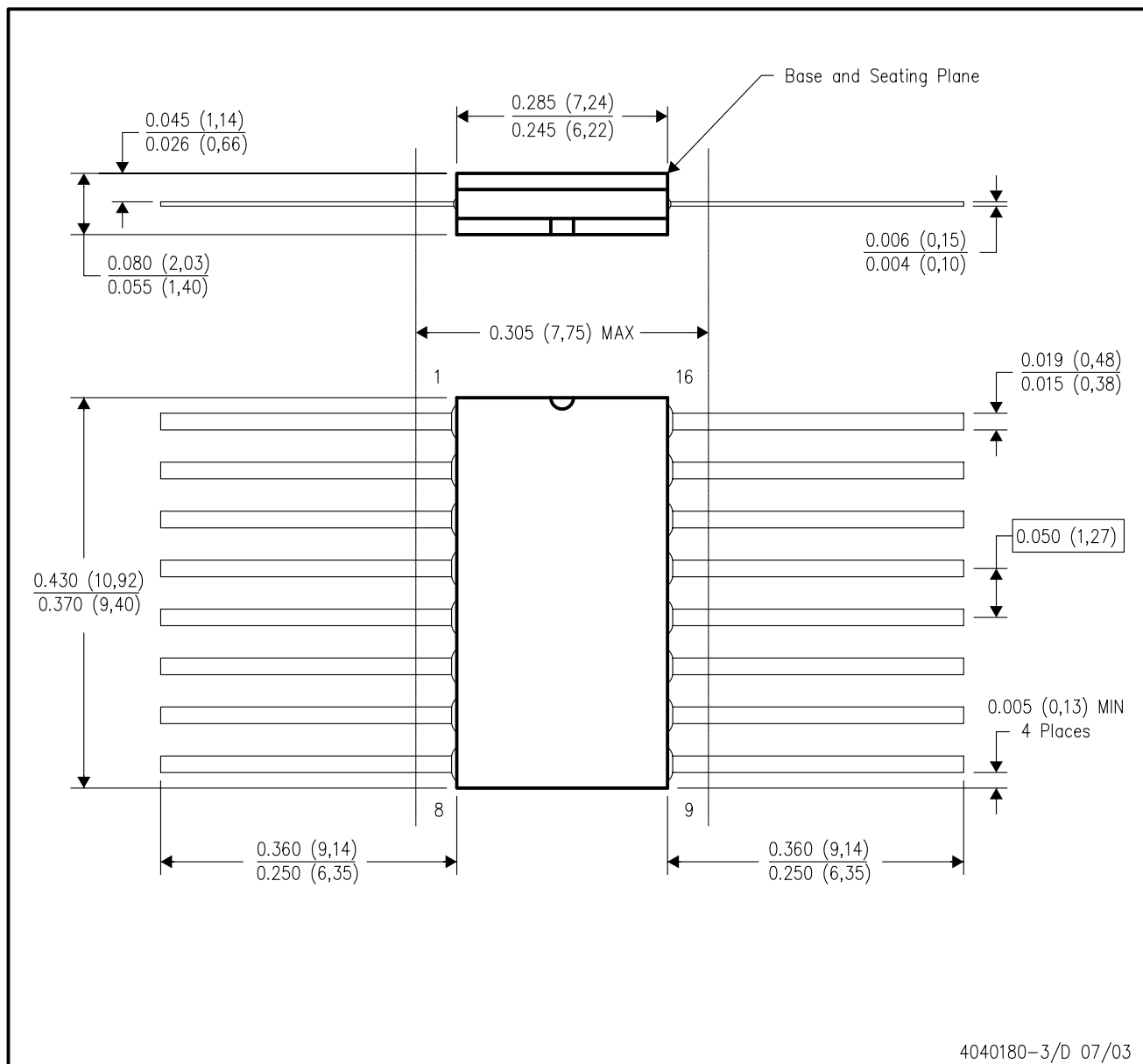
Base and Seating Plane

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

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

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

0.006 (0,15)
0.004 (0,10)

0.305 (7,75) MAX

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

1                               16

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/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

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)

0.004 (0,10)

0.010 (0,25)
0.007 (0,17)

