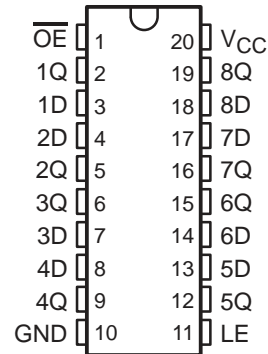


# SN54ABT373, SN74ABT373 OCTAL TRANSPARENT D-TYPE LATCHES WITH 3-STATE OUTPUTS

SCBS155D – JANUARY 1991 – REVISED MAY 1997

- State-of-the-Art *EPIC-II B*<sup>™</sup> BiCMOS Design Significantly Reduces Power Dissipation
- Latch-Up Performance Exceeds 500 mA Per JEDEC Standard JESD-17
- Typical  $V_{OLP}$  (Output Ground Bounce) < 1 V at  $V_{CC} = 5$  V,  $T_A = 25^\circ\text{C}$
- High-Drive Outputs (–32-mA  $I_{OH}$ , 64-mA  $I_{OL}$ )
- Package Options Include Plastic Small-Outline (DW), Shrink Small-Outline (DB), and Thin Shrink Small-Outline (PW) Packages, Ceramic Chip Carriers (FK), Ceramic Flat (W) Package, and Plastic (N) and Ceramic (J) DIPs

SN54ABT373 . . . J OR W PACKAGE  
SN74ABT373 . . . DB, DW, N, OR PW PACKAGE  
(TOP VIEW)



## description

The eight latches of the 'ABT373 are transparent D-type latches. While the latch-enable (LE) input is high, the Q outputs follow the data (D) inputs. When LE is taken low, the Q outputs are latched at the logic levels set up at the D inputs.

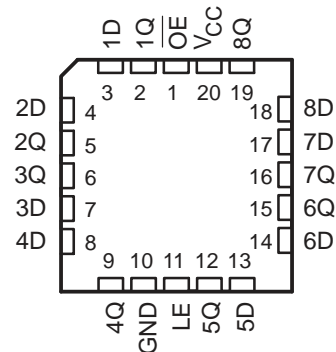
A buffered output-enable ( $\overline{OE}$ ) input can be used to place the eight outputs in either a normal logic state (high or low logic levels) or a high-impedance state. In the high-impedance state, the outputs neither load nor drive the bus lines significantly. The high-impedance state and increased drive provide the capability to drive bus lines without need for interface or pullup components.

$\overline{OE}$  does not affect the internal operations of the latches. Old data can be retained or new data can be entered while the outputs are in the high-impedance state.

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.

The SN54ABT373 is characterized for operation over the full military temperature range of  $-55^\circ\text{C}$  to  $125^\circ\text{C}$ . The SN74ABT373 is characterized for operation from  $-40^\circ\text{C}$  to  $85^\circ\text{C}$ .

SN54ABT373 . . . FK PACKAGE  
(TOP VIEW)



FUNCTION TABLE  
(each latch)

| INPUTS          |    |   | OUTPUT |
|-----------------|----|---|--------|
| $\overline{OE}$ | LE | D | Q      |
| L               | H  | H | H      |
| L               | H  | L | L      |
| L               | L  | X | $Q_0$  |
| H               | X  | X | Z      |



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EPIC-II B is a trademark of Texas Instruments Incorporated.

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

**TEXAS  
INSTRUMENTS**

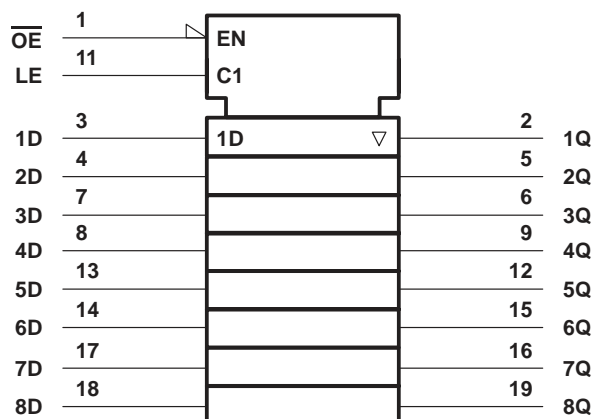
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# SN54ABT373, SN74ABT373 OCTAL TRANSPARENT D-TYPE LATCHES WITH 3-STATE OUTPUTS

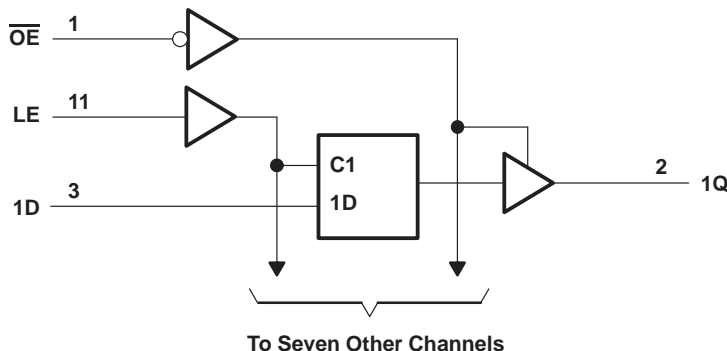
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## logic symbol†



