

### Features

- Three-State Outputs
- Separate Output Enable Inputs
- Fanout (Over Temperature Range)
  - Standard Outputs . . . . . 10 LSTTL Loads
  - Bus Driver Outputs . . . . . 15 LSTTL Loads
- Wide Operating Temperature Range . . . -55°C to 125°C
- Balanced Propagation Delay and Transition Times
- Significant Power Reduction Compared to LSTTL Logic ICs
- HC Types
  - 2V to 6V Operation
  - High Noise Immunity:  $N_{IL} = 30\%$ ,  $N_{IH} = 30\%$  of  $V_{CC}$  at  $V_{CC} = 5V$
- HCT Types
  - 4.5V to 5.5V Operation
  - Direct LSTTL Input Logic Compatibility,  $V_{IL} = 0.8V$  (Max),  $V_{IH} = 2V$  (Min)
  - CMOS Input Compatibility,  $I_I \leq 1\mu A$  at  $V_{OL}$ ,  $V_{OH}$

### Description

The 'HC125 and 'HCT125 contain 4 independent three-state buffers, each having its own output enable input, which when "HIGH" puts the output in the high impedance state.

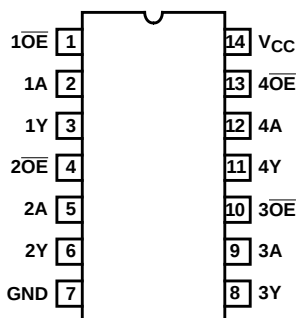
### Ordering Information

| PART NUMBER   | TEMP. RANGE (°C) | PACKAGE      |
|---------------|------------------|--------------|
| CD54HC125F3A  | -55 to 125       | 14 Ld CERDIP |
| CD54HCT125F3A | -55 to 125       | 14 Ld CERDIP |
| CD74HC125E    | -55 to 125       | 14 Ld PDIP   |
| CD74HC125M    | -55 to 125       | 14 Ld SOIC   |
| CD74HC125MT   | -55 to 125       | 14 Ld SOIC   |
| CD74HC125M96  | -55 to 125       | 14 Ld SOIC   |
| CD74HCT125E   | -55 to 125       | 14 Ld PDIP   |
| CD74HCT125M   | -55 to 125       | 14 Ld SOIC   |
| CD74HCT125MT  | -55 to 125       | 14 Ld SOIC   |
| CD74HCT125M96 | -55 to 125       | 14 Ld SOIC   |

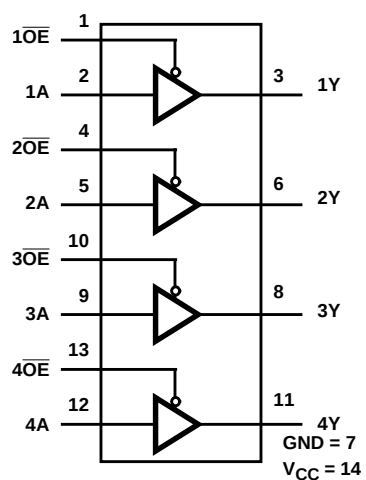
NOTE: When ordering, use the entire part number. The suffix 96 denotes tape and reel. The suffix T denotes a small-quantity reel of 250.

### Pinout

CD54HC125, CD54HCT125  
(CERDIP)  
CD74HC125, CD74HCT125  
(PDIP, SOIC)  
TOP VIEW



## Functional Diagram

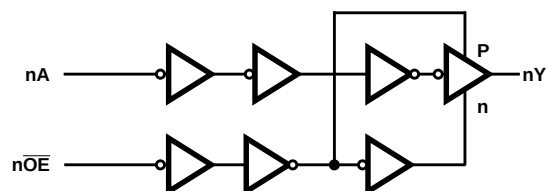


TRUTH TABLE

| INPUTS |     | OUTPUTS |
|--------|-----|---------|
| nA     | nOE | nY      |
| H      | L   | H       |
| L      | L   | L       |
| X      | H   | Z       |

