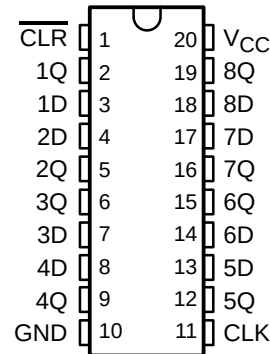


# SN54AHC273, SN74AHC273 OCTAL D-TYPE FLIP-FLOPS WITH CLEAR

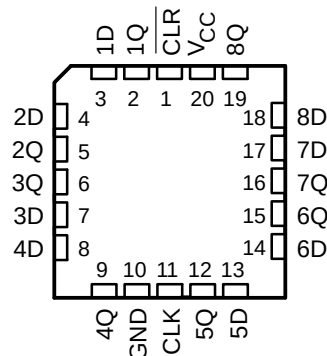
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- Operating Range 2-V to 5.5-V  $V_{CC}$
- Contain Eight Flip-Flops With Single-Rail Outputs
- Direct Clear Input
- Individual Data Input to Each Flip-Flop
- Applications Include:
  - Buffer/Storage Registers
  - Shift Registers
  - Pattern Generators
- Latch-Up Performance Exceeds 250 mA Per JESD 17
- ESD Protection Exceeds JESD 22
  - 2000-V Human-Body Model (A114-A)
  - 1000-V Charged-Device Model (C101)

SN54AHC273 ... J OR W PACKAGE  
SN74AHC273 ... DB, DGV, DW, N, NS, OR PW PACKAGE  
(TOP VIEW)



SN54AHC273 ... FK PACKAGE  
(TOP VIEW)



## description/ordering information

These circuits are positive-edge-triggered D-type flip-flops with a direct clear (CLR) input.

Information at the data (D) inputs meeting the setup time requirements is transferred to the Q outputs on the positive-going edge of the clock (CLK) pulse. Clock triggering occurs at a particular voltage level and is not directly related to the transition time of the positive-going pulse. When CLK is at either the high or low level, the D input has no effect at the output.

## ORDERING INFORMATION

| $T_A$          | PACKAGE <sup>†</sup> |               | ORDERABLE PART NUMBER | TOP-SIDE MARKING |
|----------------|----------------------|---------------|-----------------------|------------------|
| –40°C to 85°C  | PDIP – N             | Tube          | SN74AHC273N           | SN74AHC273N      |
|                | SOIC – DW            | Tube          | SN74AHC273DW          | AHC273           |
|                |                      | Tape and reel | SN74AHC273DWR         |                  |
|                | SOP – NS             | Tape and reel | SN74AHC273NSR         | AHC273           |
|                | SSOP – DB            | Tape and reel | SN74AHC273DBR         | HA273            |
|                | TSSOP – PW           | Tube          | SN74AHC273PW          | HA273            |
|                |                      | Tape and reel | SN74AHC273PWR         |                  |
| –55°C to 125°C | TVSOP – DGV          | Tape and reel | SN74AHC273DGVR        | HA273            |
|                | CDIP – J             | Tube          | SNJ54AHC273J          | SNJ54AHC273J     |
|                | CFP – W              | Tube          | SNJ54AHC273W          | SNJ54AHC273W     |
|                | LCCC – FK            | Tube          | SNJ54AHC273FK         | SNJ54AHC273FK    |

<sup>†</sup> 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).



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.

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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On products compliant to MIL-PRF-38535, all parameters are tested unless otherwise noted. On all other products, production processing does not necessarily include testing of all parameters.

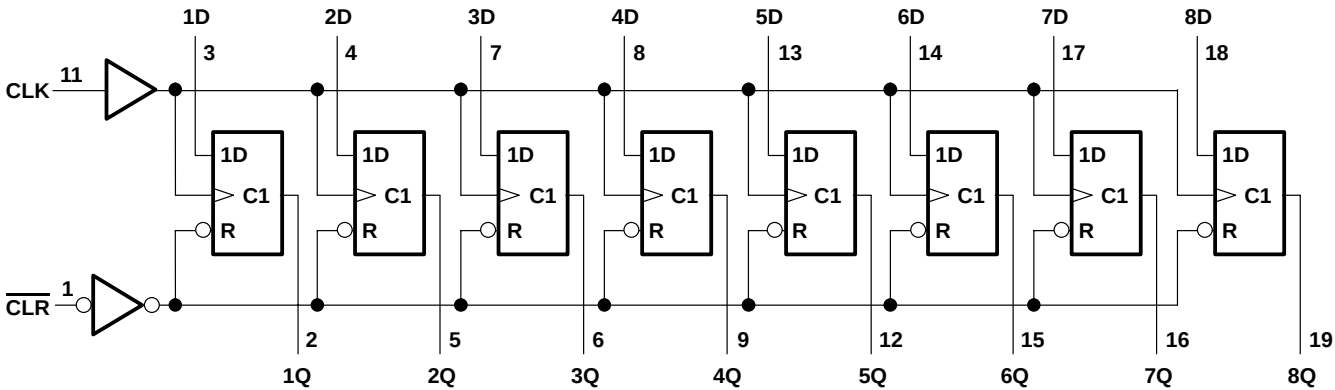
SN54AHC273, SN74AHC273  
OCTAL D-TYPE FLIP-FLOPS  
WITH CLEAR

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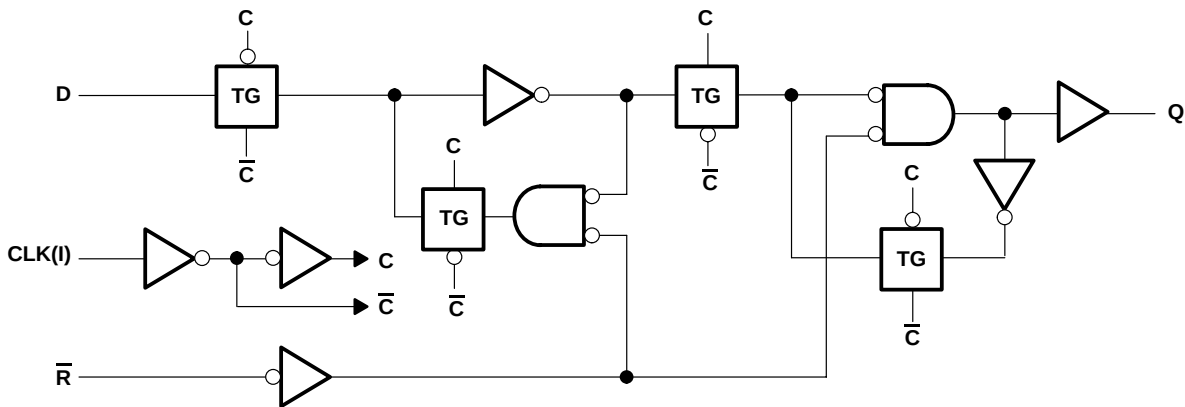
FUNCTION TABLE  
(each flip-flop)

| INPUTS                   |            |   | OUTPUT<br>Q    |
|--------------------------|------------|---|----------------|
| CL $\overline{\text{R}}$ | CLK        | D |                |
| L                        | X          | X | L              |
| H                        | $\uparrow$ | H | H              |
| H                        | $\uparrow$ | L | L              |
| H                        | L          | X | Q <sub>0</sub> |

logic diagram (positive logic)



logic diagram, each flip-flop (positive logic)



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|                                                                |                            |
|----------------------------------------------------------------|----------------------------|
| 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              |
| Output voltage range, $V_O$ (see Note 1)                       | −0.5 V to $V_{CC} + 0.5$ V |
| Input clamp current, $I_{IK}$ ( $V_I < 0$ )                    | −20 mA                     |
| Output clamp current, $I_{OK}$ ( $V_O < 0$ or $V_O > V_{CC}$ ) | ±20 mA                     |
| Continuous output current, $I_O$ ( $V_O = 0$ to $V_{CC}$ )     | ±25 mA                     |
| Continuous current through $V_{CC}$ or GND                     | ±75 mA                     |
| Package thermal impedance, $\theta_{JA}$ (see Note 2):         |                            |
| DB package                                                     | 70°C/W                     |
| DGV package                                                    | 92°C/W                     |
| DW package                                                     | 58°C/W                     |
| N package                                                      | 69°C/W                     |
| NS package                                                     | 60°C/W                     |
| PW package                                                     | 83°C/W                     |
| Storage temperature range, $T_{stg}$                           | −65°C to 150°C             |

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 JEDEC 51-7.

|                 |                                    |                                 | SN54AHC273 |                 | SN74AHC273 |                 | UNIT |
|-----------------|------------------------------------|---------------------------------|------------|-----------------|------------|-----------------|------|
|                 |                                    |                                 | MIN        | MAX             | MIN        | MAX             |      |
| V <sub>CC</sub> | Supply voltage                     |                                 | 2          | 5.5             | 2          | 5.5             | V    |
| V <sub>IH</sub> | High-level input voltage           | V <sub>CC</sub> = 2 V           | 1.5        |                 | 1.5        |                 | V    |
|                 |                                    | V <sub>CC</sub> = 3 V           | 2.1        |                 | 2.1        |                 |      |
|                 |                                    | V <sub>CC</sub> = 5.5 V         | 3.85       |                 | 3.85       |                 |      |
| V <sub>IL</sub> | Low-level input voltage            | V <sub>CC</sub> = 2 V           |            | 0.5             |            | 0.5             | V    |
|                 |                                    | V <sub>CC</sub> = 3 V           |            | 0.9             |            | 0.9             |      |
|                 |                                    | V <sub>CC</sub> = 5.5 V         |            | 1.65            |            | 1.65            |      |
| V <sub>I</sub>  | Input voltage                      |                                 | 0          | 5.5             | 0          | 5.5             | V    |
| V <sub>O</sub>  | Output voltage                     |                                 | 0          | V <sub>CC</sub> | 0          | V <sub>CC</sub> | V    |
| I <sub>OH</sub> | High-level output current          | V <sub>CC</sub> = 2 V           |            | −50             |            | −50             | μA   |
|                 |                                    | V <sub>CC</sub> = 3.3 V ± 0.3 V |            | −4              |            | −4              | mA   |
|                 |                                    | V <sub>CC</sub> = 5 V ± 0.5 V   |            | −8              |            | −8              |      |
| I <sub>OL</sub> | Low-level output current           | V <sub>CC</sub> = 2 V           |            | 50              |            | 50              | μA   |
|                 |                                    | V <sub>CC</sub> = 3.3 V ± 0.3 V |            | 4               |            | 4               | mA   |
|                 |                                    | V <sub>CC</sub> = 5 V ± 0.5 V   |            | 8               |            | 8               |      |
| Δt/Δv           | Input transition rise or fall rate | V <sub>CC</sub> = 3.3 V ± 0.3 V |            | 100             |            | 100             | ns/V |
|                 |                                    | V <sub>CC</sub> = 5 V ± 0.5 V   |            | 20              |            | 20              |      |
| T <sub>A</sub>  | Operating free-air temperature     |                                 | −55        | 125             | −40        | 85              | °C   |

NOTE 3: All unused inputs of the device must be held at V<sub>CC</sub> or GND to ensure proper device operation. Refer to the TI application report, *Implications of Slow or Floating CMOS Inputs*, literature number SCBA004.