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

## logic diagram (positive logic)



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

|   |                 |
|---|-----------------|
| Supply voltage range, $V_{CC}$ .....  | -0.5 V to 7 V   |
| Input voltage range, $V_I$ (see Note 1) .....                                   | -0.5 V to 7 V   |
| Voltage range applied to any output in the high or power-off state, $V_O$ ..... | -0.5 V to 5.5 V |
| Current into any output in the low state, $I_O$ : SN54ABT373 .....              | 96 mA           |
| SN74ABT373 .....  | 128 mA          |
| Input clamp current, $I_{IK}$ ( $V_I < 0$ ) .....                               | -18 mA          |
| Output clamp current, $I_{OK}$ ( $V_O < 0$ ) .....                              | -50 mA          |
| Package thermal impedance, $\theta_{JA}$ (see Note 2): DB package .....         | 115°C/W         |
| DW package .....  | 97°C/W          |
| N package .....   | 67°C/W          |
| PW package .....  | 128°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 negative-voltage ratings may be exceeded if the input and output clamp-current ratings are observed.  
2. The package thermal impedance is calculated in accordance with EIA/JEDEC Std JESD51, except for through-hole packages, which use a trace length of zero.



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# SN54ABT373, SN74ABT373 OCTAL TRANSPARENT D-TYPE LATCHES WITH 3-STATE OUTPUTS

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## recommended operating conditions (see Note 3)

|                 |                                    | SN54ABT373      |                 | SN74ABT373 |                 | UNIT |
|-----------------|------------------------------------|-----------------|-----------------|------------|-----------------|------|
|                 |                                    | MIN             | MAX             | MIN        | MAX             |      |
| V <sub>CC</sub> | Supply voltage                     | 4.5             | 5.5             | 4.5        | 5.5             | V    |
| V <sub>IH</sub> | High-level input voltage           | 2               |                 | 2          |                 | V    |
| V <sub>IL</sub> | Low-level input voltage            |                 | 0.8             |            | 0.8             | V    |
| V <sub>I</sub>  | Input voltage                      | 0               | V <sub>CC</sub> | 0          | V <sub>CC</sub> | V    |
| I <sub>OH</sub> | High-level output current          |                 | -24             |            | -32             | mA   |
| I <sub>OL</sub> | Low-level output current           |                 | 48              |            | 64              | mA   |
| Δt/Δv           | Input transition rise or fall rate | Outputs enabled |                 | 5          | 5               | ns/V |
| T <sub>A</sub>  | Operating free-air temperature     | -55             | 125             | -40        | 85              | °C   |

NOTE 3: Unused inputs must be held high or low to prevent them from floating.

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

| PARAMETER                | TEST CONDITIONS  | T <sub>A</sub> = 25°C    |      |       | SN54ABT373 |      | SN74ABT373 |      | UNIT |
|--------------------------|--|--------------------------|------|-------|------------|------|------------|------|------|
|                          |  | MIN                      | TYP† | MAX   | MIN        | MAX  | MIN        | MAX  |      |
| V <sub>IK</sub>          | V <sub>CC</sub> = 4.5 V, I <sub>I</sub> = -18 mA                                     |                          |      | -1.2  |            | -1.2 |            | -1.2 | V    |
| V <sub>OH</sub>          | V <sub>CC</sub> = 4.5 V, I <sub>OH</sub> = -3 mA                                     | 2.5                      |      |       | 2.5        |      | 2.5        |      | V    |
|                          | V <sub>CC</sub> = 5 V, I <sub>OH</sub> = -3 mA                                       | 3                        |      |       | 3          |      | 3          |      |      |
|                          | V <sub>CC</sub> = 4.5 V  | I <sub>OH</sub> = -24 mA | 2    |       |            | 2    |            |      |      |
| I <sub>OH</sub> = -32 mA |  | 2*                       |      |       |            |      | 2          |      |      |
| V <sub>OL</sub>          | V <sub>CC</sub> = 4.5 V  | I <sub>OL</sub> = 48 mA  |      | 0.55  |            | 0.55 |            |      | V    |
|                          |  | I <sub>OL</sub> = 64 mA  |      | 0.55* |            |      | 0.55       |      |      |
| V <sub>hys</sub>         |  |                          | 100  |       |            |      |            |      | mV   |
| I <sub>I</sub>           | V <sub>CC</sub> = 5.5 V, V <sub>I</sub> = V <sub>CC</sub> or GND                     |                          |      | ±1    |            | ±1   |            | ±1   | μA   |
| I <sub>OZH</sub>         | V <sub>CC</sub> = 5.5 V, V <sub>O</sub> = 2.7 V                                      |                          |      | 10‡   |            | 10‡  |            | 10‡  | μA   |
| I <sub>OZL</sub>         | V <sub>CC</sub> = 5.5 V, V <sub>O</sub> = 0.5 V                                      |                          |      | -10‡  |            | -10‡ |            | -10‡ | μA   |
| I <sub>off</sub>         | V <sub>CC</sub> = 0, V <sub>I</sub> or V <sub>O</sub> ≤ 4.5 V                        |                          |      | ±100  |            |      |            | ±100 | μA   |
| I <sub>CEX</sub>         | V <sub>CC</sub> = 5.5 V, V <sub>O</sub> = 5.5 V                                      | Outputs high             |      | 50    |            | 50   |            | 50   | μA   |
| I <sub>O§</sub>          | V <sub>CC</sub> = 5.5 V, V <sub>O</sub> = 2.5 V                                      | -50                      | -100 | -180  | -50        | -180 | -50        | -180 | mA   |
| I <sub>CC</sub>          | V <sub>CC</sub> = 5.5 V, I <sub>O</sub> = 0, V <sub>I</sub> = V <sub>CC</sub> or GND | Outputs high             |      | 1     | 250        | 250  | 250        | 250  | μA   |
|                          |  | Outputs low              |      | 24    | 30         | 30   | 30         | 30   | mA   |
|                          |  | Outputs disabled         |      | 0.5   | 250        | 250  | 250        | 250  | μA   |
| ΔI <sub>CC¶</sub>        | V <sub>CC</sub> = 5.5 V, One input at 3.4 V, Other inputs at V <sub>CC</sub> or GND  |                          |      | 1.5   |            | 1.5  |            | 1.5  | mA   |
| C <sub>i</sub>           | V <sub>I</sub> = 2.5 V or 0.5 V  |                          |      | 3     |            |      |            |      | pF   |
| C <sub>o</sub>           | V <sub>O</sub> = 2.5 V or 0.5 V  |                          |      | 6     |            |      |            |      | pF   |

