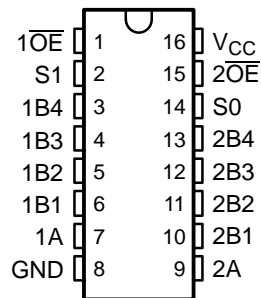


## FEATURES

- Output Voltage Translation Tracks  $V_{CC}$
- Supports Mixed-Mode Signal Operation on All Data I/O Ports
  - 5-V Input Down to 3.3-V Output Level Shift With 3.3-V  $V_{CC}$
  - 5-V/3.3-V Input Down to 2.5-V Output Level Shift With 2.5-V  $V_{CC}$
- 5-V Tolerant I/Os With Device Powered Up or Powered Down
- Bidirectional Data Flow With Near-Zero Propagation Delay
- Low ON-State Resistance ( $r_{on}$ ) Characteristics ( $r_{on} = 5 \Omega$  Typ)
- Low Input/Output Capacitance Minimizes Loading ( $C_{io(OFF)} = 5 \text{ pF}$  Typ)
- Data and Control Inputs Provide Undershoot Clamp Diodes
- Low Power Consumption ( $I_{CC} = 20 \mu\text{A}$  Max)
- $V_{CC}$  Operating Range From 2.3 V to 3.6 V
- Data I/Os Support 0- to 5-V Signaling Levels (0.8 V, 1.2 V, 1.5 V, 1.8 V, 2.5 V, 3.3 V, 5 V)
- Control Inputs Can Be Driven by TTL or 5-V/3.3-V CMOS Outputs
- $I_{off}$  Supports Partial-Power-Down Mode Operation
- Latch-Up Performance Exceeds 250 mA Per JESD 17
- ESD Performance Tested Per JESD 22
  - 2000-V Human-Body Model (A114-B, Class II)
  - 1000-V Charged-Device Model (C101)
- Supports Digital Applications: Level Translation, USB Interface, Memory Interleaving, Bus Isolation
- Ideal for Low-Power Portable Equipment

D, DBQ, DGV, OR PW PACKAGE  
(TOP VIEW)



## DESCRIPTION/ORDERING INFORMATION

The SN74CB3T3253 is a high-speed TTL-compatible FET multiplexer/demultiplexer with low ON-state resistance ( $r_{on}$ ), allowing for minimal propagation delay. The device fully supports mixed-mode signal operation on all data I/O ports by providing voltage translation that tracks  $V_{CC}$ . The SN74CB3T3253 supports systems using 5-V TTL, 3.3-V LVTTTL, and 2.5-V CMOS switching standards, as well as user-defined switching levels (see [Figure 1](#)).

The SN74CB3T3253 is organized as two 1-of-4 multiplexer/demultiplexers with separate output-enable ( $1\overline{OE}$ ,  $2\overline{OE}$ ) inputs. The select (S0, S1) inputs control the data path of each multiplexer/demultiplexer. When  $\overline{OE}$  is low, the associated multiplexer/demultiplexer is ON, and the A port is connected to the B port, allowing bidirectional data flow between ports. When  $\overline{OE}$  is high, the associated multiplexer/demultiplexer is OFF, and a high-impedance state exists between the A and B ports.

This device is fully specified for partial-power-down applications using  $I_{off}$ . The  $I_{off}$  feature ensures that damaging current will not backflow through the device when it is powered down. The device has isolation during power off.

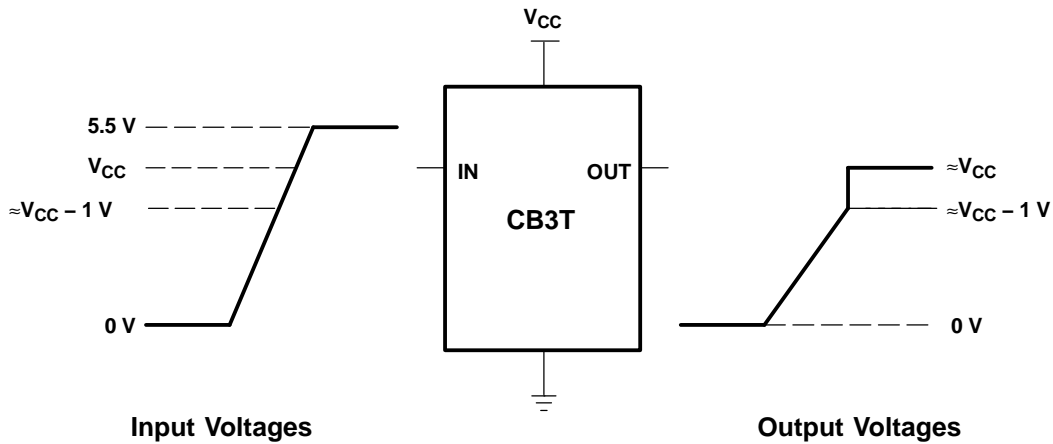
To ensure the high-impedance state during power up or power down,  $\overline{OE}$  should be tied to  $V_{CC}$  through a pullup resistor; the minimum value of the resistor is determined by the current-sinking capability of the driver.



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.

**SN74CB3T3253**  
**DUAL 1-OF-4 FET MULTIPLEXER/DEMULTIPLEXER**  
**2.5-V/3.3-V LOW-VOLTAGE BUS SWITCH WITH 5-V TOLERANT LEVEL SHIFTER**

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NOTE A: If the input high voltage ( $V_{IH}$ ) level is greater than or equal to  $V_{CC} - 1\text{ V}$ , and less than or equal to  $5.5\text{ V}$ , then the output high voltage ( $V_{OH}$ ) level will be equal to approximately the  $V_{CC}$  voltage level.