H= High Voltage Level  
 L= Low Voltage Level  
 X= Don't Care  
 Z= High Impedance, OFF State

## Logic Diagram



# CD54HC125, CD74HC125, CD54HCT125, CD74HCT125

## Absolute Maximum Ratings

|                                                        |             |
|--------------------------------------------------------|-------------|
| DC Supply Voltage, $V_{CC}$                            | -0.5V to 7V |
| DC Input Diode Current, $I_{IK}$                       |             |
| For $V_I < -0.5V$ or $V_I > V_{CC} + 0.5V$             | $\pm 20mA$  |
| DC Output Diode Current, $I_{OK}$                      |             |
| For $V_O < -0.5V$ or $V_O > V_{CC} + 0.5V$             | $\pm 20mA$  |
| DC Drain Current, per Output, $I_O$                    |             |
| For $-0.5V < V_O < V_{CC} + 0.5V$                      | $\pm 35mA$  |
| DC Output Source or Sink Current per Output Pin, $I_O$ |             |
| For $V_O > -0.5V$ or $V_O < V_{CC} + 0.5V$             | $\pm 25mA$  |
| DC $V_{CC}$ or Ground Current, $I_{CC}$                | $\pm 70mA$  |

## Thermal Information

|                                          |                                    |
|------------------------------------------|------------------------------------|
| Thermal Resistance (Typical, Note 1)     | $\theta_{JA}$ ( $^{\circ}C/W$ )    |
| E (PDIP) Package                         | 80                                 |
| M (SOIC) Package                         | 86                                 |
| Maximum Junction Temperature             | 150 $^{\circ}C$                    |
| Maximum Storage Temperature Range        | -65 $^{\circ}C$ to 150 $^{\circ}C$ |
| Maximum Lead Temperature (Soldering 10s) | 300 $^{\circ}C$                    |
| (SOIC - Lead Tips Only)                  |                                    |

## Operating Conditions

|                                           |                                    |
|-------------------------------------------|------------------------------------|
| Temperature Range ( $T_A$ )               | -55 $^{\circ}C$ to 125 $^{\circ}C$ |
| Supply Voltage Range, $V_{CC}$            |                                    |
| HC Types                                  | .2V to 6V                          |
| HCT Types                                 | .4.5V to 5.5V                      |
| DC Input or Output Voltage, $V_I$ , $V_O$ | 0V to $V_{CC}$                     |
| Input Rise and Fall Time                  |                                    |
| 2V                                        | 1000ns (Max)                       |
| 4.5V                                      | 500ns (Max)                        |
| 6V                                        | 400ns (Max)                        |

CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

### NOTE:

1. The package thermal impedance is calculated in accordance with JESD 51-7.

## DC Electrical Specifications

| PARAMETER                               | SYMBOL          | TEST CONDITIONS                       |                     | V <sub>CC</sub> (V) | 25°C |     |      | -40°C TO 85°C |      | -55°C TO 125°C |      | UNITS |
|-----------------------------------------|-----------------|---------------------------------------|---------------------|---------------------|------|-----|------|---------------|------|----------------|------|-------|
|                                         |                 | V <sub>I</sub> (V)                    | I <sub>O</sub> (mA) |                     | MIN  | TYP | MAX  | MIN           | MAX  | MIN            | MAX  |       |
| HC TYPES                                |                 |                                       |                     |                     |      |     |      |               |      |                |      |       |
| High Level Input Voltage                | V <sub>IH</sub> | -                                     | -                   | 2                   | 1.5  | -   | -    | 1.5           | -    | 1.5            | -    | V     |
|                                         |                 |                                       |                     | 4.5                 | 3.15 | -   | -    | 3.15          | -    | 3.15           | -    | V     |
|                                         |                 |                                       |                     | 6                   | 4.2  | -   | -    | 4.2           | -    | 4.2            | -    | V     |
| Low Level Input Voltage                 | V <sub>IL</sub> | -                                     | -                   | 2                   | -    | -   | 0.5  | -             | 0.5  | -              | 0.5  | V     |
|                                         |                 |                                       |                     | 4.5                 | -    | -   | 1.35 | -             | 1.35 | -              | 1.35 | V     |
|                                         |                 |                                       |                     | 6                   | -    | -   | 1.8  | -             | 1.8  | -              | 1.8  | V     |
| High Level Output Voltage<br>CMOS Loads | V <sub>OH</sub> | V <sub>IH</sub> or<br>V <sub>IL</sub> | -0.02               | 2                   | 1.9  | -   | -    | 1.9           | -    | 1.9            | -    | V     |
|                                         |                 |                                       | -0.02               | 4.5                 | 4.4  | -   | -    | 4.4           | -    | 4.4            | -    | V     |
|                                         |                 |                                       | -0.02               | 6                   | 5.9  | -   | -    | 5.9           | -    | 5.9            | -    | V     |
| High Level Output Voltage<br>TTL Loads  | V <sub>OH</sub> | V <sub>IH</sub> or<br>V <sub>IL</sub> | -6                  | 4.5                 | 3.98 | -   | -    | 3.84          | -    | 3.7            | -    | V     |
|                                         |                 |                                       | -7.8                | 6                   | 5.48 | -   | -    | 5.34          | -    | 5.2            | -    | V     |
| Low Level Output Voltage<br>CMOS Loads  | V <sub>OL</sub> | V <sub>IH</sub> or<br>V <sub>IL</sub> | 0.02                | 2                   | -    | -   | 0.1  | -             | 0.1  | -              | 0.1  | V     |
|                                         |                 |                                       | 0.02                | 4.5                 | -    | -   | 0.1  | -             | 0.1  | -              | 0.1  | V     |
|                                         |                 |                                       | 0.02                | 6                   | -    | -   | 0.1  | -             | 0.1  | -              | 0.1  | V     |
| Low Level Output Voltage<br>TTL Loads   | V <sub>OL</sub> | V <sub>IH</sub> or<br>V <sub>IL</sub> | 6                   | 4.5                 | -    | -   | 0.26 | -             | 0.33 | -              | 0.4  | V     |
|                                         |                 |                                       | 7.8                 | 6                   | -    | -   | 0.26 | -             | 0.33 | -              | 0.4  | V     |
| Input Leakage Current                   | I <sub>I</sub>  | V <sub>CC</sub> or<br>GND             | -                   | 6                   | -    | -   | ±0.1 | -             | ±1   | -              | ±1   | μA    |

