- **Wide Operating Voltage Range of 2 V to 6 V**
- **High-Current 3-State Outputs Can Drive Up To 15 LSTTL Loads**
- **Low Power Consumption, 80-µA Max $I_{CC}$**
- **Typical $t_{pd}$ = 8 ns**
- **±6-mA Output Drive at 5 V**
- **Low Input Current of 1 µA Max**
- **Lock Bus-Latch Capability**
- **True Logic**

**SN54HC623 . . . J OR W PACKAGE**
**SN74HC623 . . . DW, N, OR NS PACKAGE**
**(TOP VIEW)**

| | | |
|---|---|---|
| OEAB | 1 | 20 | $V_{CC}$ |
| A1 | 2 | 19 | $\overline{OEBA}$ |
| A2 | 3 | 18 | B1 |
| A3 | 4 | 17 | B2 |
| A4 | 5 | 16 | B3 |
| A5 | 6 | 15 | B4 |
| A6 | 7 | 14 | B5 |
| A7 | 8 | 13 | B6 |
| A8 | 9 | 12 | B7 |
| GND | 10 | 11 | B8 |

**SN54HC623 . . . FK PACKAGE**
**(TOP VIEW)**

Top pins: A2 (3), A1 (2), OEAB (1), $V_{CC}$ (20), $\overline{OEBA}$ (19)

| | | |
|---|---|---|
| A3 | 4 | 18 | B1 |
| A4 | 5 | 17 | B2 |
| A5 | 6 | 16 | B3 |
| A6 | 7 | 15 | B4 |
| A7 | 8 | 14 | B5 |

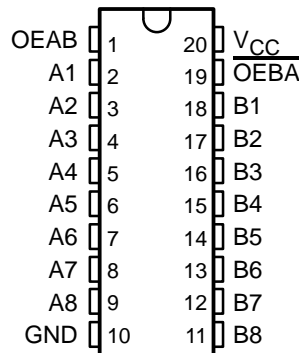Bottom pins: A8 (9), GND (10), B8 (11), B7 (12), B6 (13)

## description/ordering information

These octal bus transceivers are designed for asynchronous two-way communication between data buses. The control-function implementation allows for maximum flexibility in timing.
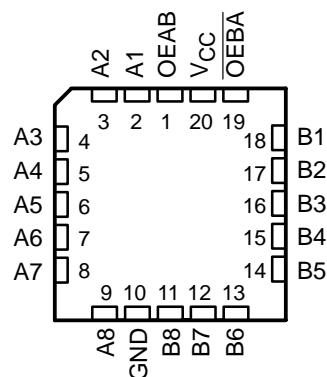
The 'HC623 devices allow data transmission from the A bus to the B bus or from the B bus to the A bus, depending upon the logic levels at the output-enable (OEAB and $\overline{OEBA}$) inputs.

OEAB and $\overline{OEBA}$ disable the device so that the buses are effectively isolated. The dual-enable configuration gives the transceivers the capability to store data by simultaneously enabling OEAB and $\overline{OEBA}$. Each output reinforces its input in this transceiver configuration. When both OEAB and $\overline{OEBA}$ are enabled and all other data sources to the two sets of bus lines are in the high-impedance state, both sets of bus lines (16 total) remain at their last states. The 8-bit codes appearing on the two sets of buses are identical.

### ORDERING INFORMATION

| $T_A$ | PACKAGE† | | ORDERABLE PART NUMBER | TOP-SIDE MARKING |
|---|---|---|---|---|
| −40°C to 85°C | PDIP – N | Tube | SN74HC623N | SN74HC623N |
| | SOIC – DW | Tube | SN74HC623DW | HC623 |
| | | Tape and reel | SN74HC623DWR | |
| | SOP – NS | Tape and reel | SN74HC623NSR | HC623 |
| −55°C to 125°C | CDIP – J | Tube | SNJ54HC623J | SNJ54HC623J |
| | CFP – W | Tube | SNJ54HC623W | SNJ54HC623W |
| | LCCC – FK | Tube | SNJ54HC623FK | SNJ54HC623FK |

† Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at www.ti.com/sc/package.

Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

Copyright © 2002, Texas Instruments Incorporated

**TEXAS INSTRUMENTS**

**FUNCTION TABLE**

| INPUTS | | OPERATION |
|---|---|---|
| $\overline{\text{OEBA}}$ | OEAB | |
| L | L | B data to A bus |
| H | H | A data to B bus |
| H | L | Isolation |
| L | H | B data to A bus, A data to B bus |

## logic diagram (positive logic)



**To Seven Other Transceivers**
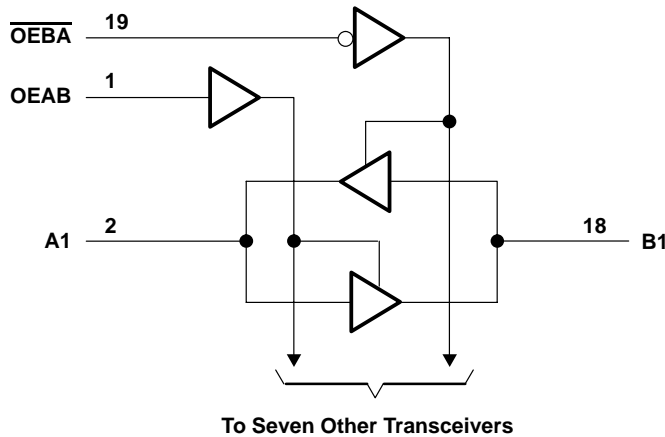
## absolute maximum ratings over operating free-air temperature range (unless otherwise noted)†

Supply voltage range, $V_{CC}$ ............................................................... –0.5 V to 7 V
Input clamp current, $I_{IK}$ ($V_I < 0$ or $V_I > V_{CC}$) (see Note 1) ................................... ±20 mA
Output clamp current, $I_{OK}$ ($V_O < 0$ or $V_O > V_{CC}$) (see Note 1) ............................... ±20 mA
Continuous output current, $I_O$ ($V_O = 0$ to $V_{CC}$) ........................................... ±35 mA
Continuous current through $V_{CC}$ or GND ...................................................... ±70 mA
Package thermal impedance, $\theta_{JA}$ (see Note 2): DW package ................................. 58°C/W
                                                     N package ................................... 69°C/W
                                                     NS package ................................. 60°C/W
Storage temperature range, $T_{stg}$ ................................................... –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.
NOTES: 1. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.
       2. The package thermal impedance is calculated in accordance with JESD 51-7.

**TEXAS
INSTRUMENTS**

POST OFFICE BOX 655303 ● DALLAS, TEXAS 75265

## recommended operating conditions (see Note 3)

| | | | SN54HC623 MIN | SN54HC623 NOM | SN54HC623 MAX | SN74HC623 MIN | SN74HC623 NOM | SN74HC623 MAX | UNIT |
|---|---|---|---|---|---|---|---|---|---|
| $V_{CC}$ | Supply voltage | | 2 | 5 | 6 | 2 | 5 | 6 | V |
| $V_{IH}$ | High-level input voltage | $V_{CC}$ = 2 V | 1.5 | | | 1.5 | | | V |
| | | $V_{CC}$ = 4.5 V | 3.15 | | | 3.15 | | | |
| | | $V_{CC}$ = 6 V | 4.2 | | | 4.2 | | | |
| $V_{IL}$ | Low-level input voltage | $V_{CC}$ = 2 V | | | 0.5 | | | 0.5 | V |
| | | $V_{CC}$ = 4.5 V | | | 1.35 | | | 1.35 | |
| | | $V_{CC}$ = 6 V | | | 1.8 | | | 1.8 | |
| $V_I$ | Input voltage | | 0 | | $V_{CC}$ | 0 | | $V_{CC}$ | V |
| $V_O$ | Output voltage | | 0 | | $V_{CC}$ | 0 | | $V_{CC}$ | V |
| $\Delta t/\Delta v$ | Input transition rise/fall time | $V_{CC}$ = 2 V | | | 1000 | | | 1000 | ns |
| | | $V_{CC}$ = 4.5 V | | | 500 | | | 500 | |
| | | $V_{CC}$ = 6 V | | | 400 | | | 400 | |
| $T_A$ | Operating free-air temperature | | −55 | | 125 | −40 | | 85 | °C |