**Figure 1. Typical DC Voltage-Translation Characteristics**

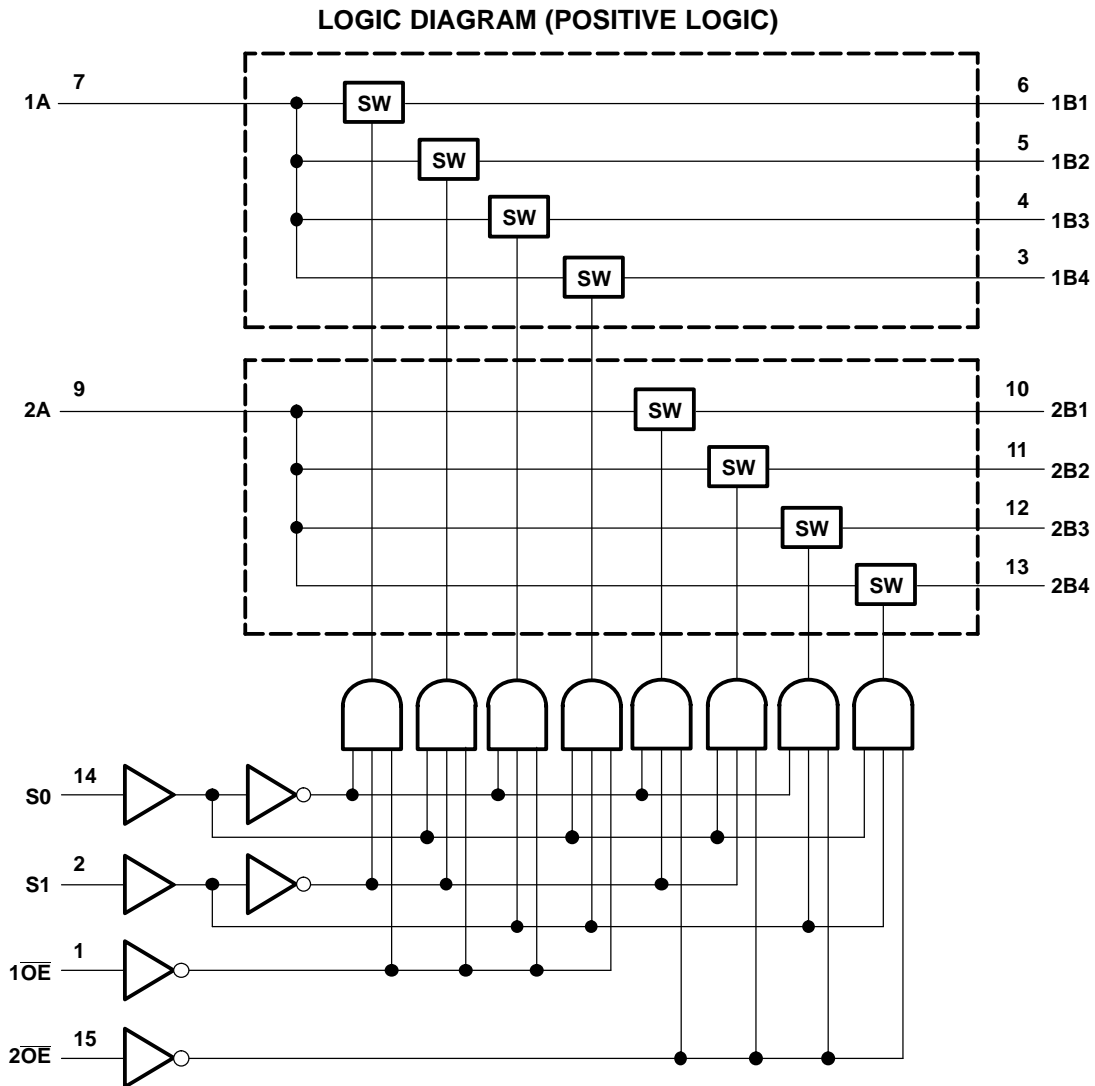
**ORDERING INFORMATION**

| $T_A$         | PACKAGE <sup>(1)</sup> |               | ORDERABLE PART NUMBER | TOP-SIDE MARKING |
|---------------|------------------------|---------------|-----------------------|------------------|
| -40°C to 85°C | SOIC – D               | Tube          | SN74CB3T3253D         | CB3T3253         |
|               |                        | Tape and reel | SN74CB3T3253DR        |                  |
|               | SSOP (QSOP) – DBQ      | Tape and reel | SN74CB3T3253DBQR      | KS253            |
|               | TSSOP – PW             | Tube          | SN74CB3T3253PW        | KS253            |
|               |                        | Tape and reel | SN74CB3T3253PWR       |                  |
|               | TVSOP – DGV            | Tape and reel | SN74CB3T3253DGVR      | KS253            |

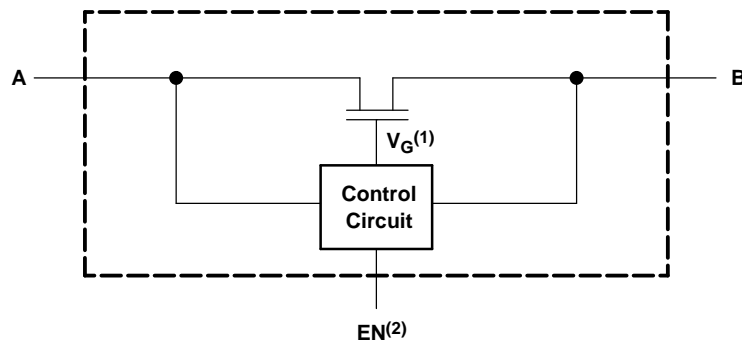
(1) Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at [www.ti.com/sc/package](http://www.ti.com/sc/package).

**FUNCTION TABLE**  
**(EACH MULTIPLEXER/DEMULTIPLEXER)**

| INPUTS          |    |    | INPUT/OUTPUT<br>A | FUNCTION         |
|-----------------|----|----|-------------------|------------------|
| $\overline{OE}$ | S1 | S0 |                   |                  |
| L               | L  | L  | B1                | A port = B1 port |
| L               | L  | H  | B2                | A port = B2 port |
| L               | H  | L  | B3                | A port = B3 port |
| L               | H  | H  | B4                | A port = B4 port |
| H               | X  | X  | Z                 | Disconnect       |



**SIMPLIFIED SCHEMATIC, EACH FET SWITCH (SW)**



- (1) Gate voltage ( $V_G$ ) is approximately equal to  $V_{CC} + V_T$  when the switch is ON and  $V_I > V_{CC} + V_T$ .
- (2) EN is the internal enable signal applied to the switch.