\* On products compliant to MIL-PRF-38535, this parameter does not apply.

† All typical values are at V<sub>CC</sub> = 5 V.

‡ This data sheet limit may vary among suppliers.

§ Not more than one output should be tested at a time, and the duration of the test should not exceed one second.

¶ This is the increase in supply current for each input that is at the specified TTL voltage level rather than V<sub>CC</sub> or GND.



**SN54ABT373, SN74ABT373**  
**OCTAL TRANSPARENT D-TYPE LATCHES**  
**WITH 3-STATE OUTPUTS**

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timing requirements over recommended ranges of supply voltage and operating free-air temperature (unless otherwise noted) (see Figure 1)

|                 |                             | SN54ABT373                                      |     |     |     | UNIT |
|-----------------|-----------------------------|---|-----|-----|-----|------|
|                 |                             | V <sub>CC</sub> = 5 V,<br>T <sub>A</sub> = 25°C |     | MIN | MAX |      |
|                 |                             | MIN   | MAX |     |     |      |
| t <sub>w</sub>  | Pulse duration, LE high     |   |     | 3.3 | 3.3 | ns   |
| t <sub>su</sub> | Setup time, data before LE↓ | High  |     | 2.2 | 2.5 | ns   |
|                 |                             | Low   |     | 2.2 | 2.5 |      |
| t <sub>h</sub>  | Hold time, data after LE↓   | High or low                                     |     | 2.2 | 2.5 | ns   |

timing requirements over recommended ranges of supply voltage and operating free-air temperature (unless otherwise noted) (see Figure 1)

|                 |                             | SN74ABT373                                      |     |     |     | UNIT |
|-----------------|-----------------------------|---|-----|-----|-----|------|
|                 |                             | V <sub>CC</sub> = 5 V,<br>T <sub>A</sub> = 25°C |     | MIN | MAX |      |
|                 |                             | MIN   | MAX |     |     |      |
| t <sub>w</sub>  | Pulse duration, LE high     |   |     | 3.3 | 3.3 | ns   |
| t <sub>su</sub> | Setup time, data before LE↓ | High  |     | 1.9 | 1.9 | ns   |
|                 |                             | Low   |     | 1.5 | 1.5 |      |
| t <sub>h</sub>  | Hold time, data after LE↓   | High or low                                     |     | 1   | 1   | ns   |



**SN54ABT373, SN74ABT373**  
**OCTAL TRANSPARENT D-TYPE LATCHES**  
**WITH 3-STATE OUTPUTS**

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switching characteristics over recommended ranges of supply voltage and operating free-air temperature,  $C_L = 50$  pF (unless otherwise noted) (see Figure 1)

| PARAMETER | FROM (INPUT)    | TO (OUTPUT) | SN54ABT373                            |     |     |     | UNIT |     |
|-----------|-----------------|-------------|---------------------------------------|-----|-----|-----|------|-----|
|           |                 |             | $V_{CC} = 5$ V,<br>$T_A = 25^\circ$ C |     |     | MIN |      | MAX |
|           |                 |             | MIN                                   | TYP | MAX |     |      |     |
| $t_{PLH}$ | D               | Q           | 1.9                                   | 3.9 | 5.4 | 1.3 | 6.8  | ns  |
| $t_{PHL}$ |                 |             | 2.2                                   | 4.2 | 5.7 | 2   | 7    |     |
| $t_{PLH}$ | LE              | Q           | 2.2                                   | 4.6 | 6.1 | 1.8 | 7.7  | ns  |
| $t_{PHL}$ |                 |             | 3.2                                   | 5.2 | 6.7 | 2.5 | 7.7  |     |
| $t_{PZH}$ | $\overline{OE}$ | Q           | 1.2                                   | 3.2 | 5.5 | 1   | 6.2  | ns  |
| $t_{PZL}$ |                 |             | 2                                     | 4.7 | 6.2 | 1.5 | 7.2  |     |
| $t_{PHZ}$ | $\overline{OE}$ | Q           | 2.5                                   | 4.9 | 6.4 | 2.4 | 8    | ns  |
| $t_{PLZ}$ |                 |             | 2                                     | 4.5 | 6   | 2   | 7    |     |