NOTE 3: All unused inputs of the device must be held at $V_{CC}$ or GND to ensure proper device operation. Refer to the TI application report, *Implications of Slow or Floating CMOS Inputs,* literature number SCBA004.

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

| PARAMETER | | TEST CONDITIONS | | $V_{CC}$ | $T_A$ = 25°C MIN | $T_A$ = 25°C TYP | $T_A$ = 25°C MAX | SN54HC623 MIN | SN54HC623 MAX | SN74HC623 MIN | SN74HC623 MAX | UNIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $V_{OH}$ | | $V_I$ = $V_{IH}$ or $V_{IL}$ | $I_{OH}$ = −20 µA | 2 V | 1.9 | 1.998 | | 1.9 | | 1.9 | | V |
| | | | | 4.5 V | 4.4 | 4.499 | | 4.4 | | 4.4 | | |
| | | | | 6 V | 5.9 | 5.999 | | 5.9 | | 5.9 | | |
| | | | $I_{OH}$ = −6 mA | 4.5 V | 3.98 | 4.3 | | 3.7 | | 3.84 | | |
| | | | $I_{OH}$ = −7.8 mA | 6 V | 5.48 | 5.8 | | 5.2 | | 5.34 | | |
| $V_{OL}$ | | $V_I$ = $V_{IH}$ or $V_{IL}$ | $I_{OL}$ = 20 µA | 2 V | | 0.002 | 0.1 | | 0.1 | | 0.1 | V |
| | | | | 4.5 V | | 0.001 | 0.1 | | 0.1 | | 0.1 | |
| | | | | 6 V | | 0.001 | 0.1 | | 0.1 | | 0.1 | |
| | | | $I_{OL}$ = 6 mA | 4.5 V | | 0.17 | 0.26 | | 0.4 | | 0.33 | |
| | | | $I_{OL}$ = 7.8 mA | 6 V | | 0.15 | 0.26 | | 0.4 | | 0.33 | |
| $I_I$ | $\overline{OEAB}$ or $\overline{OEBA}$ | $V_I$ = $V_{CC}$ or 0 | | 6 V | | ±0.1 | ±100 | | ±1000 | | ±1000 | nA |
| $I_{OZ}$ | A or B | $V_O$ = $V_{CC}$ or 0 | | 6 V | | ±0.01 | ±0.5 | | ±10 | | ±5 | µA |
| $I_{CC}$ | | $V_I$ = $V_{CC}$ or 0, $I_O$ = 0 | | 6 V | | | 8 | | 160 | | 80 | µA |
| $C_i$ | $\overline{OEAB}$ or $\overline{OEBA}$ | | | 2 V to 6 V | | 3 | 10 | | 10 | | 10 | pF |

### TEXAS INSTRUMENTS

POST OFFICE BOX 655303 ● DALLAS, TEXAS 75265

# SN54HC623, SN74HC623
## OCTAL BUS TRANSCEIVERS
## WITH 3-STATE OUTPUTS

SCLS149C – DECEMBER 1982 – REVISED DECEMBER 2002

**switching characteristics over recommended operating free-air temperature range, $C_L$ = 50 pF (unless otherwise noted) (see Figure 1)**