**SN74CB3T3253**  
**DUAL 1-OF-4 FET MULTIPLEXER/DEMULTIPLEXER**  
**2.5-V/3.3-V LOW-VOLTAGE BUS SWITCH WITH 5-V TOLERANT LEVEL SHIFTER**



SCDS148–OCTOBER 2003–REVISED JUNE 2005

**Absolute Maximum Ratings<sup>(1)</sup>**

over operating free-air temperature range (unless otherwise noted)

|               |   | MIN           | MAX | UNIT    |
|---------------|---|---------------|-----|---------|
| $V_{CC}$      | Supply voltage range <sup>(2)</sup>           | -0.5          | 7   | V       |
| $V_{IN}$      | Control input voltage range <sup>(2)(3)</sup> | -0.5          | 7   | V       |
| $V_{I/O}$     | Switch I/O voltage range <sup>(2)(3)(4)</sup> | -0.5          | 7   | V       |
| $I_{IK}$      | Control input clamp current                   | $V_{IN} < 0$  |     | -50 mA  |
| $I_{I/OK}$    | I/O port clamp current                        | $V_{I/O} < 0$ |     | -50 mA  |
| $I_{I/O}$     | ON-state switch current <sup>(5)</sup>        |               |     | ±128 mA |
|               | Continuous current through $V_{CC}$ or GND    |               |     | ±100 mA |
| $\theta_{JA}$ | Package thermal impedance <sup>(6)</sup>      | D package     |     | 73      |
|               |   | DBQ package   |     | 90      |
|               |   | DGV package   |     | 120     |
|               |   | PW package    |     | 108     |
| $T_{stg}$     | Storage temperature range                     | -65           | 150 | °C      |

- (1) 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.
- (2) All voltages are with respect to ground, unless otherwise specified.
- (3) The input and output voltage ratings may be exceeded if the input and output clamp-current ratings are observed.
- (4)  $V_I$  and  $V_O$  are used to denote specific conditions for  $V_{I/O}$ .
- (5)  $I_I$  and  $I_O$  are used to denote specific conditions for  $I_{I/O}$ .
- (6) The package thermal impedance is calculated in accordance with JESD 51-7.

**Recommended Operating Conditions<sup>(1)</sup>**

|           |                                  | MIN  | MAX | UNIT    |
|-----------|----------------------------------|--|-----|---------|
| $V_{CC}$  | Supply voltage                   | 2.3  | 3.6 | V       |
| $V_{IH}$  | High-level control input voltage | $V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$ |     | 1.7 5.5 |
|           |                                  | $V_{CC} = 2.7 \text{ V to } 3.6 \text{ V}$ |     | 2 5.5   |
| $V_{IL}$  | Low-level control input voltage  | $V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$ |     | 0 0.7   |
|           |                                  | $V_{CC} = 2.7 \text{ V to } 3.6 \text{ V}$ |     | 0 0.8   |
| $V_{I/O}$ | Data input/output voltage        | 0  | 5.5 | V       |
| $T_A$     | Operating free-air temperature   | -40  | 85  | °C      |

- (1) All unused control 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<sup>(1)</sup>

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

| PARAMETER                      |                | TEST CONDITIONS   |  | MIN                   | TYP <sup>(2)</sup> | MAX      | UNIT          |
|--------------------------------|----------------|---|--|-----------------------|--------------------|----------|---------------|
| $V_{IK}$                       |                | $V_{CC} = 3\text{ V}$ , $I_I = -18\text{ mA}$   |  |                       |                    | -1.2     | V             |
| $V_{OH}$                       |                | See <a href="#">Figure 3</a> and <a href="#">Figure 4</a>   |  |                       |                    |          |               |
| $I_{IN}$                       | Control inputs | $V_{CC} = 3.6\text{ V}$ , $V_{IN} = 3.6\text{ V to } 5.5\text{ V or GND}$   |  |                       |                    | $\pm 10$ | $\mu\text{A}$ |
| $I_I$                          |                | $V_{CC} = 3.6\text{ V}$ , Switch ON,<br>$V_{IN} = V_{CC}$ or GND  | $V_I = V_{CC} - 0.7\text{ V to } 5.5\text{ V}$ |                       |                    | $\pm 20$ | $\mu\text{A}$ |
|                                |                |   | $V_I = 0.7\text{ V to } V_{CC} - 0.7\text{ V}$ |                       |                    | -40      |               |
|                                |                |   | $V_I = 0\text{ to } 0.7\text{ V}$              |                       |                    | $\pm 5$  |               |
| $I_{OZ}$ <sup>(3)</sup>        |                | $V_{CC} = 3.6\text{ V}$ , $V_O = 0\text{ to } 5.5\text{ V}$ , $V_I = 0$ ,<br>Switch OFF, $V_{IN} = V_{CC}$ or GND     |  |                       |                    | $\pm 10$ | $\mu\text{A}$ |
| $I_{off}$                      |                | $V_{CC} = 0$ , $V_O = 0\text{ to } 5.5\text{ V}$ , $V_I = 0$  |  |                       |                    | 10       | $\mu\text{A}$ |
| $I_{CC}$                       |                | $V_{CC} = 3.6\text{ V}$ , $I_{I/O} = 0$ , Switch ON or OFF,<br>$V_{IN} = V_{CC}$ or GND                               |  | $V_I = V_{CC}$ or GND |                    | 20       | $\mu\text{A}$ |
|                                |                |   |  | $V_I = 5.5\text{ V}$  |                    | 20       |               |
| $\Delta I_{CC}$ <sup>(4)</sup> | Control inputs | $V_{CC} = 3\text{ V to } 3.6\text{ V}$ , One input at $V_{CC} - 0.6\text{ V}$ ,<br>Other inputs at $V_{CC}$ or GND    |  |                       |                    | 300      | $\mu\text{A}$ |
| $C_{in}$                       | Control inputs | $V_{CC} = 3.3\text{ V}$ , $V_{IN} = V_{CC}$ or GND  |  |                       |                    | 3        | pF            |
| $C_{io(OFF)}$                  | A port         | $V_{CC} = 3.3\text{ V}$ , $V_{I/O} = 5.5\text{ V}$ , $3.3\text{ V}$ , or GND,<br>Switch OFF, $V_{IN} = V_{CC}$ or GND |  |                       |                    | 12       | pF            |
|                                | B port         |   |  |                       |                    | 5        |               |
| $C_{io(ON)}$                   | A port         | $V_{CC} = 3.3\text{ V}$ , Switch ON, $V_{IN} = V_{CC}$ or GND   | $V_{I/O} = 5.5\text{ V or } 3.3\text{ V}$      |                       |                    | 10       | pF            |
|                                |                |   | $V_{I/O} = \text{GND}$                         |                       |                    | 22       |               |
|                                | B port         |   | $V_{I/O} = 5.5\text{ V or } 3.3\text{ V}$      |                       |                    | 4        |               |
|                                |                |   | $V_{I/O} = \text{GND}$                         |                       |                    | 22       |               |
| $r_{on}$ <sup>(5)</sup>        |                | $V_{CC} = 2.3\text{ V}$ , TYP at $V_{CC} = 2.5\text{ V}$ , $V_I = 0$  | $I_O = 24\text{ mA}$                           |                       |                    | 5        | $\Omega$      |
|                                |                |   | $I_O = 16\text{ mA}$                           |                       |                    | 5        |               |
|                                |                | $V_{CC} = 3\text{ V}$ , $V_I = 0$   | $I_O = 64\text{ mA}$                           |                       |                    | 5        |               |
|                                |                |   | $I_O = 32\text{ mA}$                           |                       |                    | 7        |               |

(1)  $V_{IN}$  and  $I_{IN}$  refer to control inputs.  $V_I$ ,  $V_O$ ,  $I_I$ , and  $I_O$  refer to data pins.