# SN54AHC273, SN74AHC273

## OCTAL D-TYPE FLIP-FLOPS

### WITH CLEAR

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

| PARAMETER       | TEST CONDITIONS                                             | V <sub>CC</sub> | T <sub>A</sub> = 25°C |     |      | SN54AHC273 |     | SN74AHC273 |      | UNIT |
|-----------------|-------------------------------------------------------------|-----------------|-----------------------|-----|------|------------|-----|------------|------|------|
|                 |                                                             |                 | MIN                   | TYP | MAX  | MIN        | MAX | MIN        | MAX  |      |
| V <sub>OH</sub> | I <sub>OH</sub> = –50 µA                                    | 2 V             | 1.9                   |     |      | 1.9        |     | 1.9        |      | V    |
|                 |                                                             | 3 V             | 2.9                   |     |      | 2.9        |     | 2.9        |      |      |
|                 |                                                             | 4.5 V           | 4.4                   |     |      | 4.4        |     | 4.4        |      |      |
|                 | I <sub>OH</sub> = –4 mA                                     | 3 V             | 2.58                  |     |      | 2.48       |     | 2.48       |      |      |
|                 | I <sub>OH</sub> = –8 mA                                     | 4.5 V           | 3.94                  |     |      | 3.8        |     | 3.8        |      |      |
| V <sub>OL</sub> | I <sub>OL</sub> = 50 µA                                     | 2 V             |                       |     | 0.1  |            | 0.1 |            | 0.1  | V    |
|                 |                                                             | 3 V             |                       |     | 0.1  |            | 0.1 |            | 0.1  |      |
|                 |                                                             | 4.5 V           |                       |     | 0.1  |            | 0.1 |            | 0.1  |      |
|                 | I <sub>OL</sub> = 4 mA                                      | 3 V             |                       |     | 0.36 |            | 0.5 |            | 0.44 |      |
|                 | I <sub>OL</sub> = 8 mA                                      | 4.5 V           |                       |     | 0.36 |            | 0.5 |            | 0.44 |      |
| I <sub>I</sub>  | V <sub>I</sub> = 5.5 V or GND                               | 0 V to 5.5 V    |                       |     | ±0.1 |            | ±1* |            | ±1   | µA   |
| I <sub>CC</sub> | V <sub>I</sub> = V <sub>CC</sub> or GND, I <sub>O</sub> = 0 | 5.5 V           |                       |     | 4    |            | 40  |            | 40   | µA   |
| C <sub>i</sub>  | V <sub>I</sub> = V <sub>CC</sub> or GND                     | 5 V             |                       |     | 2.5  | 10         |     |            | 10   | pF   |

\* On products compliant to MIL-PRF-38535, this parameter is not production tested at V<sub>CC</sub> = 0 V.

timing requirements over recommended operating free-air temperature range, V<sub>CC</sub> = 3.3 V ± 0.3 V (unless otherwise noted) (see Figure 1)

|                 |                            | SN54AHC273            |     |     |     | SN74AHC273            |     |     |     | UNIT |
|-----------------|----------------------------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|------|
|                 |                            | T <sub>A</sub> = 25°C |     | MIN | MAX | T <sub>A</sub> = 25°C |     | MIN | MAX |      |
|                 |                            | MIN                   | MAX |     |     | MIN                   | MAX |     |     |      |
| t <sub>w</sub>  | Pulse duration             | CLR low               | 5   | 6   | 5   | 6                     | ns  |     |     |      |
|                 |                            | CLK high or low       | 5   | 6.5 | 5   | 6.5                   |     |     |     |      |
| t <sub>su</sub> | Setup time                 | Data before CLK↑      | 5.5 | 6.5 | 5.5 | 6.5                   | ns  |     |     |      |
|                 |                            | CLR before CLK↑       | 2.5 | 2.5 | 2.5 | 2.5                   |     |     |     |      |
| t <sub>h</sub>  | Hold time, data after CLK↑ |                       | 1.5 | 2   | 1   | 1                     | ns  |     |     |      |

timing requirements over recommended operating free-air temperature range, V<sub>CC</sub> = 5 V ± 0.5 V (unless otherwise noted) (see Figure 1)

|                 |                            | SN54AHC273            |     |     |     | SN74AHC273            |     |     |     | UNIT |
|-----------------|----------------------------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|------|
|                 |                            | T <sub>A</sub> = 25°C |     | MIN | MAX | T <sub>A</sub> = 25°C |     | MIN | MAX |      |
|                 |                            | MIN                   | MAX |     |     | MIN                   | MAX |     |     |      |
| t <sub>w</sub>  | Pulse duration             | CLR low               | 5   | 5   | 5   | 5                     | 5   | 5   | ns  |      |
|                 |                            | CLK high or low       | 5   | 5   | 5   | 5                     | 5   |     |     |      |
| t <sub>su</sub> | Setup time                 | Data before CLK↑      | 4.5 | 4.5 | 4.5 | 4.5                   | 4.5 | 4.5 | ns  |      |
|                 |                            | CLR before CLK↑       | 2   | 2   | 2   | 2                     | 2   |     |     |      |
| t <sub>h</sub>  | Hold time, data after CLK↑ |                       | 1.5 | 2   | 1   |                       | 1   |     | ns  |      |



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# SN54AHC273, SN74AHC273 OCTAL D-TYPE FLIP-FLOPS WITH CLEAR

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switching characteristics over recommended operating free-air temperature range,  
 $V_{CC} = 3.3 \text{ V} \pm 0.3 \text{ V}$  (unless otherwise noted) (see Figure 1)

| PARAMETER          | FROM<br>(INPUT)         | TO<br>(OUTPUT) | LOAD<br>CAPACITANCE   | $T_A = 25^\circ\text{C}$ |      |       | SN54AHC273 |      | SN74AHC273 |      | UNIT |
|--------------------|-------------------------|----------------|-----------------------|--------------------------|------|-------|------------|------|------------|------|------|
|                    |                         |                |                       | MIN                      | TYP  | MAX   | MIN        | MAX  | MIN        | MAX  |      |
| $f_{\max}$         |                         |                | $C_L = 15 \text{ pF}$ | 75*                      | 120* |       | 65*        |      | 65         |      | MHz  |
|                    |                         |                | $C_L = 50 \text{ pF}$ | 50                       | 75   |       | 45         |      | 45         |      |      |
| $t_{\text{PHL}}$   | $\overline{\text{CLR}}$ | Q              | $C_L = 15 \text{ pF}$ |                          | 8.9* | 13.6* | 1*         | 16*  | 1          | 16   | ns   |
| $t_{\text{PLH}}$   | CLK                     | Q              | $C_L = 15 \text{ pF}$ |                          | 8.7* | 13.6* | 1*         | 16*  | 1          | 16   | ns   |
| $t_{\text{PHL}}$   |                         |                |                       |                          | 8.7* | 13.6* | 1*         | 16*  | 1          | 16   |      |
| $t_{\text{PHL}}$   | $\overline{\text{CLR}}$ | Q              | $C_L = 50 \text{ pF}$ |                          | 11.4 | 17.1  | 1          | 19.5 | 1          | 19.5 | ns   |
| $t_{\text{PLH}}$   | CLK                     | Q              | $C_L = 50 \text{ pF}$ |                          | 11.2 | 17.1  | 1          | 19.5 | 1          | 19.5 | ns   |
| $t_{\text{PHL}}$   |                         |                |                       |                          | 11.2 | 17.1  | 1          | 19.5 | 1          | 19.5 |      |
| $t_{\text{sk}}(0)$ |                         |                | $C_L = 50 \text{ pF}$ |                          |      | 1.5** |            |      |            | 1.5  | ns   |

\* On products compliant to MIL-PRF-38535, this parameter is not production tested.

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

switching characteristics over recommended operating free-air temperature range,  
 $V_{CC} = 5 \text{ V} \pm 0.5 \text{ V}$  (unless otherwise noted) (see Figure 1)

| PARAMETER          | FROM<br>(INPUT)         | TO<br>(OUTPUT) | LOAD<br>CAPACITANCE   | $T_A = 25^\circ\text{C}$ |      |      | SN54AHC273 |       | SN74AHC273 |      | UNIT |
|--------------------|-------------------------|----------------|-----------------------|--------------------------|------|------|------------|-------|------------|------|------|
|                    |                         |                |                       | MIN                      | TYP  | MAX  | MIN        | MAX   | MIN        | MAX  |      |
| $f_{\max}$         |                         |                | $C_L = 15 \text{ pF}$ | 120*                     | 165* |      | 100*       |       | 100        |      | MHz  |
|                    |                         |                | $C_L = 50 \text{ pF}$ | 80                       | 110  |      | 70         |       | 70         |      |      |
| $t_{\text{PHL}}$   | $\overline{\text{CLR}}$ | Q              | $C_L = 15 \text{ pF}$ |                          | 5.2* | 8.5* | 1*         | 10*   | 1          | 10   | ns   |
| $t_{\text{PLH}}$   | CLK                     | Q              | $C_L = 15 \text{ pF}$ |                          | 5.8* | 9*   | 1*         | 10.5* | 1          | 10.5 | ns   |
| $t_{\text{PHL}}$   |                         |                |                       |                          | 5.8* | 9*   | 1*         | 10.5* | 1          | 10.5 |      |
| $t_{\text{PHL}}$   | $\overline{\text{CLR}}$ | Q              | $C_L = 50 \text{ pF}$ |                          | 6.7  | 10.5 | 1          | 12    | 1          | 12   | ns   |
| $t_{\text{PLH}}$   | CLK                     | Q              | $C_L = 50 \text{ pF}$ |                          | 7.3  | 11   | 1          | 12.5  | 1          | 12.5 | ns   |
| $t_{\text{PHL}}$   |                         |                |                       |                          | 7.3  | 11   | 1          | 12.5  | 1          | 12.5 |      |
| $t_{\text{sk}}(0)$ |                         |                | $C_L = 50 \text{ pF}$ |                          |      | 1**  |            |       |            | 1    | ns   |

\* On products compliant to MIL-PRF-38535, this parameter is not production tested.