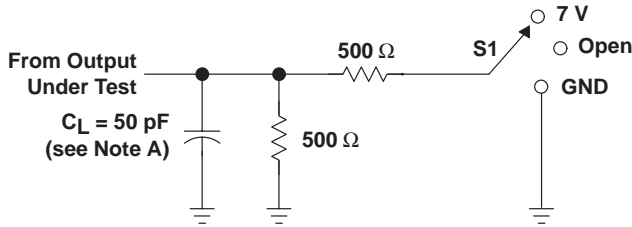
switching characteristics over recommended ranges of supply voltage and operating free-air temperature,  $C_L = 50$  pF (unless otherwise noted) (see Figure 1)

| PARAMETER | FROM (INPUT)    | TO (OUTPUT) | SN74ABT373                            |     |     |     | UNIT |     |
|-----------|-----------------|-------------|---------------------------------------|-----|-----|-----|------|-----|
|           |                 |             | $V_{CC} = 5$ V,<br>$T_A = 25^\circ$ C |     |     | MIN |      | MAX |
|           |                 |             | MIN                                   | TYP | MAX |     |      |     |
| $t_{PLH}$ | D               | Q           | 1.9                                   | 3.9 | 5.4 | 1.9 | 5.9  | ns  |
| $t_{PHL}$ |                 |             | 2.2                                   | 4.2 | 5.7 | 2.2 | 6.2  |     |
| $t_{PLH}$ | LE              | Q           | 2.2                                   | 4.6 | 6.1 | 2.2 | 6.6  | ns  |
| $t_{PHL}$ |                 |             | 3.2                                   | 5.2 | 6.7 | 3.2 | 7.2  |     |
| $t_{PZH}$ | $\overline{OE}$ | Q           | 1.2                                   | 3.2 | 4.7 | 1.2 | 5.2  | ns  |
| $t_{PZL}$ |                 |             | 2.7                                   | 4.7 | 6.2 | 2.7 | 6.7  |     |
| $t_{PHZ}$ | $\overline{OE}$ | Q           | 2.5                                   | 4.9 | 6.4 | 2.5 | 6.9  | ns  |
| $t_{PLZ}$ |                 |             | 2                                     | 4.5 | 6   | 2   | 6.5  |     |

# SN54ABT373, SN74ABT373 OCTAL TRANSPARENT D-TYPE LATCHES WITH 3-STATE OUTPUTS

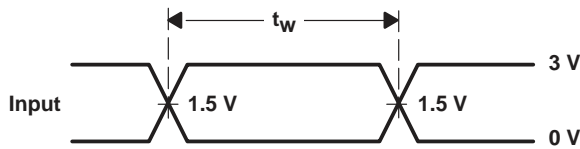
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## PARAMETER MEASUREMENT INFORMATION

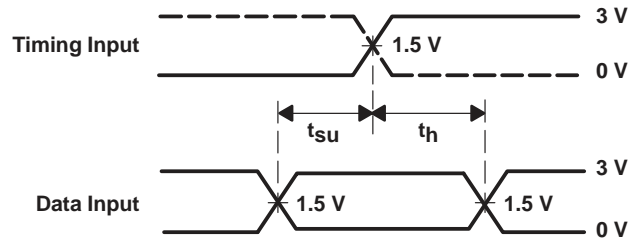


LOAD CIRCUIT

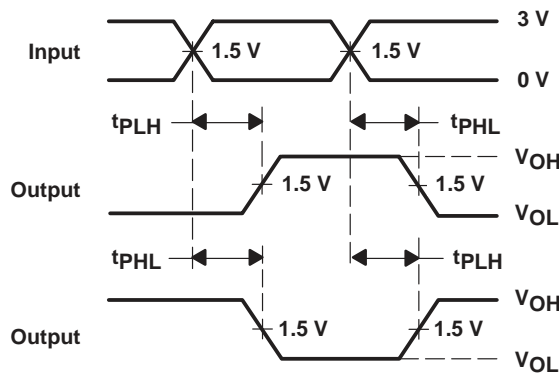
| TEST              | S1   |
|-------------------|------|
| $t_{PLH}/t_{PHL}$ | Open |
| $t_{PLZ}/t_{PZL}$ | 7 V  |
| $t_{PHZ}/t_{PZH}$ | Open |



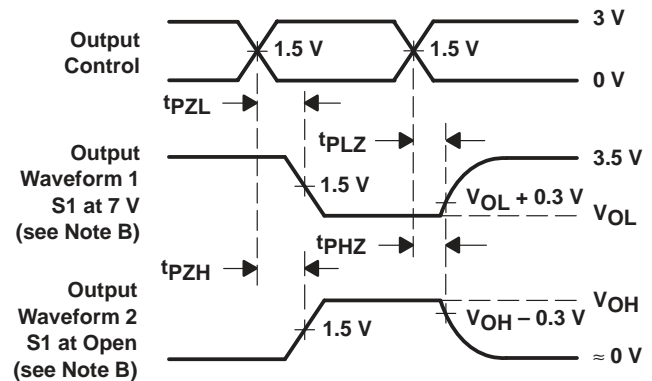
VOLTAGE WAVEFORMS  
PULSE DURATION



VOLTAGE WAVEFORMS  
SETUP AND HOLD TIMES



VOLTAGE WAVEFORMS  
PROPAGATION DELAY TIMES  
INVERTING AND NONINVERTING OUTPUTS







VOLTAGE WAVEFORMS  
ENABLE AND DISABLE TIMES  
LOW- AND HIGH-LEVEL ENABLING

- 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. All input pulses are supplied by generators having the following characteristics:  $PRR \leq 10 \text{ MHz}$ ,  $Z_O = 50 \Omega$ ,  $t_r \leq 2.5 \text{ ns}$ ,  $t_f \leq 2.5 \text{ ns}$ .  
 D. The outputs are measured one at a time with one transition per measurement.