Gauge Plane

Seating Plane

0.010 (0,25)        0°−8°

0.050 (1,27)
0.016 (0,40)
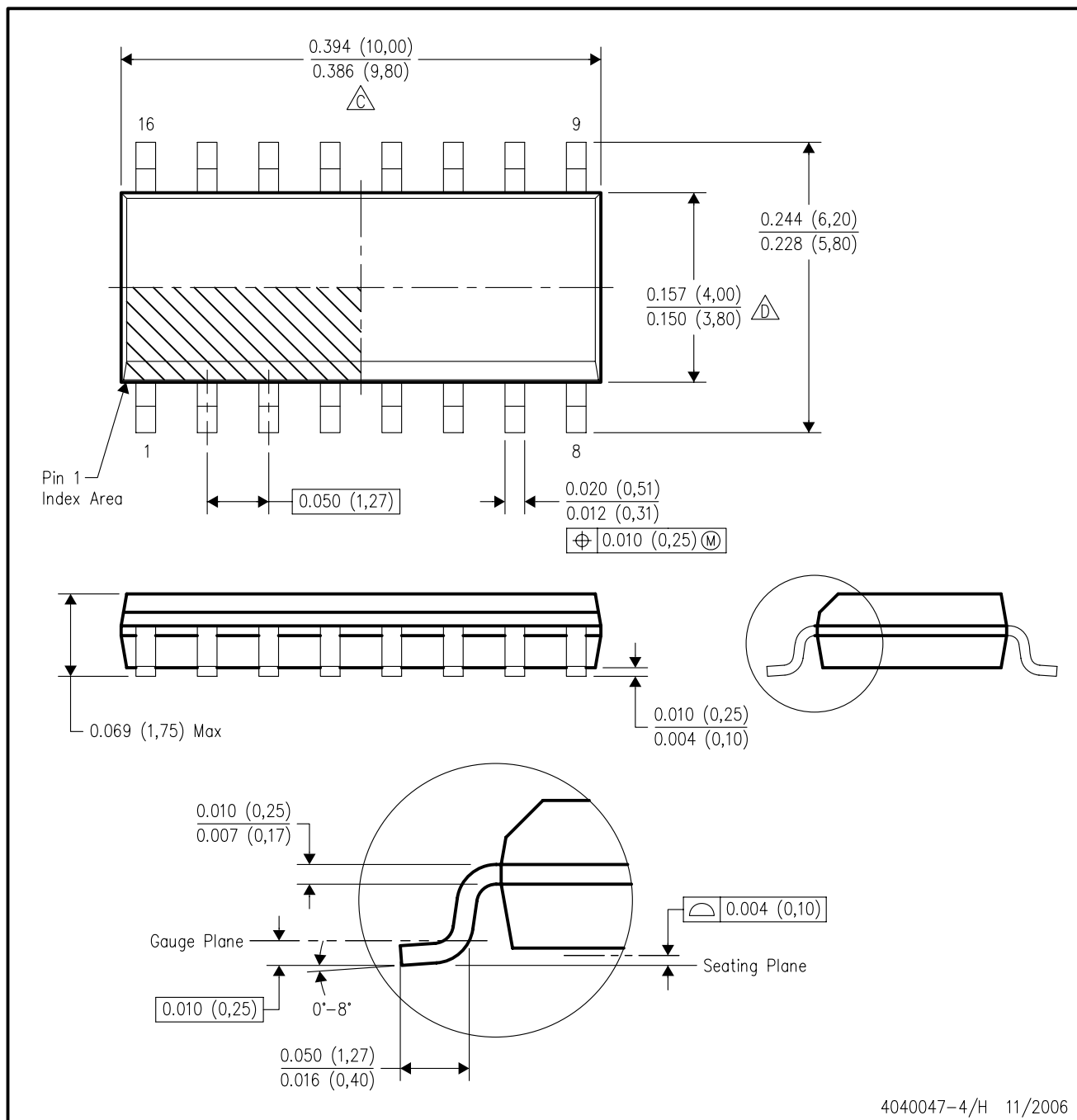
4040047−4/H   11/2006