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | $V_{CC}$ | $T_A$ = 25°C MIN | $T_A$ = 25°C TYP | $T_A$ = 25°C MAX | SN54HC623 MIN | SN54HC623 MAX | SN74HC623 MIN | SN74HC623 MAX | UNIT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| $t_{pd}$ | A or B | B or A | 2 V | | 29 | 105 | | 160 | | 130 | ns |
| | | | 4.5 V | | 10 | 21 | | 32 | | 26 | |
| | | | 6 V | | 8 | 18 | | 27 | | 22 | |
| $t_{en}$ | $\overline{OEBA}$ | A | 2 V | | 112 | 210 | | 315 | | 265 | ns |
| | | | 4.5 V | | 27 | 42 | | 63 | | 53 | |
| | | | 6 V | | 20 | 36 | | 54 | | 45 | |
| $t_{dis}$ | $\overline{OEBA}$ | A | 2 V | | 40 | 150 | | 225 | | 190 | ns |
| | | | 4.5 V | | 18 | 30 | | 45 | | 38 | |
| | | | 6 V | | 16 | 26 | | 38 | | 32 | |
| $t_{en}$ | OEAB | B | 2 V | | 112 | 210 | | 315 | | 265 | ns |
| | | | 4.5 V | | 27 | 42 | | 63 | | 53 | |
| | | | 6 V | | 20 | 36 | | 54 | | 45 | |
| $t_{dis}$ | OEAB | B | 2 V | | 40 | 150 | | 225 | | 190 | ns |
| | | | 4.5 V | | 18 | 30 | | 45 | | 38 | |
| | | | 6 V | | 16 | 26 | | 38 | | 32 | |
| $t_t$ | | A or B | 2 V | | 20 | 60 | | 90 | | 75 | ns |
| | | | 4.5 V | | 8 | 12 | | 18 | | 15 | |
| | | | 6 V | | 6 | 10 | | 15 | | 13 | |

**switching characteristics over recommended operating free-air temperature range, $C_L$ = 150 pF (unless otherwise noted) (see Figure 1)**

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | $V_{CC}$ | $T_A$ = 25°C MIN | $T_A$ = 25°C TYP | $T_A$ = 25°C MAX | SN54HC623 MIN | SN54HC623 MAX | SN74HC623 MIN | SN74HC623 MAX | UNIT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| $t_{pd}$ | A or B | B or A | 2 V | | 44 | 135 | | 200 | | 170 | ns |
| | | | 4.5 V | | 14 | 27 | | 40 | | 34 | |
| | | | 6 V | | 11 | 23 | | 34 | | 29 | |
| $t_{en}$ | $\overline{OEBA}$ | A | 2 V | | 130 | 270 | | 405 | | 335 | ns |
| | | | 4.5 V | | 31 | 54 | | 81 | | 67 | |
| | | | 6 V | | 23 | 46 | | 69 | | 56 | |
| | OEAB | B | 2 V | | 130 | 270 | | 405 | | 335 | ns |
| | | | 4.5 V | | 31 | 54 | | 81 | | 67 | |
| | | | 6 V | | 23 | 46 | | 69 | | 56 | |
| $t_t$ | | A or B | 2 V | | 45 | 210 | | 315 | | 265 | ns |
| | | | 4.5 V | | 17 | 42 | | 63 | | 53 | |
| | | | 6 V | | 13 | 36 | | 53 | | 45 | |

## operating characteristics, $T_A$ = 25°C

| PARAMETER | | TEST CONDITIONS | TYP | UNIT |
|---|---|---|---|---|
| $C_{pd}$ | Power dissipation capacitance per transceiver | No load | 40 | pF |

![Texas Instruments logo]