Figure 1. Load Circuit and Voltage Waveforms

**PACKAGING INFORMATION**

| Orderable Device | Status<br>(1) | Package Type | Package<br>Drawing | Pins | Package<br>Qty | Eco Plan<br>(2)            | Lead/Ball Finish<br>(6) | MSL Peak Temp<br>(3) | Op Temp (°C) | Device Marking<br>(4/5)              | Samples                 |
|------------------|---------------|--------------|--------------------|------|----------------|----------------------------|-------------------------|----------------------|--------------|--------------------------------------|-------------------------|
| 5962-9321801Q2A  | ACTIVE        | LCCC         | FK                 | 20   | 1              | TBD                        | POST-PLATE              | N / A for Pkg Type   | -55 to 125   | 5962-9321801Q2A<br>SNJ54ABT<br>373FK | <a href="#">Samples</a> |
| 5962-9321801QRA  | ACTIVE        | CDIP         | J                  | 20   | 1              | TBD                        | A42                     | N / A for Pkg Type   | -55 to 125   | 5962-9321801QR<br>A<br>SNJ54ABT373J  | <a href="#">Samples</a> |
| 5962-9321801QSA  | ACTIVE        | CFP          | W                  | 20   | 1              | TBD                        | A42                     | N / A for Pkg Type   | -55 to 125   | 5962-9321801QS<br>A<br>SNJ54ABT373W  | <a href="#">Samples</a> |
| SN74ABT373DBLE   | OBSOLETE      | SSOP         | DB                 | 20   |                | TBD                        | Call TI                 | Call TI              | -40 to 85    |                                      |                         |
| SN74ABT373DBR    | ACTIVE        | SSOP         | DB                 | 20   | 2000           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -40 to 85    | AB373                                | <a href="#">Samples</a> |
| SN74ABT373DBRG4  | ACTIVE        | SSOP         | DB                 | 20   | 2000           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -40 to 85    | AB373                                | <a href="#">Samples</a> |
| SN74ABT373DW     | ACTIVE        | SOIC         | DW                 | 20   | 25             | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -40 to 85    | ABT373                               | <a href="#">Samples</a> |
| SN74ABT373DWG4   | ACTIVE        | SOIC         | DW                 | 20   | 25             | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -40 to 85    | ABT373                               | <a href="#">Samples</a> |
| SN74ABT373DWR    | ACTIVE        | SOIC         | DW                 | 20   | 2000           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -40 to 85    | ABT373                               | <a href="#">Samples</a> |
| SN74ABT373N      | ACTIVE        | PDIP         | N                  | 20   | 20             | Pb-Free<br>(RoHS)          | CU NIPDAU               | N / A for Pkg Type   | -40 to 85    | SN74ABT373N                          | <a href="#">Samples</a> |
| SN74ABT373NSR    | ACTIVE        | SO           | NS                 | 20   | 2000           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -40 to 85    | ABT373                               | <a href="#">Samples</a> |
| SN74ABT373NSRE4  | ACTIVE        | SO           | NS                 | 20   | 2000           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -40 to 85    | ABT373                               | <a href="#">Samples</a> |
| SN74ABT373NSRG4  | ACTIVE        | SO           | NS                 | 20   | 2000           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -40 to 85    | ABT373                               | <a href="#">Samples</a> |
| SN74ABT373PW     | ACTIVE        | TSSOP        | PW                 | 20   | 70             | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -40 to 85    | AB373                                | <a href="#">Samples</a> |
| SN74ABT373PWE4   | ACTIVE        | TSSOP        | PW                 | 20   | 70             | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -40 to 85    | AB373                                | <a href="#">Samples</a> |
| SN74ABT373PWLE   | OBSOLETE      | TSSOP        | PW                 | 20   |                | TBD                        | Call TI                 | Call TI              | -40 to 85    |                                      |                         |

| 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   |
|------------------|---------------|--------------|-----------------|------|-------------|-------------------------|-------------------------|----------------------|--------------|--------------------------------------|---|
| SN74ABT373PWR    | ACTIVE        | TSSOP        | PW              | 20   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -40 to 85    | AB373                                |  |
| SNJ54ABT373FK    | ACTIVE        | LCCC         | FK              | 20   | 1           | TBD                     | POST-PLATE              | N / A for Pkg Type   | -55 to 125   | 5962-9321801Q2A<br>SNJ54ABT<br>373FK |  |
| SNJ54ABT373J     | ACTIVE        | CDIP         | J               | 20   | 1           | TBD                     | A42                     | N / A for Pkg Type   | -55 to 125   | 5962-9321801QR<br>A<br>SNJ54ABT373J  |  |
| SNJ54ABT373W     | ACTIVE        | CFP          | W               | 20   | 1           | TBD                     | A42                     | N / A for Pkg Type   | -55 to 125   | 5962-9321801QS<br>A<br>SNJ54ABT373W  |  |

(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.