(2) All typical values are at  $V_{CC} = 3.3\text{ V}$  (unless otherwise noted),  $T_A = 25^\circ\text{C}$ .

(3) For I/O ports, the parameter  $I_{OZ}$  includes the input leakage current.

(4) This is the increase in supply current for each input that is at the specified TTL voltage level, rather than  $V_{CC}$  or GND.

(5) Measured by the voltage drop between A and B terminals at the indicated current through the switch. ON-state resistance is determined by the lower of the voltages of the two (A or B) terminals.

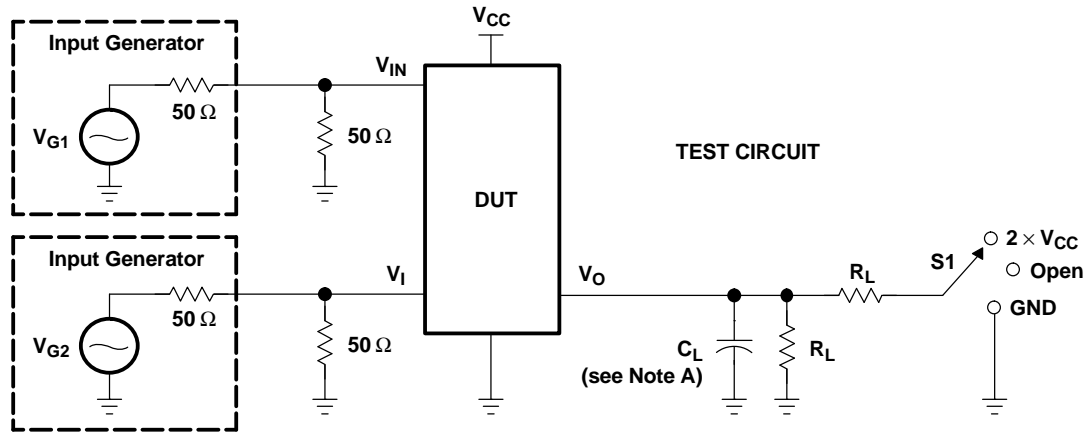
## Switching Characteristics

over recommended operating free-air temperature range (unless otherwise noted) (see [Figure 2](#))

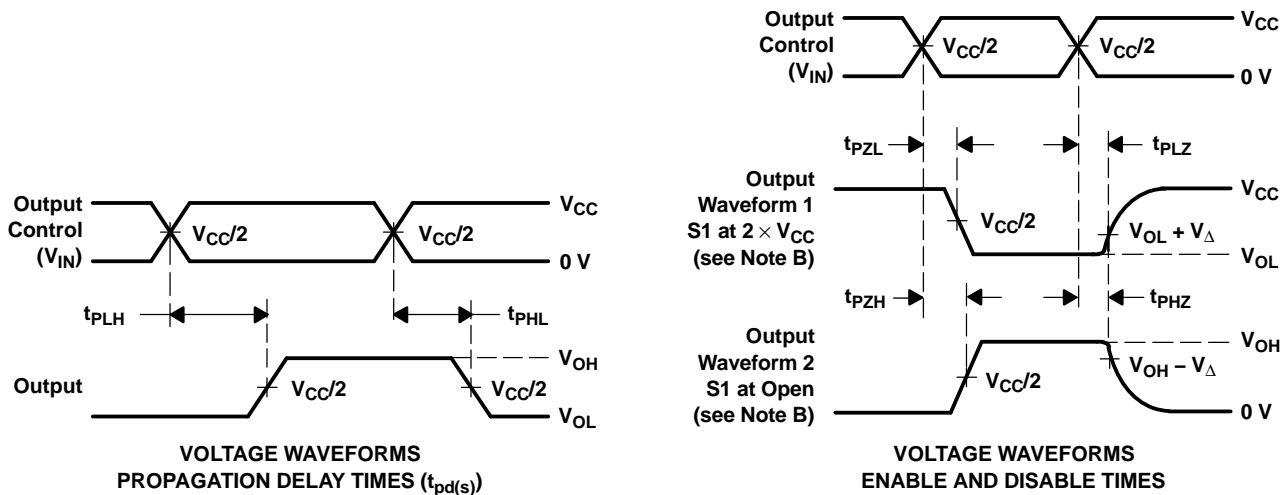
| PARAMETER               | FROM<br>(INPUT) | TO<br>(OUTPUT) | $V_{CC} = 2.5\text{ V}$<br>$\pm 0.2\text{ V}$ |      | $V_{CC} = 3.3\text{ V}$<br>$\pm 0.3\text{ V}$ |     | UNIT |
|-------------------------|-----------------|----------------|---|------|---|-----|------|
|                         |                 |                | MIN   | MAX  | MIN   | MAX |      |
| $t_{pd}$ <sup>(1)</sup> | A or B          | B or A         | 0.15  |      | 0.25  |     | ns   |
| $t_{pd(s)}$             | S               | A              | 1   | 10.5 | 1   | 8   | ns   |
|                         | S               | B              | 1   | 10   | 1   | 8   |      |
| $t_{en}$                | $\overline{OE}$ | A or B         | 1   | 8.5  | 1   | 8   | ns   |
|                         | S               | B              | 1   | 7.5  | 1   | 8.5 |      |
| $t_{dis}$               | $\overline{OE}$ | A or B         | 1   | 6.5  | 1   | 8   | ns   |

(1) The propagation delay is the calculated RC time constant of the typical ON-state resistance of the switch and the specified load capacitance, when driven by an ideal voltage source (zero output impedance).