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

noise characteristics,  $V_{CC} = 5 \text{ V}$ ,  $C_L = 50 \text{ pF}$ ,  $T_A = 25^\circ\text{C}$  (see Note 4)

| PARAMETER   |                                        | SN74AHC273 |      |     | UNIT |
|-------------|----------------------------------------|------------|------|-----|------|
|             |                                        | MIN        | TYP  | MAX |      |
| $V_{OL(P)}$ | Quiet output, maximum dynamic $V_{OL}$ |            | 0.7  |     | V    |
| $V_{OL(V)}$ | Quiet output, minimum dynamic $V_{OL}$ |            | -0.7 |     | V    |
| $V_{OH(V)}$ | Quiet output, minimum dynamic $V_{OH}$ |            | 4.7  |     | V    |
| $V_{IH(D)}$ | High-level dynamic input voltage       |            | 3.5  |     | V    |
| $V_{IL(D)}$ | Low-level dynamic input voltage        |            |      | 1.5 | V    |

NOTE 4: Characteristics are for surface-mount packages only.

operating characteristics,  $T_A = 25^\circ\text{C}$

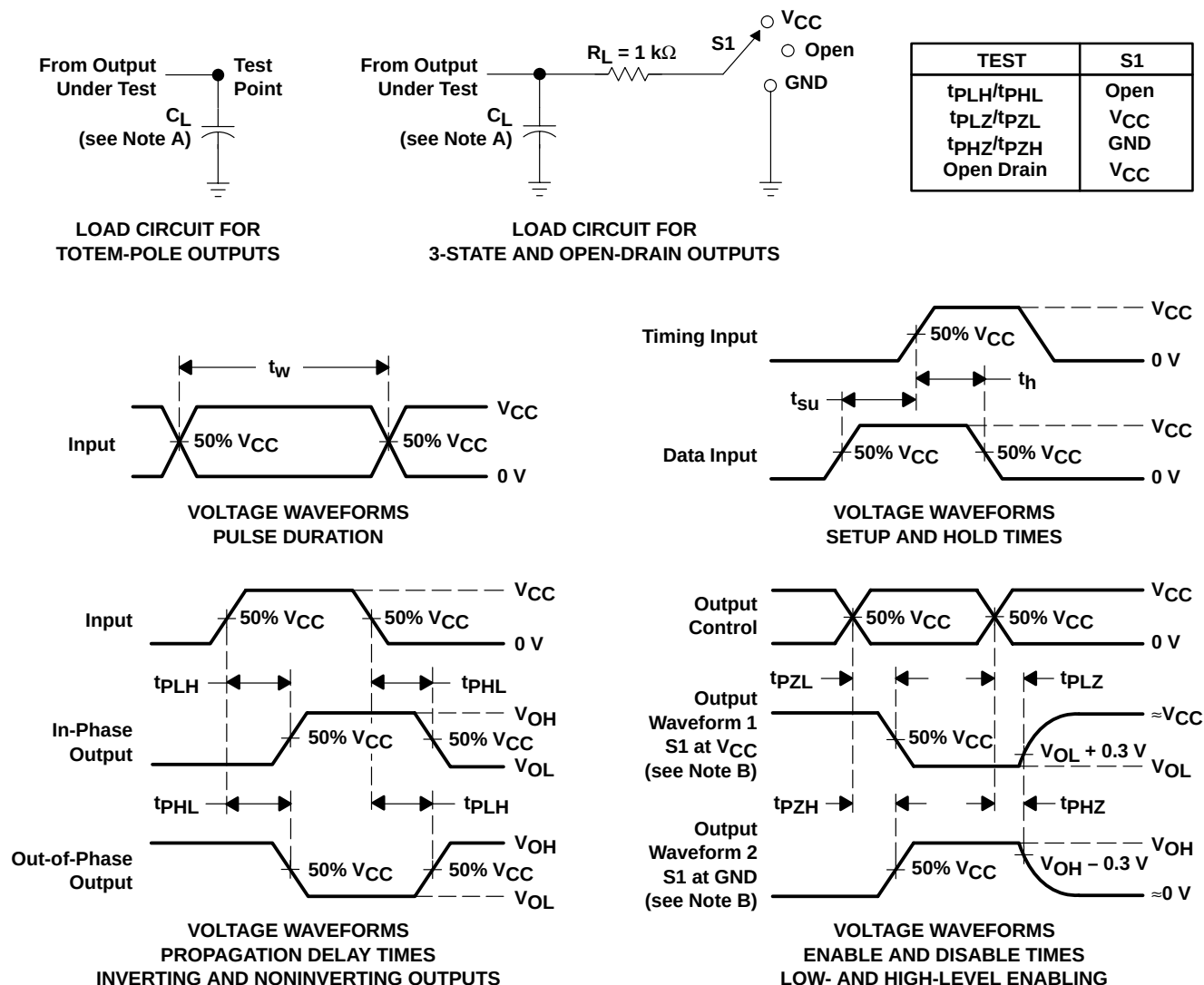
| PARAMETER |                               | TEST CONDITIONS              | TYP | UNIT |
|-----------|-------------------------------|------------------------------|-----|------|
| $C_{pd}$  | Power dissipation capacitance | No load, $f = 1 \text{ MHz}$ | 31  | pF   |



# SN54AHC273, SN74AHC273 OCTAL D-TYPE FLIP-FLOPS WITH CLEAR

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## PARAMETER MEASUREMENT INFORMATION



- 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:  $PRR \leq 1\text{ MHz}$ ,  $Z_O = 50\ \Omega$ ,  $t_r \leq 3\text{ ns}$ ,  $t_f \leq 3\text{ ns}$ .  
 D. The outputs are measured one at a time with one input transition per measurement.  
 E. All parameters and waveforms are not applicable to all devices.

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 | MSL Peak Temp<br>(3) | Op Temp (°C) | Top-Side Markings<br>(4)             | Samples                 |
|------------------|---------------|--------------|--------------------|------|----------------|----------------------------|------------------|----------------------|--------------|--------------------------------------|-------------------------|
| 5962-9853001Q2A  | ACTIVE        | LCCC         | FK                 | 20   | 1              | TBD                        | Call TI          | Call TI              | -55 to 125   | 5962-9853001Q2A<br>SNJ54AHC<br>273FK | <a href="#">Samples</a> |
| 5962-9853001QRA  | ACTIVE        | CDIP         | J                  | 20   | 1              | TBD                        | Call TI          | Call TI              | -55 to 125   | 5962-9853001QR<br>A<br>SNJ54AHC273J  | <a href="#">Samples</a> |
| 5962-9853001QSA  | ACTIVE        | CFP          | W                  | 20   | 1              | TBD                        | Call TI          | Call TI              | -55 to 125   | 5962-9853001QS<br>A<br>SNJ54AHC273W  | <a href="#">Samples</a> |
| SN74AHC273DBLE   | OBSOLETE      | SSOP         | DB                 | 20   |                | TBD                        | Call TI          | Call TI              | -40 to 85    |                                      |                         |
| SN74AHC273DBR    | ACTIVE        | SSOP         | DB                 | 20   | 2000           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM   | -40 to 85    | HA273                                | <a href="#">Samples</a> |
| SN74AHC273DBRE4  | ACTIVE        | SSOP         | DB                 | 20   | 2000           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM   | -40 to 85    | HA273                                | <a href="#">Samples</a> |
| SN74AHC273DBRG4  | ACTIVE        | SSOP         | DB                 | 20   | 2000           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM   | -40 to 85    | HA273                                | <a href="#">Samples</a> |
| SN74AHC273DGVR   | ACTIVE        | TVSOP        | DGV                | 20   | 2000           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM   | -40 to 85    | HA273                                | <a href="#">Samples</a> |
| SN74AHC273DGVRE4 | ACTIVE        | TVSOP        | DGV                | 20   | 2000           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM   | -40 to 85    | HA273                                | <a href="#">Samples</a> |
| SN74AHC273DGVRG4 | ACTIVE        | TVSOP        | DGV                | 20   | 2000           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM   | -40 to 85    | HA273                                | <a href="#">Samples</a> |
| SN74AHC273DW     | ACTIVE        | SOIC         | DW                 | 20   | 25             | Green (RoHS<br>& no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM   | -40 to 85    | AHC273                               | <a href="#">Samples</a> |
| SN74AHC273DWG4   | ACTIVE        | SOIC         | DW                 | 20   | 25             | Green (RoHS<br>& no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM   | -40 to 85    | AHC273                               | <a href="#">Samples</a> |
| SN74AHC273DWR    | ACTIVE        | SOIC         | DW                 | 20   | 2000           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM   | -40 to 85    | AHC273                               | <a href="#">Samples</a> |
| SN74AHC273DWRG4  | ACTIVE        | SOIC         | DW                 | 20   | 2000           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM   | -40 to 85    | AHC273                               | <a href="#">Samples</a> |
| SN74AHC273N      | ACTIVE        | PDIP         | N                  | 20   | 20             | Pb-Free<br>(RoHS)          | CU NIPDAU        | N / A for Pkg Type   | -40 to 85    | SN74AHC273N                          | <a href="#">Samples</a> |
| SN74AHC273NE4    | ACTIVE        | PDIP         | N                  | 20   | 20             | Pb-Free<br>(RoHS)          | CU NIPDAU        | N / A for Pkg Type   | -40 to 85    | SN74AHC273N                          | <a href="#">Samples</a> |