**OBSELETE:** 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.

(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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**OTHER QUALIFIED VERSIONS OF SN54ABT373, SN74ABT373 :**

- Catalog: [SN74ABT373](#)
- Military: [SN54ABT373](#)

NOTE: Qualified Version Definitions:

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

**TAPE AND REEL INFORMATION**

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


\*All dimensions are nominal

| Device        | Package Type | Package Drawing | Pins | SPQ  | Reel Diameter (mm) | Reel Width W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P1 (mm) | W (mm) | Pin1 Quadrant |
|---------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| SN74ABT373DBR | SSOP         | DB              | 20   | 2000 | 330.0              | 16.4               | 8.2     | 7.5     | 2.5     | 12.0    | 16.0   | Q1            |
| SN74ABT373DWR | SOIC         | DW              | 20   | 2000 | 330.0              | 24.4               | 10.8    | 13.3    | 2.7     | 12.0    | 24.0   | Q1            |
| SN74ABT373NSR | SO           | NS              | 20   | 2000 | 330.0              | 24.4               | 9.0     | 13.0    | 2.4     | 12.0    | 24.0   | Q1            |
| SN74ABT373PWR | TSSOP        | PW              | 20   | 2000 | 330.0              | 16.4               | 6.95    | 7.1     | 1.6     | 8.0     | 16.0   | Q1            |

**TAPE AND REEL BOX DIMENSIONS**


\*All dimensions are nominal

| Device        | Package Type | Package Drawing | Pins | SPQ  | Length (mm) | Width (mm) | Height (mm) |
|---------------|--------------|-----------------|------|------|-------------|------------|-------------|
| SN74ABT373DBR | SSOP         | DB              | 20   | 2000 | 367.0       | 367.0      | 38.0        |
| SN74ABT373DWR | SOIC         | DW              | 20   | 2000 | 367.0       | 367.0      | 45.0        |
| SN74ABT373NSR | SO           | NS              | 20   | 2000 | 367.0       | 367.0      | 45.0        |
| SN74ABT373PWR | TSSOP        | PW              | 20   | 2000 | 367.0       | 367.0      | 38.0        |

FK (S-CQCC-N\*\*)

LEADLESS CERAMIC CHIP CARRIER

28 TERMINAL SHOWN



| NO. OF TERMINALS ** | A                |                  | B                |                  |
|---------------------|------------------|------------------|------------------|------------------|
|                     | MIN              | MAX              | MIN              | MAX              |
| 20                  | 0.342<br>(8,69)  | 0.358<br>(9,09)  | 0.307<br>(7,80)  | 0.358<br>(9,09)  |
| 28                  | 0.442<br>(11,23) | 0.458<br>(11,63) | 0.406<br>(10,31) | 0.458<br>(11,63) |
| 44                  | 0.640<br>(16,26) | 0.660<br>(16,76) | 0.495<br>(12,58) | 0.560<br>(14,22) |
| 52                  | 0.740<br>(18,78) | 0.761<br>(19,32) | 0.495<br>(12,58) | 0.560<br>(14,22) |
| 68                  | 0.938<br>(23,83) | 0.962<br>(24,43) | 0.850<br>(21,6)  | 0.858<br>(21,8)  |
| 84                  | 1.141<br>(28,99) | 1.165<br>(29,59) | 1.047<br>(26,6)  | 1.063<br>(27,0)  |



4040140/D 01/11

- NOTES:
- All linear dimensions are in inches (millimeters).
  - This drawing is subject to change without notice.
  - This package can be hermetically sealed with a metal lid.
  - Falls within JEDEC MS-004

# 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.

J (R-GDIP-T\*\*)

14 LEADS SHOWN

CERAMIC DUAL IN-LINE PACKAGE



| DIM \ PINS ** | 14                     | 16                     | 18                     | 20                     |
|---------------|------------------------|------------------------|------------------------|------------------------|
| A             | 0.300<br>(7,62)<br>BSC | 0.300<br>(7,62)<br>BSC | 0.300<br>(7,62)<br>BSC | 0.300<br>(7,62)<br>BSC |
| B MAX         | 0.785<br>(19,94)       | .840<br>(21,34)        | 0.960<br>(24,38)       | 1.060<br>(26,92)       |
| B MIN         | —                      | —                      | —                      | —                      |
| C MAX         | 0.300<br>(7,62)        | 0.300<br>(7,62)        | 0.310<br>(7,87)        | 0.300<br>(7,62)        |
| C MIN         | 0.245<br>(6,22)        | 0.245<br>(6,22)        | 0.220<br>(5,59)        | 0.245<br>(6,22)        |