PARAMETER MEASUREMENT INFORMATION



| TEST                               | V <sub>CC</sub> | S1                  | R <sub>L</sub> | V <sub>I</sub> | C <sub>L</sub> | V <sub>Δ</sub> |
|------------------------------------|-----------------|---------------------|----------------|----------------|----------------|----------------|
| t <sub>pd</sub> (s)                | 2.5 V ± 0.2 V   | Open                | 500 Ω          | 3.6 V or GND   | 30 pF          |                |
|                                    | 3.3 V ± 0.3 V   | Open                | 500 Ω          | 5.5 V or GND   | 50 pF          |                |
| t <sub>PLZ</sub> /t <sub>PZL</sub> | 2.5 V ± 0.2 V   | 2 × V <sub>CC</sub> | 500 Ω          | GND            | 30 pF          | 0.15 V         |
|                                    | 3.3 V ± 0.3 V   | 2 × V <sub>CC</sub> | 500 Ω          | GND            | 50 pF          | 0.3 V          |
| t <sub>PHZ</sub> /t <sub>PZH</sub> | 2.5 V ± 0.2 V   | Open                | 500 Ω          | 3.6 V          | 30 pF          | 0.15 V         |
|                                    | 3.3 V ± 0.3 V   | Open                | 500 Ω          | 5.5 V          | 50 pF          | 0.3 V          |



- NOTES:
- A. C<sub>L</sub> 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. All input pulses are supplied by generators having the following characteristics: PRR ≤ 10 MHz, Z<sub>O</sub> = 50 Ω, t<sub>r</sub> ≤ 2.5 ns, t<sub>f</sub> ≤ 2.5 ns.
  - D. The outputs are measured one at a time, with one transition per measurement.
  - E. t<sub>PLZ</sub> and t<sub>PZH</sub> are the same as t<sub>dis</sub>.
  - F. t<sub>PZL</sub> and t<sub>PZH</sub> are the same as t<sub>en</sub>.
  - G. t<sub>PLH</sub> and t<sub>PHL</sub> are the same as t<sub>pd</sub>(s). The t<sub>pd</sub> propagation delay is the calculated RC time constant of the typical ON-state resistance of the switch and the specified load capacitance, when driven by an ideal voltage source (zero output impedance).
  - H. All parameters and waveforms are not applicable to all devices.