| Orderable Device | Status<br>(1) | Package Type | Package<br>Drawing | Pins | Package<br>Qty | Eco Plan<br>(2)            | Lead/Ball Finish | MSL Peak Temp<br>(3) | Op Temp (°C) | Top-Side Markings<br>(4)                 | Samples                 |
|------------------|---------------|--------------|--------------------|------|----------------|----------------------------|------------------|----------------------|--------------|------------------------------------------|-------------------------|
| SN74AHC273NSR    | ACTIVE        | SO           | NS                 | 20   | 2000           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM   | -40 to 85    | AHC273                                   | <a href="#">Samples</a> |
| SN74AHC273NSRE4  | ACTIVE        | SO           | NS                 | 20   | 2000           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM   | -40 to 85    | AHC273                                   | <a href="#">Samples</a> |
| SN74AHC273NSRG4  | ACTIVE        | SO           | NS                 | 20   | 2000           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM   | -40 to 85    | AHC273                                   | <a href="#">Samples</a> |
| SN74AHC273PW     | ACTIVE        | TSSOP        | PW                 | 20   | 70             | Green (RoHS<br>& no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM   | -40 to 85    | HA273                                    | <a href="#">Samples</a> |
| SN74AHC273PWE4   | ACTIVE        | TSSOP        | PW                 | 20   | 70             | Green (RoHS<br>& no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM   | -40 to 85    | HA273                                    | <a href="#">Samples</a> |
| SN74AHC273PWG4   | ACTIVE        | TSSOP        | PW                 | 20   | 70             | Green (RoHS<br>& no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM   | -40 to 85    | HA273                                    | <a href="#">Samples</a> |
| SN74AHC273PWLE   | OBSOLETE      | TSSOP        | PW                 | 20   |                | TBD                        | Call TI          | Call TI              | -40 to 85    |                                          |                         |
| SN74AHC273PWR    | ACTIVE        | TSSOP        | PW                 | 20   | 2000           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM   | -40 to 85    | HA273                                    | <a href="#">Samples</a> |
| SN74AHC273PWRE4  | ACTIVE        | TSSOP        | PW                 | 20   | 2000           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM   | -40 to 85    | HA273                                    | <a href="#">Samples</a> |
| SN74AHC273PWRG4  | ACTIVE        | TSSOP        | PW                 | 20   | 2000           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM   | -40 to 85    | HA273                                    | <a href="#">Samples</a> |
| SNJ54AHC273FK    | ACTIVE        | LCCC         | FK                 | 20   | 1              | TBD                        | POST-PLATE       | N / A for Pkg Type   | -55 to 125   | 5962-<br>9853001Q2A<br>SNJ54AHC<br>273FK | <a href="#">Samples</a> |
| SNJ54AHC273J     | ACTIVE        | CDIP         | J                  | 20   | 1              | TBD                        | A42              | N / A for Pkg Type   | -55 to 125   | 5962-9853001QR<br>A<br>SNJ54AHC273J      | <a href="#">Samples</a> |
| SNJ54AHC273W     | ACTIVE        | CFP          | W                  | 20   | 1              | TBD                        | Call TI          | N / A for Pkg Type   | -55 to 125   | 5962-9853001QS<br>A<br>SNJ54AHC273W      | <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.



<sup>(2)</sup> 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)

<sup>(3)</sup> MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

<sup>(4)</sup> Multiple Top-Side Markings will be inside parentheses. Only one Top-Side 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 Top-Side Marking for that device.

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#### **OTHER QUALIFIED VERSIONS OF SN54AHC273, SN74AHC273 :**

- Catalog: [SN74AHC273](#)

- Military: [SN54AHC273](#)

NOTE: Qualified Version Definitions:

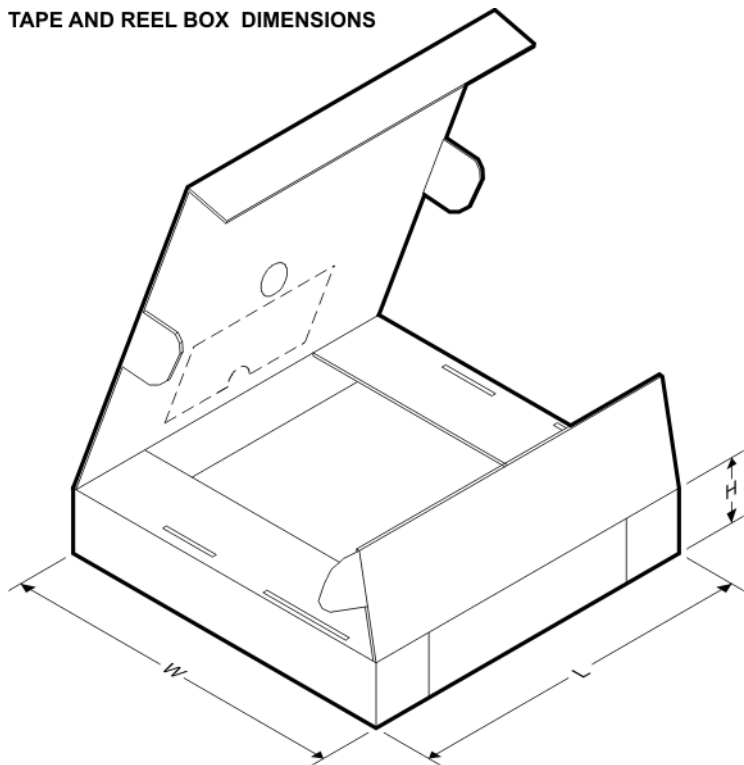
- Catalog - TI's standard catalog product
- Military - QML certified for Military and Defense Applications

**TAPE AND REEL INFORMATION**


\*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 |
|----------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| SN74AHC273DBR  | SSOP         | DB              | 20   | 2000 | 330.0              | 16.4               | 8.2     | 7.5     | 2.5     | 12.0    | 16.0   | Q1            |
| SN74AHC273DGVR | TVSOP        | DGV             | 20   | 2000 | 330.0              | 12.4               | 6.9     | 5.6     | 1.6     | 8.0     | 12.0   | Q1            |
| SN74AHC273DWR  | SOIC         | DW              | 20   | 2000 | 330.0              | 24.4               | 10.8    | 13.0    | 2.7     | 12.0    | 24.0   | Q1            |
| SN74AHC273NSR  | SO           | NS              | 20   | 2000 | 330.0              | 24.4               | 8.2     | 13.0    | 2.5     | 12.0    | 24.0   | Q1            |
| SN74AHC273PWR  | TSSOP        | PW              | 20   | 2000 | 330.0              | 16.4               | 6.95    | 7.1     | 1.6     | 8.0     | 16.0   | Q1            |

## TAPE AND REEL BOX DIMENSIONS



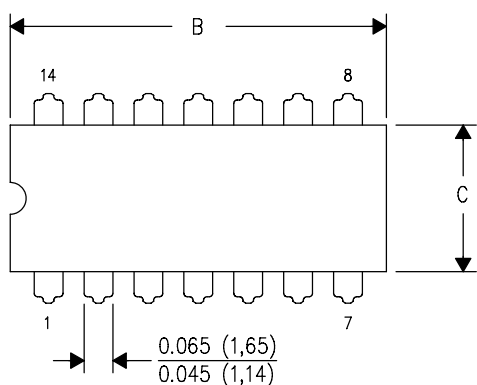
\*All dimensions are nominal

| Device         | Package Type | Package Drawing | Pins | SPQ  | Length (mm) | Width (mm) | Height (mm) |
|----------------|--------------|-----------------|------|------|-------------|------------|-------------|
| SN74AHC273DBR  | SSOP         | DB              | 20   | 2000 | 367.0       | 367.0      | 38.0        |
| SN74AHC273DGVR | TVSOP        | DGV             | 20   | 2000 | 367.0       | 367.0      | 35.0        |
| SN74AHC273DWR  | SOIC         | DW              | 20   | 2000 | 367.0       | 367.0      | 45.0        |
| SN74AHC273NSR  | SO           | NS              | 20   | 2000 | 367.0       | 367.0      | 45.0        |
| SN74AHC273PWR  | TSSOP        | PW              | 20   | 2000 | 367.0       | 367.0      | 38.0        |

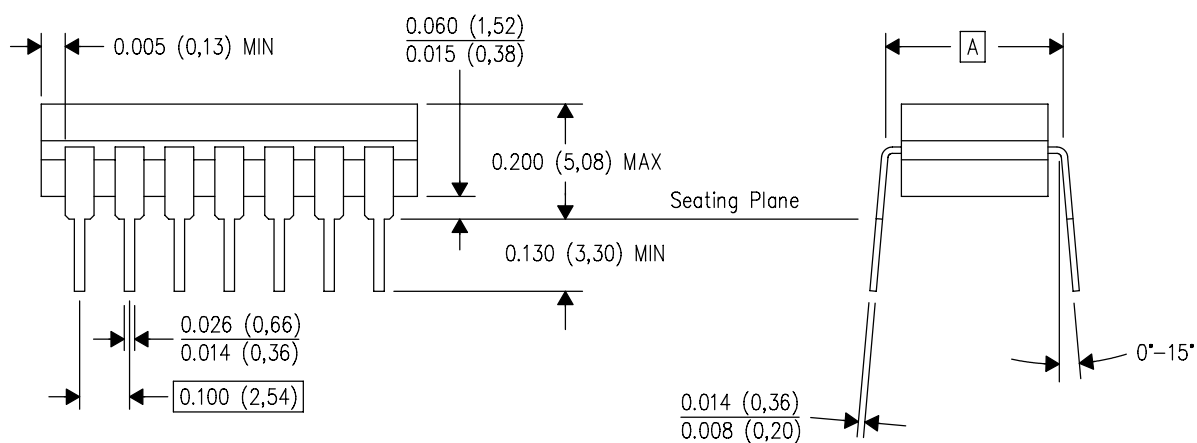
J (R-GDIP-T\*\*)

14 LEADS SHOWN

# CERAMIC DUAL IN-LINE PACKAGE



| PINS **<br>DIM | 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)        |