**CD54HC125, CD74HC125, CD54HCT125, CD74HCT125**

**DC Electrical Specifications (Continued)**

| PARAMETER                                                      | SYMBOL                      | TEST CONDITIONS      |            | $V_{CC}$ (V) | 25°C |     |           | -40°C TO 85°C |         | -55°C TO 125°C |          | UNITS   |
|----------------------------------------------------------------|-----------------------------|----------------------|------------|--------------|------|-----|-----------|---------------|---------|----------------|----------|---------|
|                                                                |                             | $V_I$ (V)            | $I_O$ (mA) |              | MIN  | TYP | MAX       | MIN           | MAX     | MIN            | MAX      |         |
| Quiescent Device Current                                       | $I_{CC}$                    | $V_{CC}$ or GND      | 0          | 6            | -    | -   | 8         | -             | 80      | -              | 160      | $\mu A$ |
| Three-State Leakage Current                                    | $I_{OZ}$                    | $V_{IL}$ or $V_{IH}$ | -          | 6            | -    | -   | $\pm 0.5$ | -             | $\pm 5$ | -              | $\pm 10$ | $\mu A$ |
| <b>HCT TYPES</b>                                               |                             |                      |            |              |      |     |           |               |         |                |          |         |
| High Level Input Voltage                                       | $V_{IH}$                    | -                    | -          | 4.5 to 5.5   | 2    | -   | -         | 2             | -       | 2              | -        | V       |
| Low Level Input Voltage                                        | $V_{IL}$                    | -                    | -          | 4.5 to 5.5   | -    | -   | 0.8       | -             | 0.8     | -              | 0.8      | V       |
| High Level Output Voltage<br>CMOS Loads                        | $V_{OH}$                    | $V_{IH}$ or $V_{IL}$ | -0.02      | 4.5          | 4.4  | -   | -         | 4.4           | -       | 4.4            | -        | V       |
| High Level Output Voltage<br>TTL Loads                         |                             |                      | -6         | 4.5          | 3.98 | -   | -         | 3.84          | -       | 3.7            | -        | V       |
| Low Level Output Voltage<br>CMOS Loads                         | $V_{OL}$                    | $V_{IH}$ or $V_{IL}$ | 0.02       | 4.5          | -    | -   | 0.1       | -             | 0.1     | -              | 0.1      | V       |
| Low Level Output Voltage<br>TTL Loads                          |                             |                      | 6          | 4.5          | -    | -   | 0.26      | -             | 0.33    | -              | 0.4      | V       |
| Input Leakage Current                                          | $I_I$                       | $V_{CC}$ to GND      | 0          | 5.5          | -    | -   | $\pm 0.1$ | -             | $\pm 1$ | -              | $\pm 1$  | $\mu A$ |
| Quiescent Device Current                                       | $I_{CC}$                    | $V_{CC}$ or GND      | 0          | 5.5          | -    | -   | 8         | -             | 80      | -              | 160      | $\mu A$ |
| Additional Quiescent Device Current Per Input Pin: 1 Unit Load | $\Delta I_{CC}$<br>(Note 2) | $V_{CC}$ -2.1        | -          | 4.5 to 5.5   | -    | 100 | 360       | -             | 450     | -              | 490      | $\mu A$ |
| Three-State Leakage Current                                    | $I_{OZ}$                    | $V_{IL}$ or $V_{IH}$ | -          | 5.5          | -    | -   | $\pm 0.5$ | -             | $\pm 5$ | -              | $\pm 10$ | $\mu A$ |

NOTE:

- For dual-supply systems theoretical worst case ( $V_I = 2.4V$ ,  $V_{CC} = 5.5V$ ) specification is 1.8mA.

**HCT Input Loading Table**

| INPUT                | UNIT LOADS |
|----------------------|------------|
| nA, $n\overline{OE}$ | 1          |

NOTE: Unit Load is  $\Delta I_{CC}$  limit specified in DC Electrical Specifications table, e.g., 360 $\mu A$  max at 25°C.