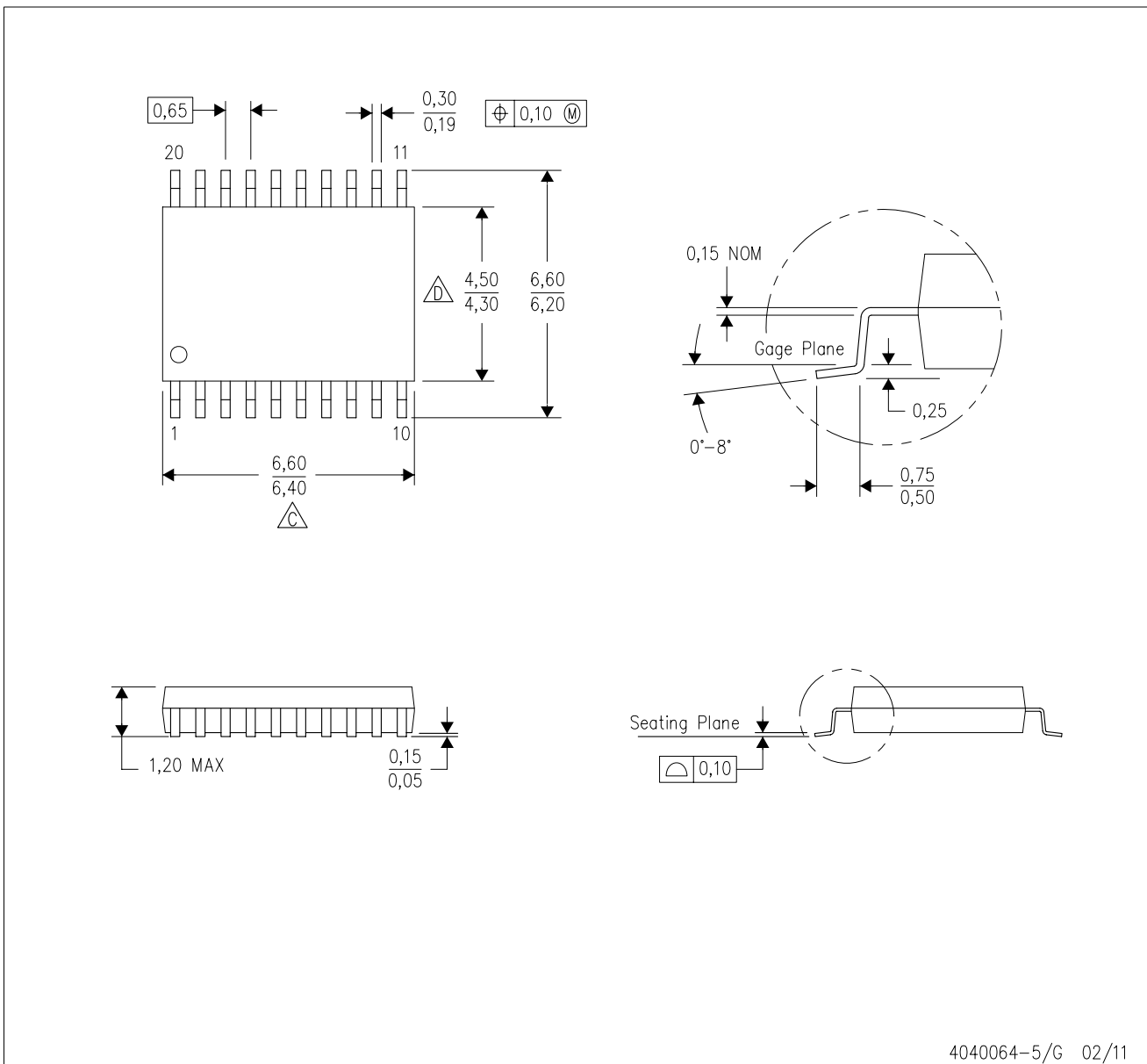


4040083/F 03/03

- NOTES:
- All linear dimensions are in inches (millimeters).
  - This drawing is subject to change without notice.
  - This package is hermetically sealed with a ceramic lid using glass frit.
  - Index point is provided on cap for terminal identification only on press ceramic glass frit seal only.
  - Falls within MIL STD 1835 GDIP1-T14, GDIP1-T16, GDIP1-T18 and GDIP1-T20.

PW (R-PDSO-G20)

PLASTIC SMALL OUTLINE



4040064-5/G 02/11

- NOTES:
- A. All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M-1994.
  - B. This drawing is subject to change without notice.
  - C. Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0,15 each side.
  - D. Body width does not include interlead flash. Interlead flash shall not exceed 0,25 each side.
  - E. Falls within JEDEC MO-153

PW (R-PDSO-G20)

PLASTIC SMALL OUTLINE



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



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

PLASTIC SMALL-OUTLINE

28 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.  
 D. Falls within JEDEC MO-150

N (R-PDIP-T\*\*)

PLASTIC DUAL-IN-LINE PACKAGE

16 PINS SHOWN



- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - Falls within JEDEC MS-001, except 18 and 20 pin minimum body length (Dim A).
  - The 20 pin end lead shoulder width is a vendor option, either half or full width.

4040049/E 12/2002

# DW0020A



# PACKAGE OUTLINE

## SOIC - 2.65 mm max height

SOIC



4220724/A 05/2016

### NOTES:

1. All linear dimensions are in millimeters. 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 0.43 mm per side.
5. Reference JEDEC registration MS-013.