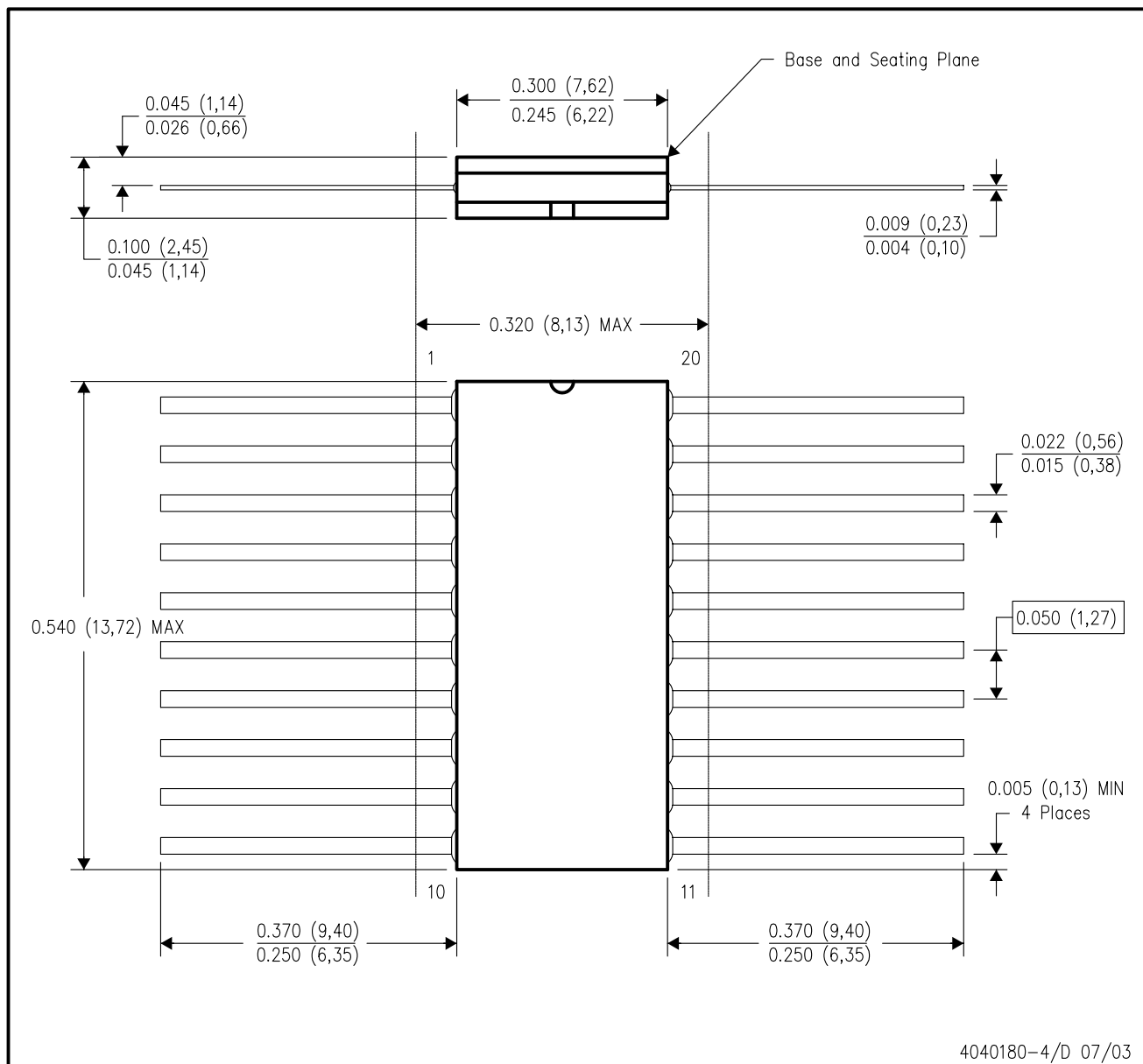


4040083/F 03/03

- NOTES:
- 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-F20)

CERAMIC DUAL FLATPACK

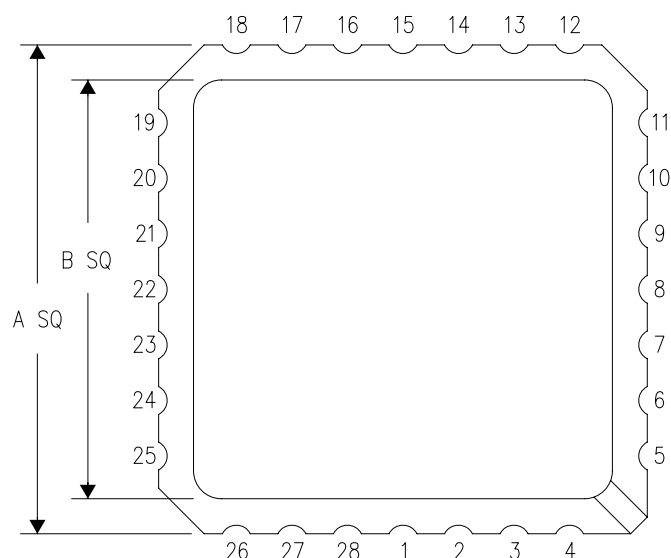


- NOTES:
- All linear dimensions are in inches (millimeters).
  - This drawing is subject to change without notice.
  - This package can be hermetically sealed with a ceramic lid using glass frit.
  - Index point is provided on cap for terminal identification only.
  - Falls within Mil-Std 1835 GDFP2-F20

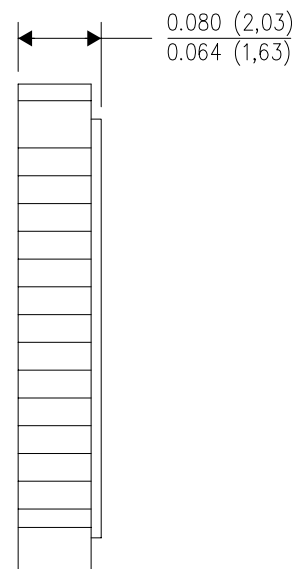
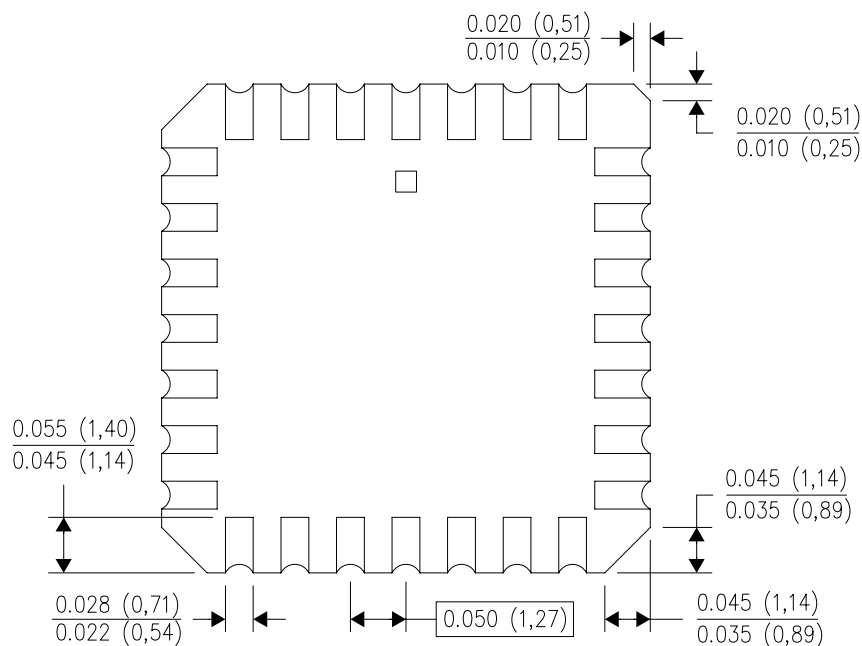
FK (S-CQCC-N\*\*)

LEADLESS CERAMIC CHIP CARRIER

28 TERMINAL SHOWN



| NO. OF<br>TERMINALS<br>** | 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)  |



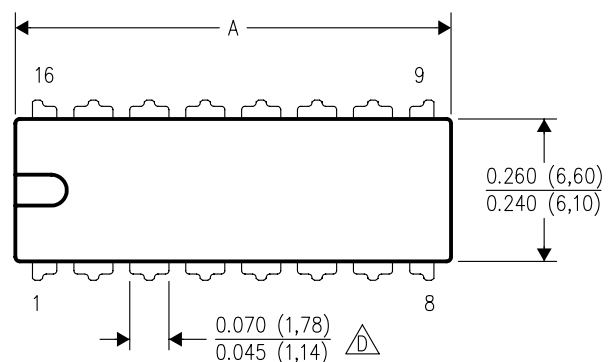
4040140/D 01/11

- 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

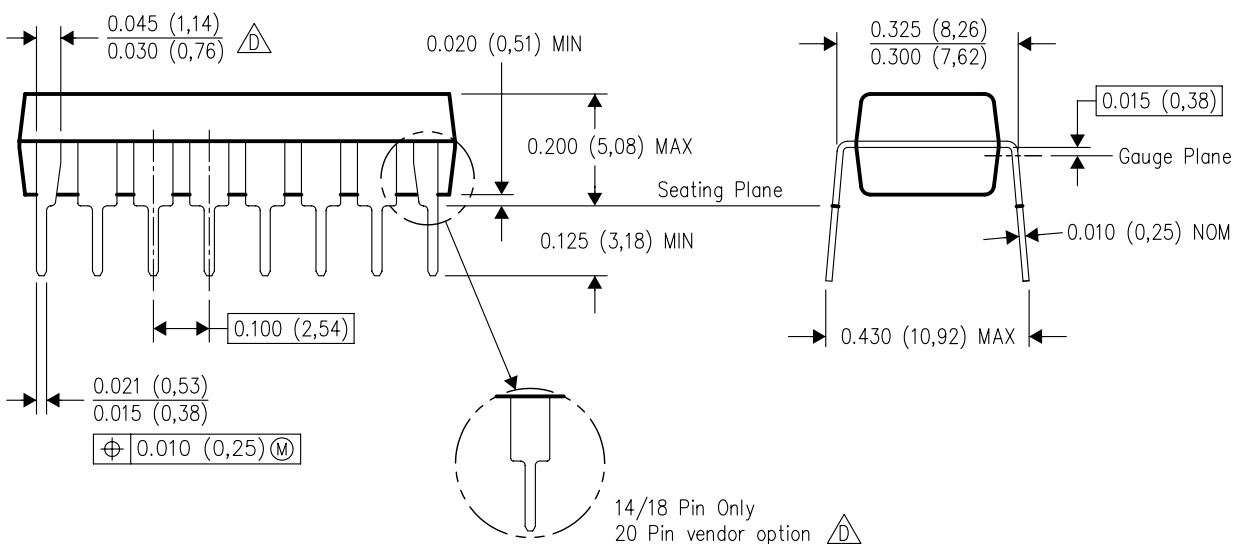
N (R-PDIP-T\*\*)