## PARAMETER MEASUREMENT INFORMATION

**LOAD CIRCUIT**
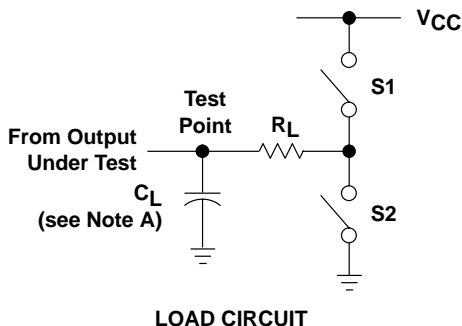
| PARAMETER | | $R_L$ | $C_L$ | S1 | S2 |
|---|---|---|---|---|---|
| $t_{en}$ | $t_{PZH}$ | 1 kΩ | 50 pF or 150 pF | Open | Closed |
| | $t_{PZL}$ | | | Closed | Open |
| $t_{dis}$ | $t_{PHZ}$ | 1 kΩ | 50 pF | Open | Closed |
| | $t_{PLZ}$ | | | Closed | Open |
| $t_{pd}$ or $t_t$ | | — | 50 pF or 150 pF | Open | Open |
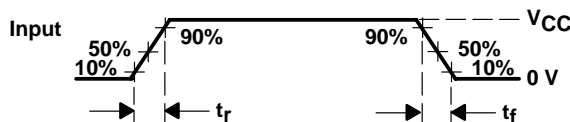
**VOLTAGE WAVEFORM**
**INPUT RISE AND FALL TIMES**
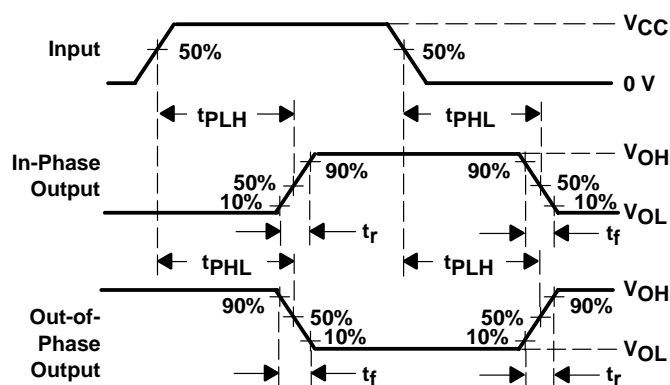
**VOLTAGE WAVEFORMS**
**PROPAGATION DELAY AND OUTPUT TRANSITION TIMES**
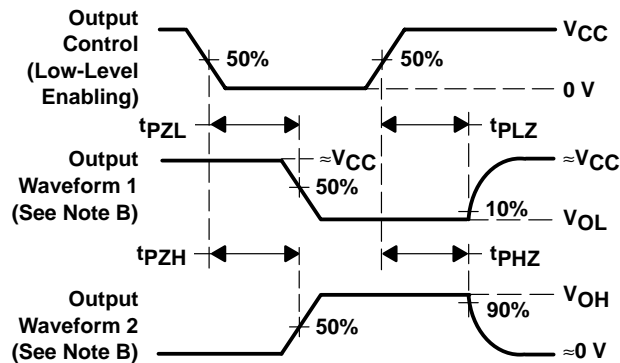
**VOLTAGE WAVEFORMS**
**ENABLE AND DISABLE TIMES FOR 3-STATE OUTPUTS**

NOTES:  A.  $C_L$ includes probe and test-fixture 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.  Phase relationships between waveforms were chosen arbitrarily. All input pulses are supplied by generators having the following
       characteristics: PRR ≤ 1 MHz, $Z_O$ = 50 Ω, $t_r$ = 6 ns, $t_f$ = 6 ns.
   D.  The outputs are measured one at a time with one input transition per measurement.
   E.  $t_{PLZ}$ and $t_{PHZ}$ are the same as $t_{dis}$.
   F.  $t_{PZL}$ and $t_{PZH}$ are the same as $t_{en}$.
   G.  $t_{PLH}$ and $t_{PHL}$ are the same as $t_{pd}$.

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

## PACKAGING INFORMATION

| Orderable Device | Status [1] | Package Type | Package Drawing | Pins | Package Qty | Eco Plan [2] | Lead/Ball Finish | MSL Peak Temp [3] |
|---|---|---|---|---|---|---|---|---|
| SN74HC623DW | ACTIVE | SOIC | DW | 20 | 25 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74HC623DWG4 | ACTIVE | SOIC | DW | 20 | 25 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74HC623DWR | ACTIVE | SOIC | DW | 20 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74HC623DWRE4 | ACTIVE | SOIC | DW | 20 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74HC623DWRG4 | ACTIVE | SOIC | DW | 20 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74HC623N | ACTIVE | PDIP | N | 20 | 20 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type |
| SN74HC623NE4 | ACTIVE | PDIP | N | 20 | 20 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type |
| SN74HC623NSR | ACTIVE | SO | NS | 20 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74HC623NSRE4 | ACTIVE | SO | NS | 20 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| SN74HC623NSRG4 | ACTIVE | SO | NS | 20 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |

[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.