Figure 2. Test Circuit and Voltage Waveforms

TYPICAL CHARACTERISTICS

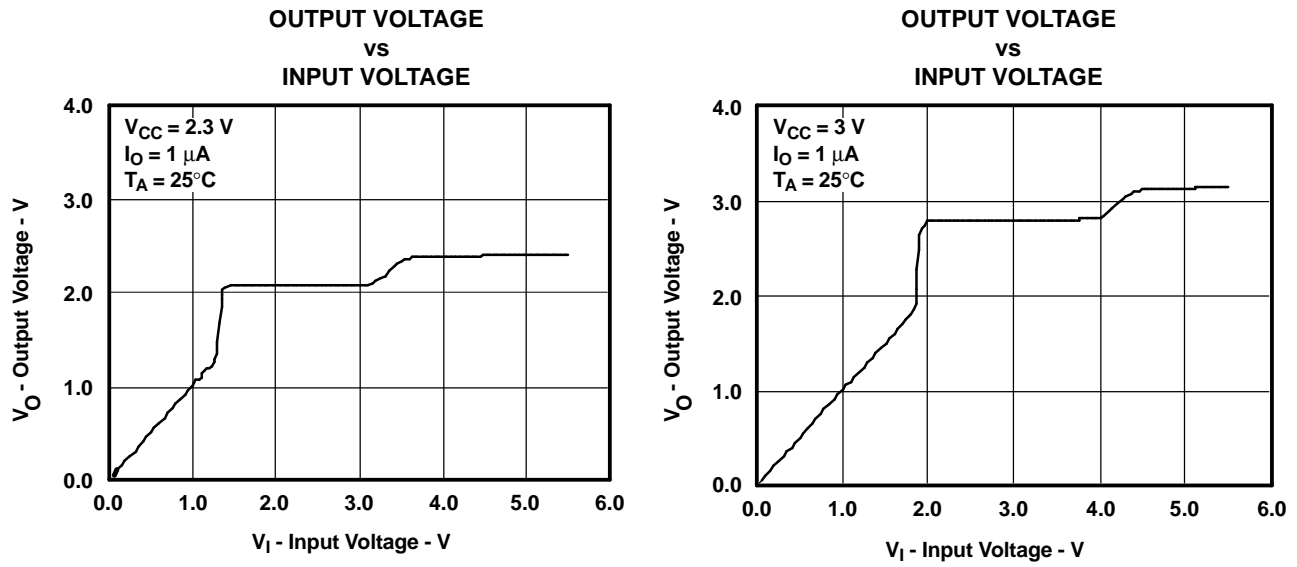


Figure 3. Data Output Voltage vs Data Input Voltage

TYPICAL CHARACTERISTICS

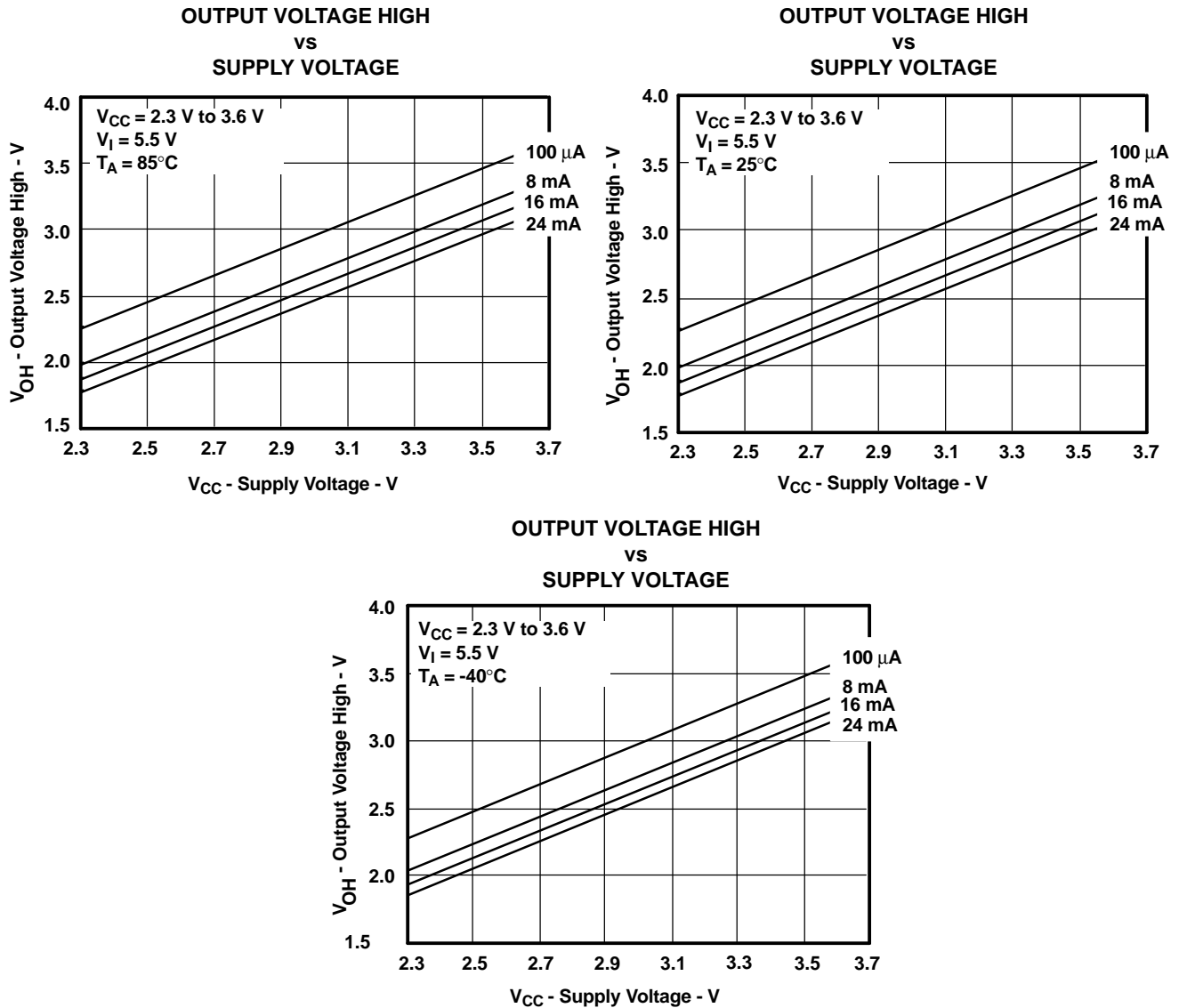


Figure 4.  $V_{OH}$  Values



**PACKAGING INFORMATION**

| 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                 |
|------------------|---------------|--------------|-----------------|------|-------------|-------------------------|-------------------------|----------------------|--------------|-------------------------|-------------------------|
| SN74CB3T3253D    | ACTIVE        | SOIC         | D               | 16   | 40          | Green (RoHS & no Sb/Br) | NIPDAU                  | Level-1-260C-UNLIM   | -40 to 85    | CB3T3253                | <a href="#">Samples</a> |
| SN74CB3T3253DBQR | ACTIVE        | SSOP         | DBQ             | 16   | 2500        | Green (RoHS & no Sb/Br) | NIPDAU                  | Level-2-260C-1 YEAR  | -40 to 85    | KS253                   | <a href="#">Samples</a> |
| SN74CB3T3253DGVR | ACTIVE        | TVSOP        | DGV             | 16   | 2000        | Green (RoHS & no Sb/Br) | NIPDAU                  | Level-1-260C-UNLIM   | -40 to 85    | KS253                   | <a href="#">Samples</a> |
| SN74CB3T3253DR   | ACTIVE        | SOIC         | D               | 16   | 2500        | Green (RoHS & no Sb/Br) | NIPDAU                  | Level-1-260C-UNLIM   | -40 to 85    | CB3T3253                | <a href="#">Samples</a> |
| SN74CB3T3253PW   | ACTIVE        | TSSOP        | PW              | 16   | 90          | Green (RoHS & no Sb/Br) | NIPDAU                  | Level-1-260C-UNLIM   | -40 to 85    | KS253                   | <a href="#">Samples</a> |
| SN74CB3T3253PWR  | ACTIVE        | TSSOP        | PW              | 16   | 2000        | Green (RoHS & no Sb/Br) | NIPDAU                  | Level-1-260C-UNLIM   | -40 to 85    | KS253                   | <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.

<sup>(6)</sup> 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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**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 |
|------------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| SN74CB3T3253DBQR | SSOP         | DBQ             | 16   | 2500 | 330.0              | 12.5               | 6.4     | 5.2     | 2.1     | 8.0     | 12.0   | Q1            |
| SN74CB3T3253DGVR | TVSOP        | DGV             | 16   | 2000 | 330.0              | 12.4               | 6.8     | 4.0     | 1.6     | 8.0     | 12.0   | Q1            |
| SN74CB3T3253DR   | SOIC         | D               | 16   | 2500 | 330.0              | 16.4               | 6.5     | 10.3    | 2.1     | 8.0     | 16.0   | Q1            |
| SN74CB3T3253PWR  | TSSOP        | PW              | 16   | 2000 | 330.0              | 12.4               | 6.9     | 5.6     | 1.6     | 8.0     | 12.0   | Q1            |

**TAPE AND REEL BOX DIMENSIONS**


\*All dimensions are nominal

| Device           | Package Type | Package Drawing | Pins | SPQ  | Length (mm) | Width (mm) | Height (mm) |
|------------------|--------------|-----------------|------|------|-------------|------------|-------------|
| SN74CB3T3253DBQR | SSOP         | DBQ             | 16   | 2500 | 340.5       | 338.1      | 20.6        |
| SN74CB3T3253DGVR | TVSOP        | DGV             | 16   | 2000 | 367.0       | 367.0      | 35.0        |
| SN74CB3T3253DR   | SOIC         | D               | 16   | 2500 | 333.2       | 345.9      | 28.6        |
| SN74CB3T3253PWR  | TSSOP        | PW              | 16   | 2000 | 367.0       | 367.0      | 35.0        |