16 PINS SHOWN

## PLASTIC DUAL-IN-LINE PACKAGE



| 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               |



4040049/E 12/2002

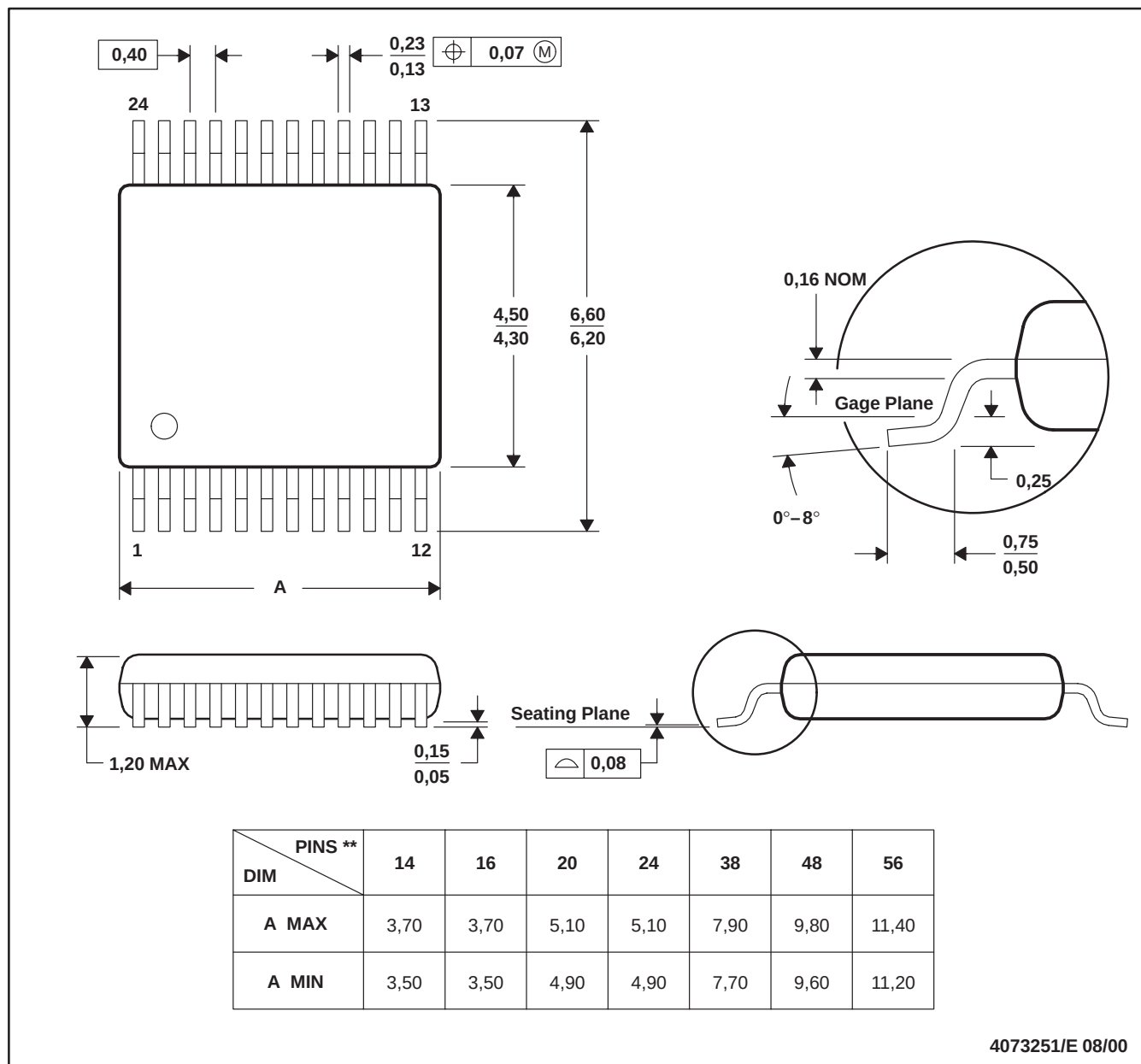
NOTES:

- 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.

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

## PLASTIC SMALL-OUTLINE

24 PINS SHOWN

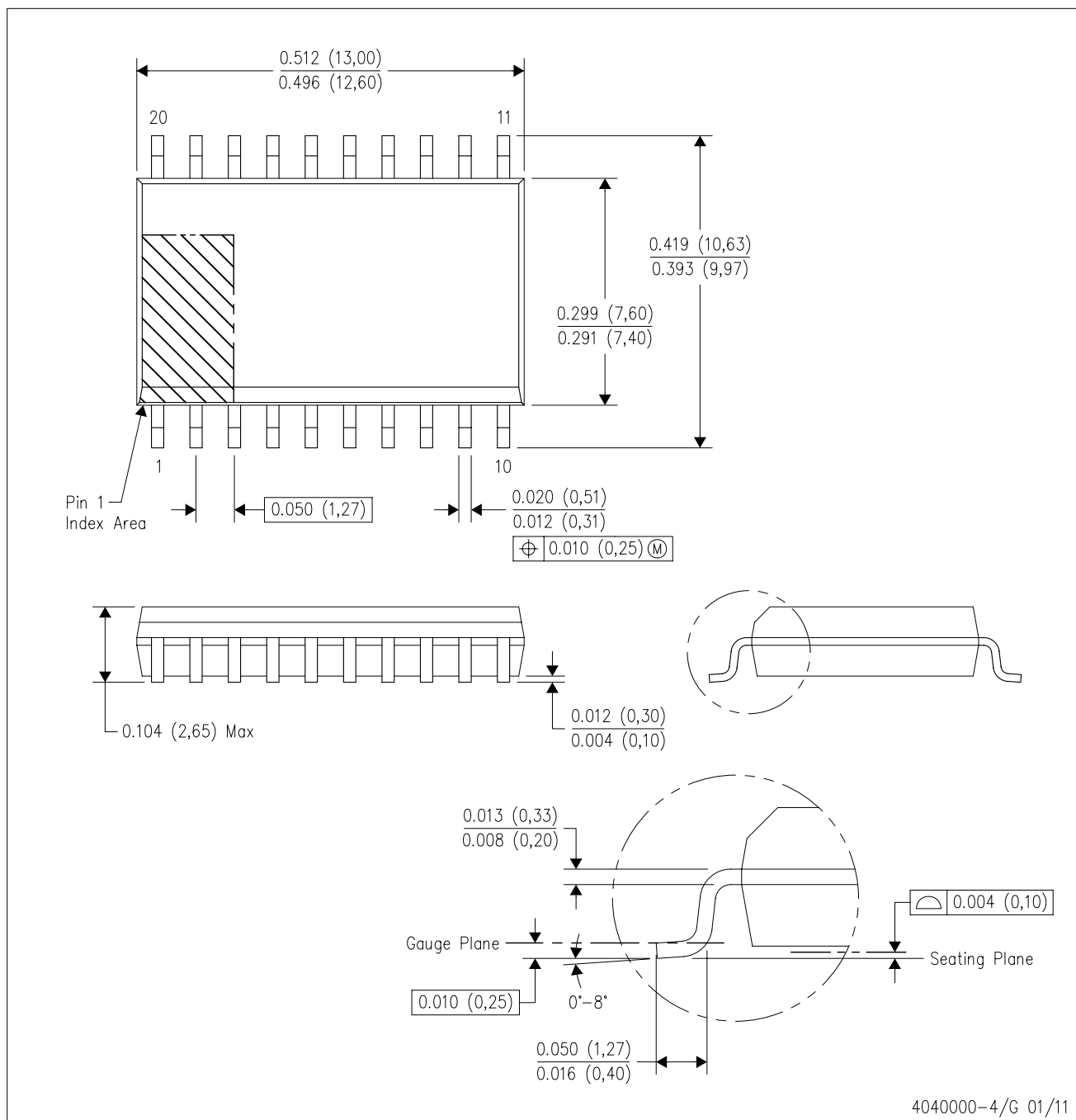


- NOTES: A. All linear dimensions are in millimeters.  
 B. This drawing is subject to change without notice.  
 C. Body dimensions do not include mold flash or protrusion, not to exceed 0,15 per side.  
 D. Falls within JEDEC: 24/48 Pins – MO-153  
 14/16/20/56 Pins – MO-194



DW (R-PDSO-G20)