**Important Information and Disclaimer:** The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. TI has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

## TAPE AND REEL INFORMATION

**REEL DIMENSIONS**



Reel Diameter

Reel Width (W1)

**TAPE DIMENSIONS**



Cavity

| 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**



Sprocket Holes

Q1 | Q2
Q3 | Q4

Q1 | Q2
Q3 | Q4

User Direction of Feed

Pocket Quadrants

*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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SN74HC623DWR | SOIC | DW | 20 | 2000 | 330.0 | 24.4 | 10.8 | 13.0 | 2.7 | 12.0 | 24.0 | Q1 |
| SN74HC623NSR | SO | NS | 20 | 2000 | 330.0 | 24.4 | 8.2 | 13.0 | 2.5 | 12.0 | 24.0 | Q1 |

**TAPE AND REEL BOX  DIMENSIONS**



*All dimensions are nominal

| Device | Package Type | Package Drawing | Pins | SPQ | Length (mm) | Width (mm) | Height (mm) |
|--------|--------------|-----------------|------|-----|-------------|------------|-------------|
| SN74HC623DWR | SOIC | DW | 20 | 2000 | 346.0 | 346.0 | 41.0 |
| SN74HC623NSR | SO | NS | 20 | 2000 | 346.0 | 346.0 | 41.0 |

## NS (R-PDSO-G**)                                PLASTIC SMALL-OUTLINE PACKAGE

**14-PINS SHOWN**

1,27

0,51
0,35    ⌖ 0,25 Ⓜ

14                    8

5,60      8,20
5,00      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.