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

PLASTIC SMALL-OUTLINE

24 PINS SHOWN



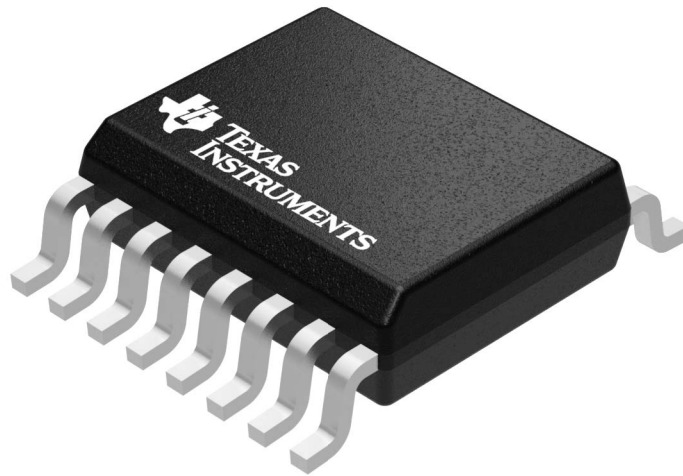
- NOTES: A. All linear dimensions are in millimeters.  
 B. This drawing is subject to change without notice.  
 C. Body dimensions do not include mold flash or protrusion, not to exceed 0,15 per side.  
 D. Falls within JEDEC: 24/48 Pins – MO-153  
 14/16/20/56 Pins – MO-194

**GENERIC PACKAGE VIEW**

**DBQ 16**

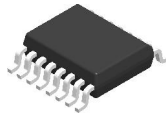
**SSOP - 1.75 mm max height**

SHRINK SMALL-OUTLINE PACKAGE



Images above are just a representation of the package family, actual package may vary.  
Refer to the product data sheet for package details.

4073301-2/1

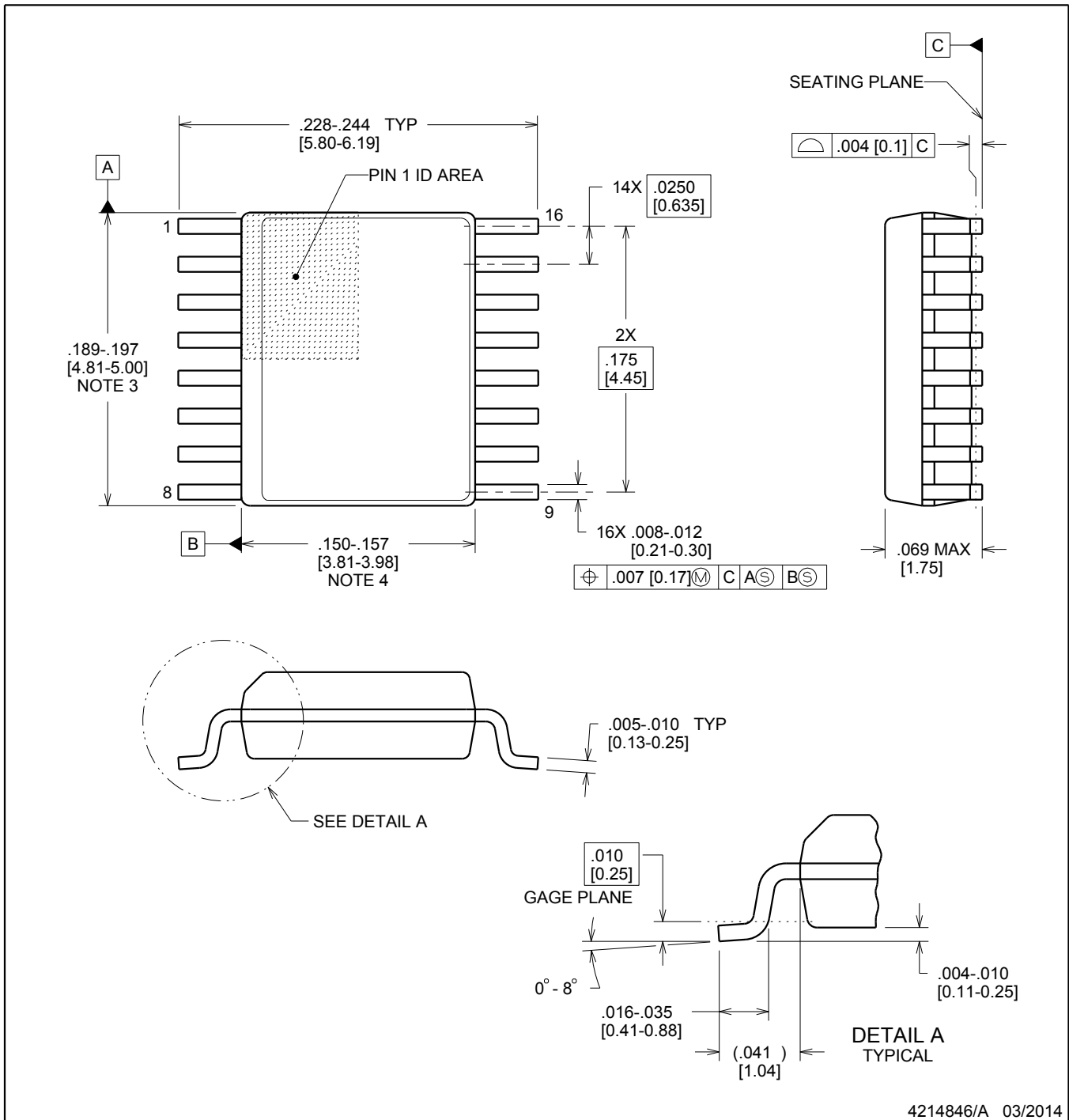


# DBQ0016A

# PACKAGE OUTLINE

## SSOP - 1.75 mm max height

SHRINK SMALL-OUTLINE PACKAGE



4214846/A 03/2014

### NOTES:

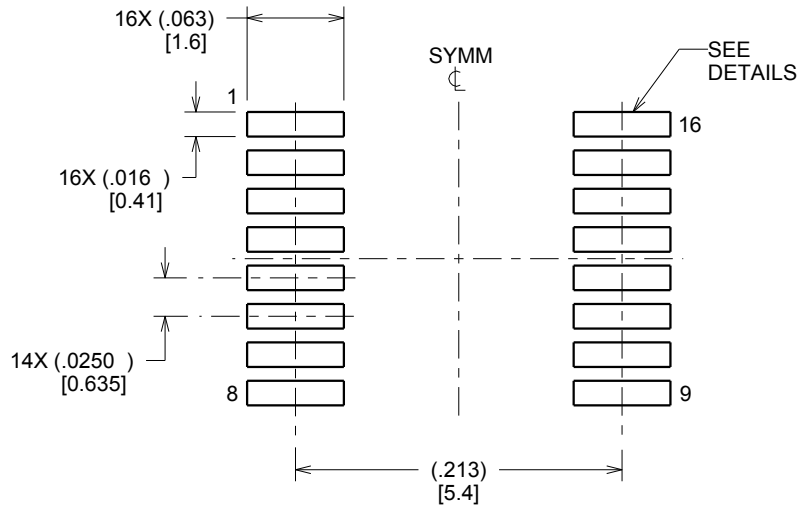
- Linear dimensions are in inches [millimeters]. Dimensions in parenthesis are for reference only. Controlling dimensions are in inches. Dimensioning and tolerancing per ASME Y14.5M.
- This drawing is subject to change without notice.
- This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed .006 inch, per side.
- This dimension does not include interlead flash.
- Reference JEDEC registration MO-137, variation AB.