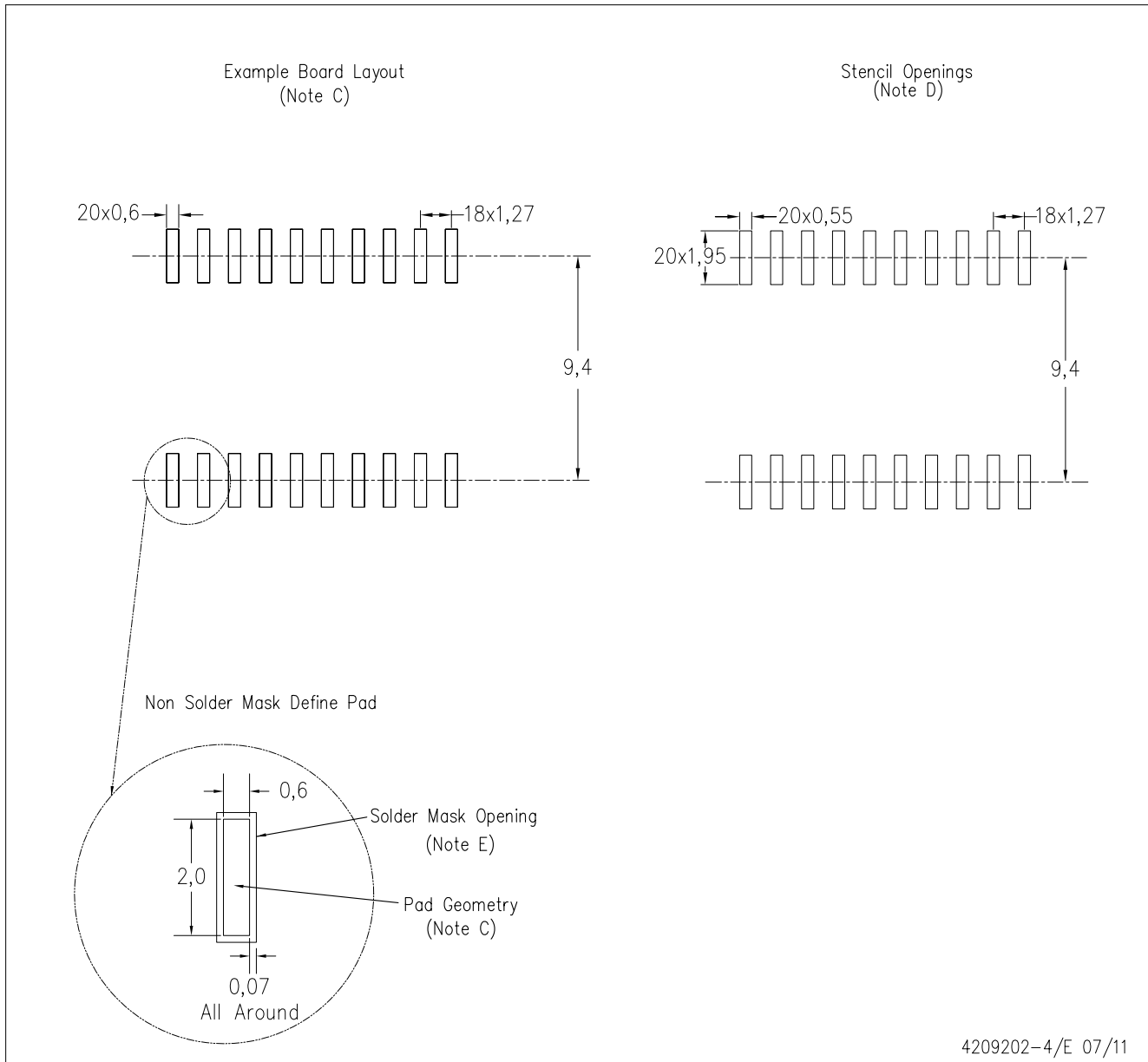
# PLASTIC SMALL OUTLINE



- NOTES: A. All linear dimensions are in inches (millimeters). Dimensioning and tolerancing per ASME Y14.5M-1994.  
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.

DW (R-PDSO-G20)

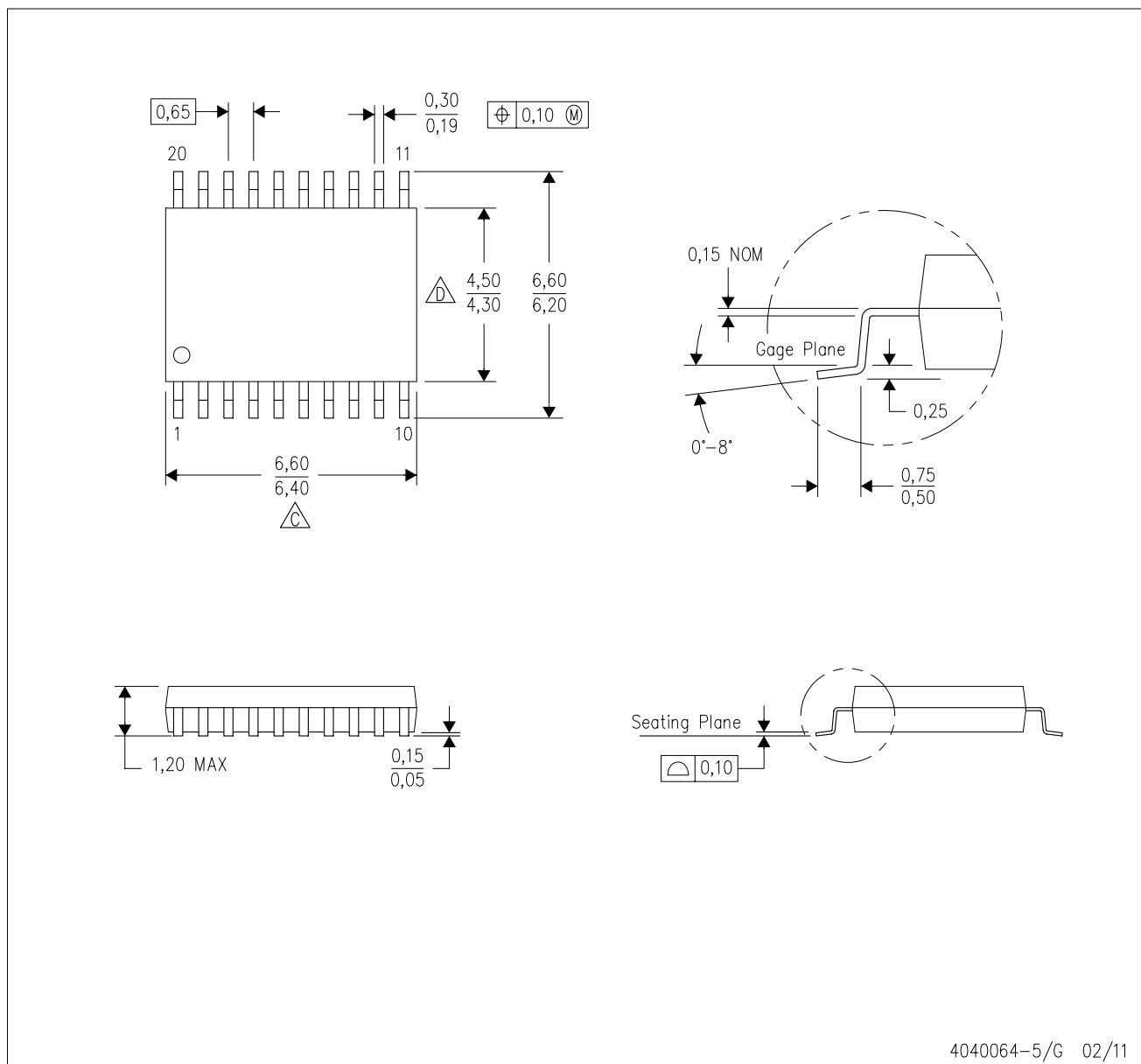
PLASTIC SMALL OUTLINE



- NOTES:
- A. All linear dimensions are in millimeters.
  - B. This drawing is subject to change without notice.
  - C. Refer to IPC7351 for alternate board 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
  - E. Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

PW (R-PDSO-G20)

PLASTIC SMALL OUTLINE



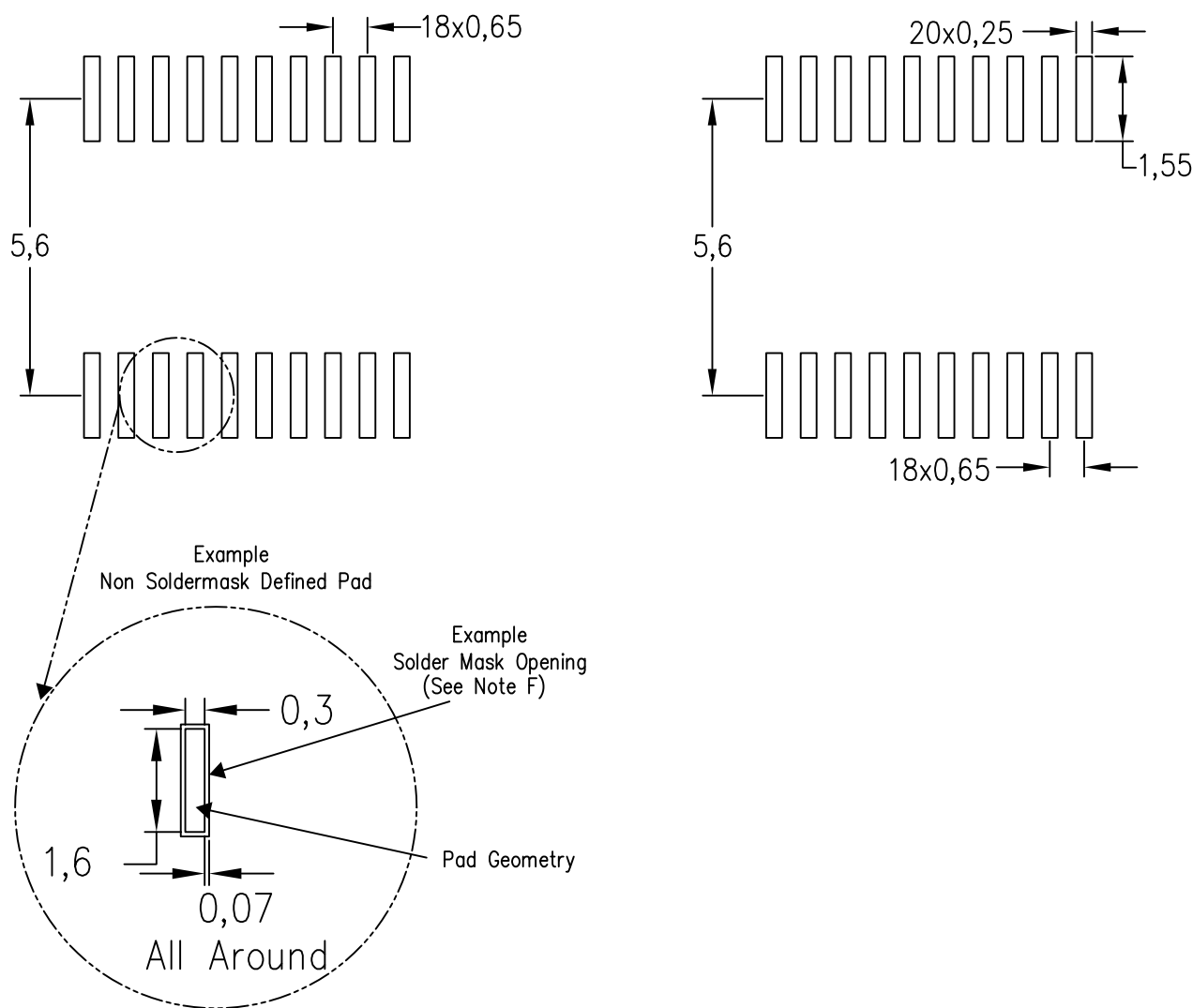
- NOTES:
- A. All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M-1994.
  - B. This drawing is subject to change without notice.
  - C. Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0,15 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

Example Board Layout

Based on a stencil thickness  
of .127mm (.005inch).