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

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

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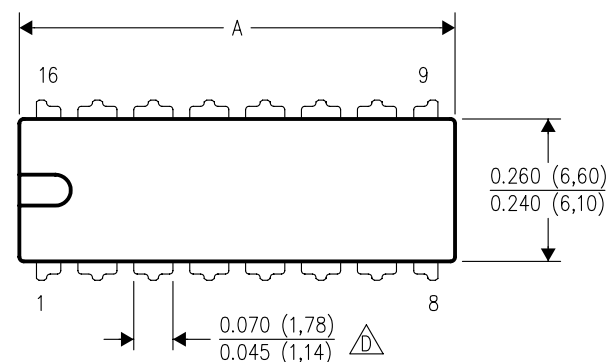
| PINS **<br>DIM | 14 | 16 | 18 | 20 |
|---|---|---|---|---|
| A    MAX | 0.775<br>(19,69) | 0.775<br>(19,69) | 0.920<br>(23,37) | 1.060<br>(26,92) |
| A    MIN | 0.745<br>(18,92) | 0.745<br>(18,92) | 0.850<br>(21,59) | 0.940<br>(23,88) |
| MS−001<br>VARIATION | AA | BB | AC | AD |

A

16    9

0.260 (6,60)
0.240 (6,10)

1    8

0.070 (1,78)
0.045 (1,14)

0.045 (1,14)
0.030 (0,76)

0.020 (0,51) MIN

0.325 (8,26)
0.300 (7,62)

0.015 (0,38)

0.200 (5,08) MAX

Gauge Plane

Seating Plane

0.125 (3,18) MIN

0.010 (0,25) NOM

0.100 (2,54)

0.021 (0,53)
0.015 (0,38)

⊕ 0.010 (0,25) Ⓜ

0.430 (10,92) MAX

14/18 Pin Only
20 Pin vendor option
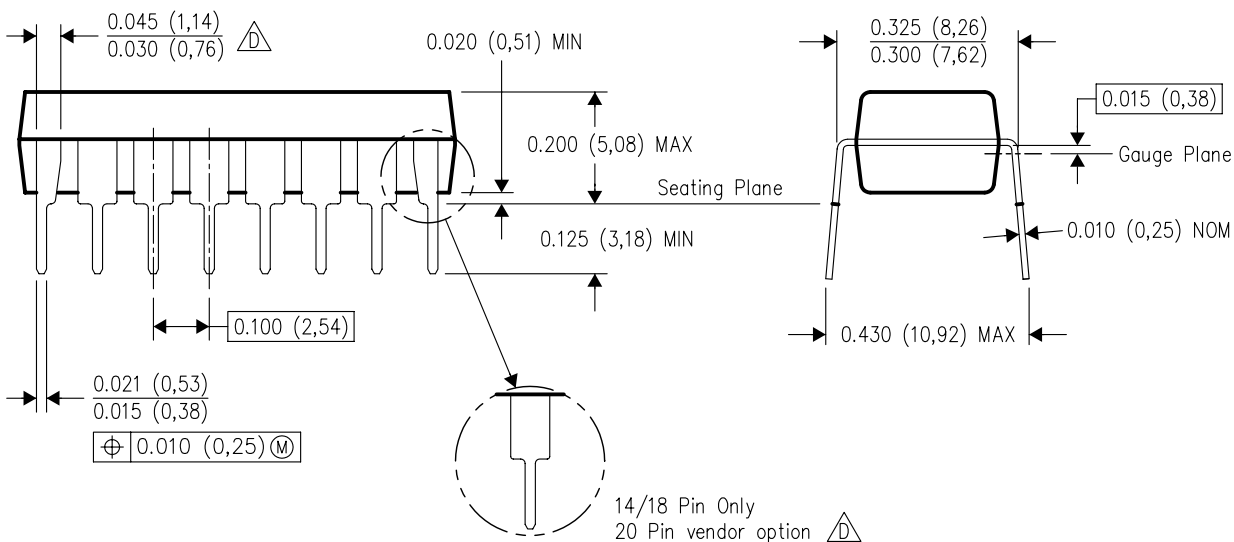
4040049/E  12/2002

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.

## IMPORTANT NOTICE