# EXAMPLE BOARD LAYOUT

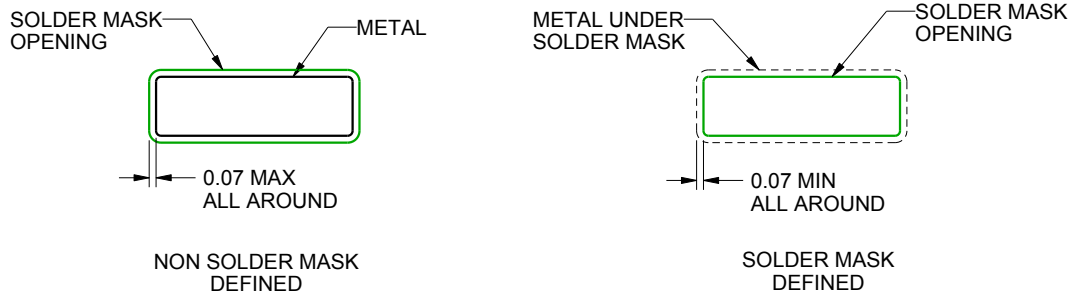
DW0020A

SOIC - 2.65 mm max height

SOIC



LAND PATTERN EXAMPLE  
SCALE:6X



SOLDER MASK DETAILS

4220724/A 05/2016

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

DW0020A

SOIC - 2.65 mm max height

SOIC



SOLDER PASTE EXAMPLE  
BASED ON 0.125 mm THICK STENCIL  
SCALE:6X

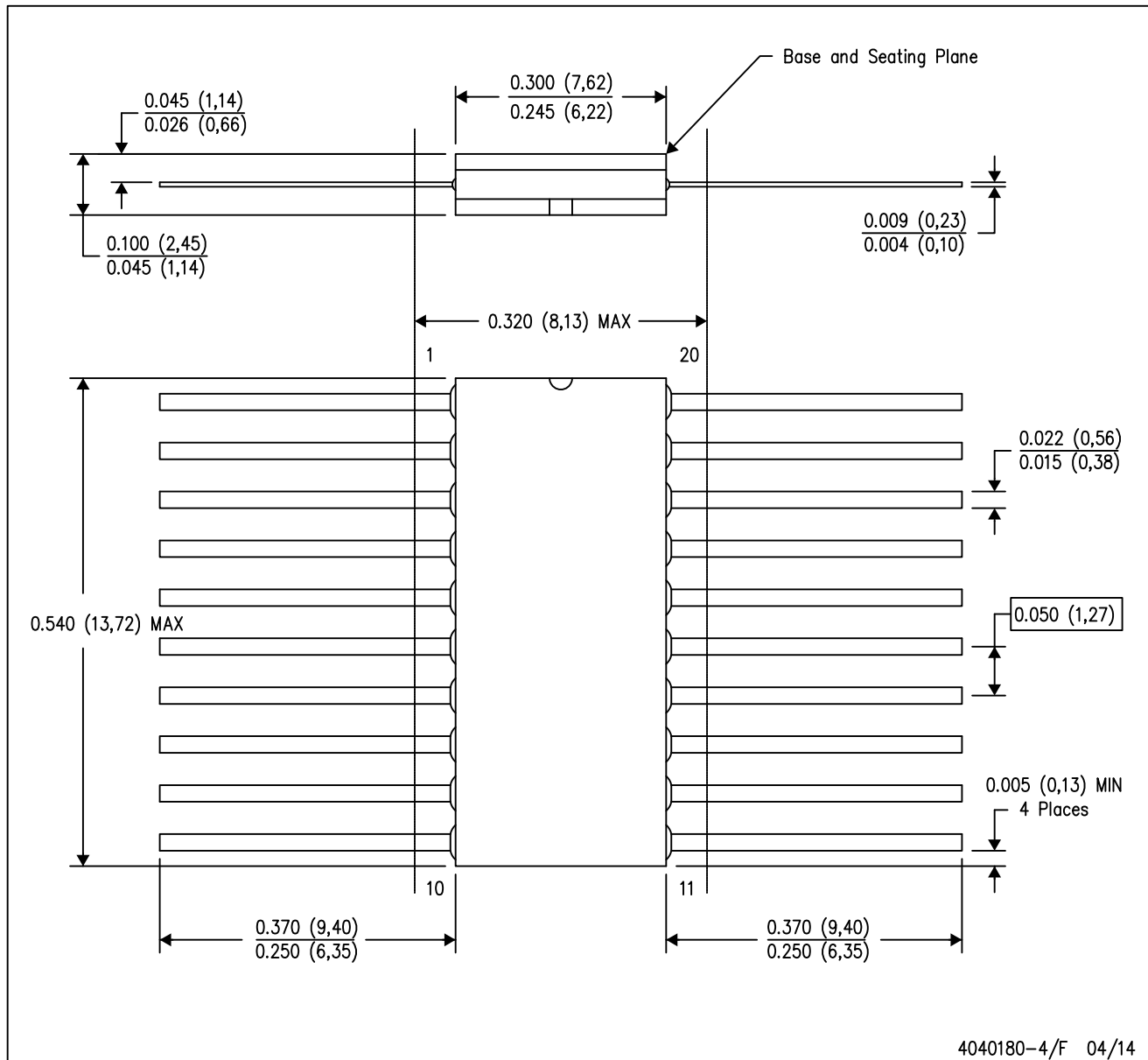
4220724/A 05/2016

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.

W (R-GDFP-F20)

CERAMIC DUAL FLATPACK



- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - C. This package can be hermetically sealed with a ceramic lid using glass frit.
  - D. Index point is provided on cap for terminal identification only.
  - E. Falls within Mil-Std 1835 GDFP2-F20

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