4211284-5/F 12/12

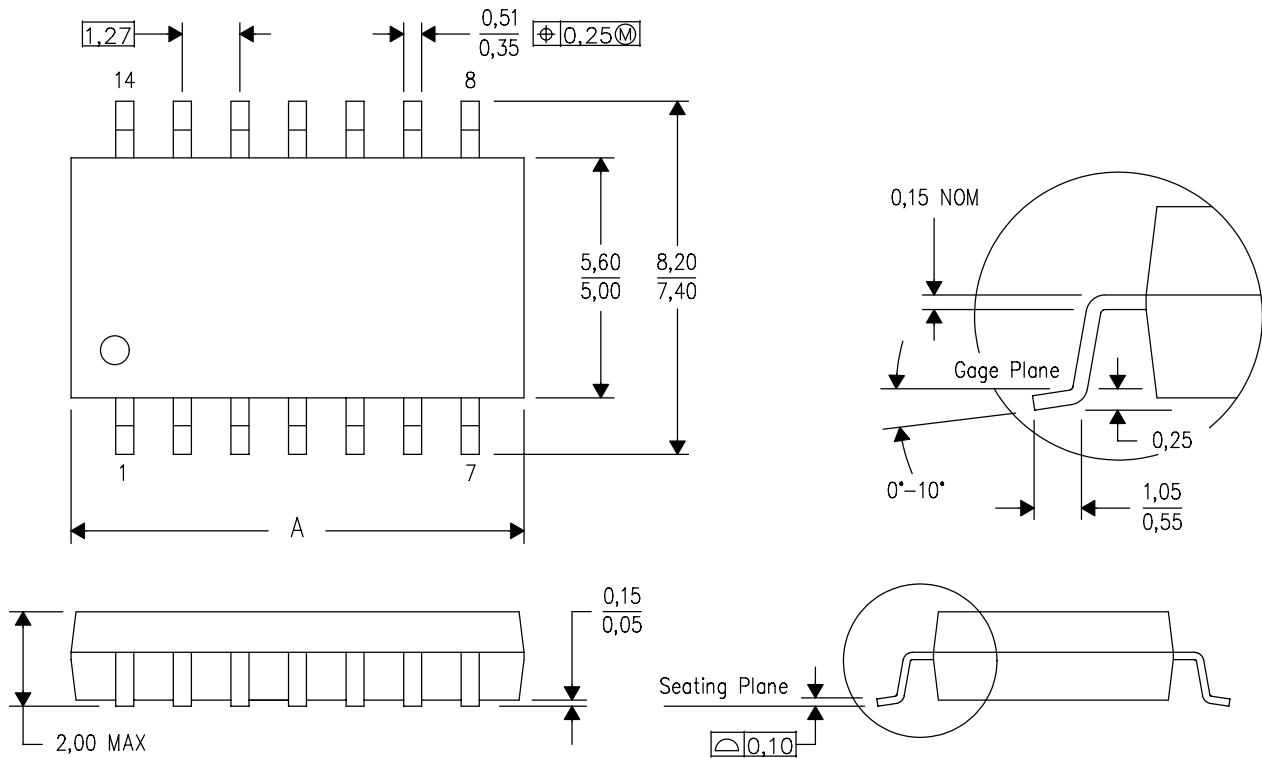
- NOTES:
- A. All linear dimensions are in millimeters.
  - B. This drawing is subject to change without notice.
  - C. Publication IPC-7351 is recommended for alternate design.
  - D. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers 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.

# MECHANICAL DATA

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

PLASTIC SMALL-OUTLINE PACKAGE

14-PINS SHOWN



| 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 |

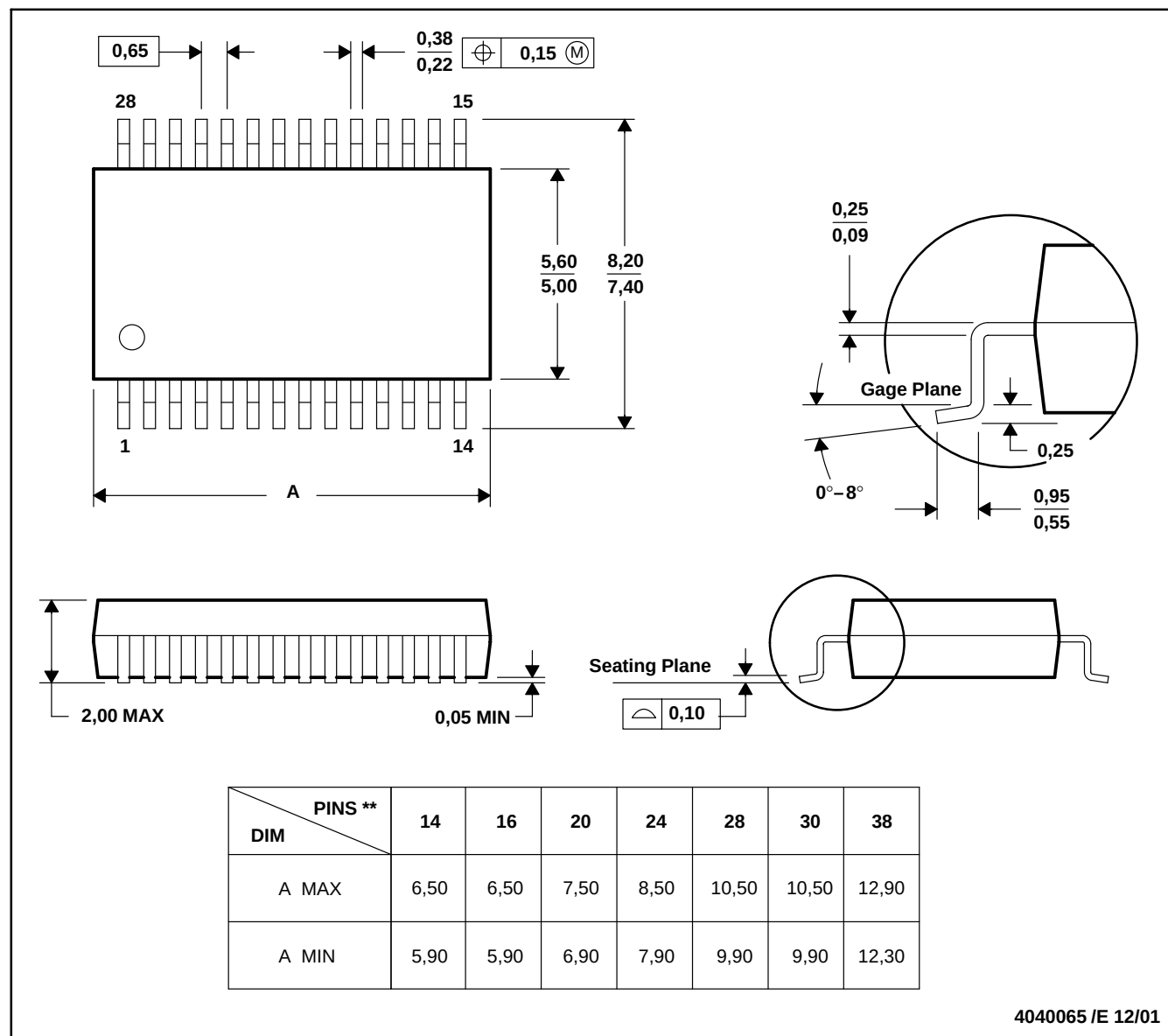
4040062/C 03/03

- 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.

## 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

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| Data Converters              | <a href="http://dataconverter.ti.com">dataconverter.ti.com</a>                       |
| DLP® Products                | <a href="http://www.dlp.com">www.dlp.com</a>                                         |
| DSP                          | <a href="http://dsp.ti.com">dsp.ti.com</a>                                           |
| Clocks and Timers            | <a href="http://www.ti.com/clocks">www.ti.com/clocks</a>                             |
| Interface                    | <a href="http://interface.ti.com">interface.ti.com</a>                               |
| Logic                        | <a href="http://logic.ti.com">logic.ti.com</a>                                       |
| Power Mgmt                   | <a href="http://power.ti.com">power.ti.com</a>                                       |
| Microcontrollers             | <a href="http://microcontroller.ti.com">microcontroller.ti.com</a>                   |
| RFID                         | <a href="http://www.ti-rfid.com">www.ti-rfid.com</a>                                 |
| OMAP Applications Processors | <a href="http://www.ti.com/omap">www.ti.com/omap</a>                                 |
| Wireless Connectivity        | <a href="http://www.ti.com/wirelessconnectivity">www.ti.com/wirelessconnectivity</a> |

### Applications

|                               |                                                                                          |
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| Communications and Telecom    | <a href="http://www.ti.com/communications">www.ti.com/communications</a>                 |
| Computers and Peripherals     | <a href="http://www.ti.com/computers">www.ti.com/computers</a>                           |
| Consumer Electronics          | <a href="http://www.ti.com/consumer-apps">www.ti.com/consumer-apps</a>                   |
| Energy and Lighting           | <a href="http://www.ti.com/energy">www.ti.com/energy</a>                                 |
| Industrial                    | <a href="http://www.ti.com/industrial">www.ti.com/industrial</a>                         |
| Medical                       | <a href="http://www.ti.com/medical">www.ti.com/medical</a>                               |
| Security                      | <a href="http://www.ti.com/security">www.ti.com/security</a>                             |
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