# EXAMPLE BOARD LAYOUT

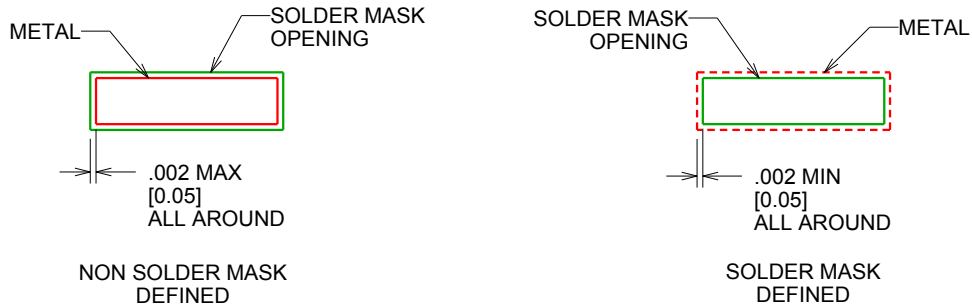
DBQ0016A

SSOP - 1.75 mm max height

SHRINK SMALL-OUTLINE PACKAGE



LAND PATTERN EXAMPLE  
SCALE:8X



SOLDER MASK DETAILS

4214846/A 03/2014

NOTES: (continued)

6. Publication IPC-7351 may have alternate designs.

7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

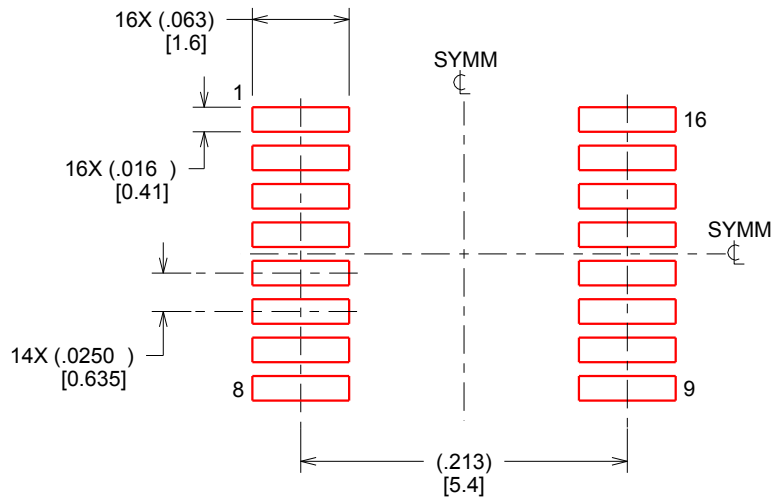


# EXAMPLE STENCIL DESIGN

DBQ0016A

SSOP - 1.75 mm max height

SHRINK SMALL-OUTLINE PACKAGE



SOLDER PASTE EXAMPLE  
BASED ON .005 INCH [0.127 MM] THICK STENCIL  
SCALE:8X

4214846/A 03/2014

NOTES: (continued)

8. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.
9. Board assembly site may have different recommendations for stencil design.

D (R-PDSO-G16)

PLASTIC SMALL OUTLINE



4040047-6/M 06/11

- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  -  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.
  -  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



4211283-4/E 08/12

- 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.



4220204/A 02/2017

NOTES:

1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.15 mm per side.
4. This dimension does not include interlead flash. Interlead flash shall not exceed 0.25 mm per side.
5. Reference JEDEC registration MO-153.

# EXAMPLE BOARD LAYOUT

PW0016A

TSSOP - 1.2 mm max height

SMALL OUTLINE PACKAGE



LAND PATTERN EXAMPLE  
EXPOSED METAL SHOWN  
SCALE: 10X



4220204/A 02/2017

NOTES: (continued)

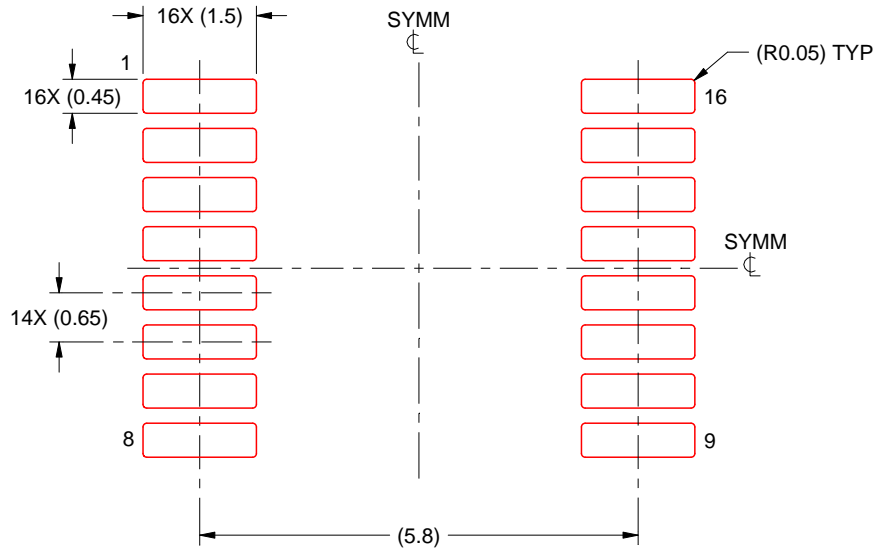
- 6. Publication IPC-7351 may have alternate designs.
- 7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

# EXAMPLE STENCIL DESIGN

PW0016A

TSSOP - 1.2 mm max height

SMALL OUTLINE PACKAGE



SOLDER PASTE EXAMPLE  
BASED ON 0.125 mm THICK STENCIL  
SCALE: 10X

4220204/A 02/2017

NOTES: (continued)

8. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.
9. Board assembly site may have different recommendations for stencil design.

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