## DW (R−PDSO−G20)

## PLASTIC SMALL−OUTLINE PACKAGE
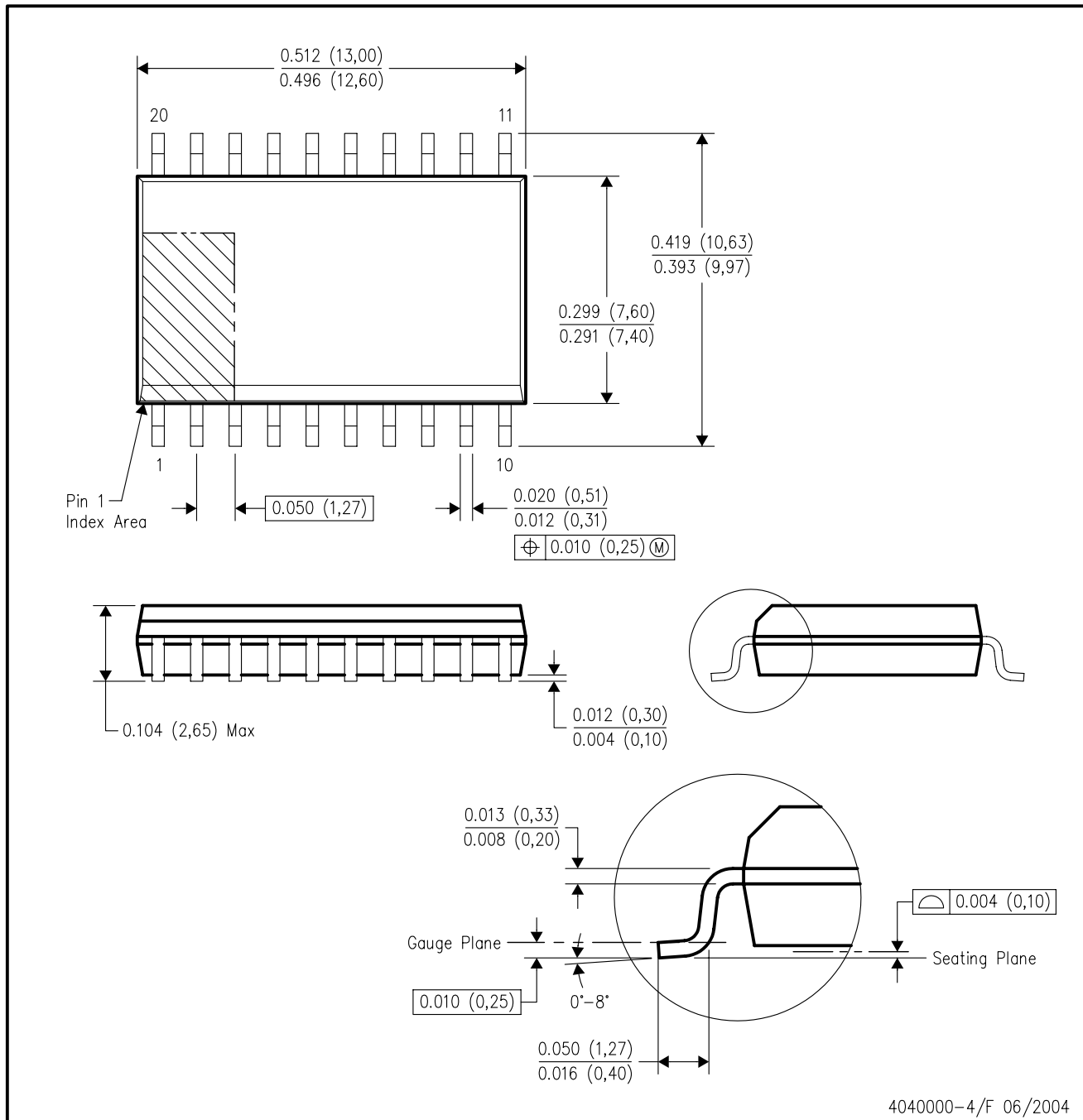
$\frac{0.512\ (13,00)}{0.496\ (12,60)}$

20

11

$\frac{0.419\ (10,63)}{0.393\ (9,97)}$

$\frac{0.299\ (7,60)}{0.291\ (7,40)}$

1

10

Pin 1
Index Area

0.050 (1,27)

$\frac{0.020\ (0,51)}{0.012\ (0,31)}$

$\oplus$ | 0.010 (0,25) Ⓜ

0.104 (2,65) Max

$\frac{0.012\ (0,30)}{0.004\ (0,10)}$

$\frac{0.013\ (0,33)}{0.008\ (0,20)}$

⌂ | 0.004 (0,10)

Gauge Plane

Seating Plane

0.010 (0,25)

0°−8°

$\frac{0.050\ (1,27)}{0.016\ (0,40)}$

4040000−4/F 06/2004

NOTES:   A.   All linear dimensions are in inches (millimeters).
         B.   This drawing is subject to change without notice.
         C.   Body dimensions do not include mold flash or protrusion not to exceed 0.006 (0,15).
         D.   Falls within JEDEC MS−013 variation AC.

TEXAS
INSTRUMENTS
www.ti.com

## N (R−PDIP−T**)
16 PINS SHOWN

## PLASTIC DUAL−IN−LINE PACKAGE

| 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) |
| △C MS−001 VARIATION | AA | BB | AC | AD |

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

0.070 (1,78) / 0.045 (1,14) △D

0.045 (1,14) / 0.030 (0,76) △D

0.020 (0,51) MIN

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

0.015 (0,38)

Gauge Plane

0.200 (5,08) MAX

Seating Plane

0.010 (0,25) NOM

0.125 (3,18) MIN

0.100 (2,54)

0.430 (10,92) MAX

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

⊕ 0.010 (0,25) Ⓜ

14/18 Pin Only
20 Pin vendor option △D

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.