# CD54HC125, CD74HC125, CD54HCT125, CD74HCT125

## Switching Specifications Input $t_r, t_f = 6\text{ns}$

| PARAMETER                                        | SYMBOL                              | TEST<br>CONDITIONS    | V <sub>CC</sub> (V) | 25°C |     | -40°C TO 85°C | -55°C TO 125°C | UNITS |
|--------------------------------------------------|-------------------------------------|-----------------------|---------------------|------|-----|---------------|----------------|-------|
|                                                  |                                     |                       |                     | TYP  | MAX | MAX           | MAX            |       |
| HC TYPES                                         |                                     |                       |                     |      |     |               |                |       |
| Propagation Delay Time<br>nA to nY               | t <sub>PLH</sub> , t <sub>PHL</sub> | C <sub>L</sub> = 50pF | 2                   | -    | 100 | 125           | 150            | ns    |
|                                                  |                                     |                       | 4.5                 | -    | 20  | 25            | 30             | ns    |
|                                                  |                                     | C <sub>L</sub> = 15pF | 5                   | 8    | -   | -             | -              | ns    |
|                                                  |                                     | CL = 50pF             | 6                   | -    | 17  | 21            | 26             | ns    |
| Enable Delay Time                                | t <sub>PZL</sub> , t <sub>PZH</sub> | C <sub>L</sub> = 50pF | 2                   | -    | 125 | 155           | 190            | ns    |
|                                                  |                                     |                       | 4.5                 | -    | 25  | 31            | 38             | ns    |
|                                                  |                                     | C <sub>L</sub> = 15pF | 5                   | 10   | -   | -             | -              | ns    |
|                                                  |                                     | CL = 50pF             | 6                   | -    | 21  | 26            | 32             | ns    |
| Disable Delay Time                               | t <sub>PLZ</sub> , t <sub>PHZ</sub> | CL = 50pF             | 2                   | -    | 125 | 155           | 190            | ns    |
|                                                  |                                     | C <sub>L</sub> = 50pF | 4.5                 | -    | 25  | 31            | 38             | ns    |
|                                                  |                                     | C <sub>L</sub> = 15pF | 5                   | 10   | -   | -             | -              | ns    |
|                                                  |                                     | CL = 50pF             | 6                   | -    | 21  | 26            | 32             | ns    |
| Output Transition Time                           | t <sub>TLH</sub> , t <sub>THL</sub> | C <sub>L</sub> = 50pF | 2                   | -    | 60  | 75            | 90             | ns    |
|                                                  |                                     |                       | 4.5                 | -    | 12  | 15            | 18             | ns    |
|                                                  |                                     |                       | 6                   | -    | 10  | 13            | 15             | ns    |
| Input Capacitance                                | C <sub>I</sub>                      | -                     | -                   | -    | 10  | 10            | 10             | pF    |
| Three-State Output<br>Capacitance                | C <sub>O</sub>                      | -                     | -                   | -    | 20  | 20            | 20             | pF    |
| Power Dissipation<br>Capacitance<br>(Notes 3, 4) | C <sub>PD</sub>                     | -                     | 5                   | 29   | -   | -             | -              | pF    |
| HCT TYPES                                        |                                     |                       |                     |      |     |               |                |       |
| Propagation Delay Time<br>nA to nY               | t <sub>PLH</sub> , t <sub>PHL</sub> | C <sub>L</sub> = 50pF | 4.5                 | -    | 25  | 31            | 38             | ns    |
|                                                  |                                     | C <sub>L</sub> = 15pF | 5                   | 10   | -   | -             | -              | ns    |
| Output Enable Time                               | t <sub>PZL</sub> , t <sub>PZH</sub> | C <sub>L</sub> = 50pF | 4.5                 | -    | 25  | 31            | 38             | ns    |
|                                                  |                                     | C <sub>L</sub> = 15pF | 5                   | 10   | -   | -             | -              | ns    |
| Output Disabling Time                            | t <sub>PLZ</sub> , t <sub>PHZ</sub> | C <sub>L</sub> = 50pF | 4.5                 | -    | 28  | 35            | 42             | ns    |
|                                                  |                                     | C <sub>L</sub> = 15pF | 5                   | 11   | -   | -             | -              | ns    |
| Output Transition Times                          | t <sub>TLH</sub> , t <sub>THL</sub> | C <sub>L</sub> = 50pF | 4.5                 | -    | 12  | 15            | 18             | ns    |
| Input Capacitance                                | C <sub>I</sub>                      | -                     | -                   | -    | 10  | 10            | 10             | pF    |
| Three-State Output<br>Capacitance                | C <sub>O</sub>                      | -                     | -                   | -    | 20  | 20            | 20             | pF    |
| Power Dissipation<br>Capacitance<br>(Notes 3, 4) | C <sub>PD</sub>                     | -                     | 5                   | 34   | -   | -             | -              | pF    |

### NOTES:

- $C_{PD}$  is used to determine the dynamic power consumption, per channel.
- $P_D = V_{CC}^2 f_i (C_{PD} + C_L)$  where  $f_i$  = Input Frequency,  $f_O$  = Output Frequency,  $C_L$  = Output Load Capacitance,  $V_{CC}$  = Supply Voltage.

## Test Circuits and Waveforms

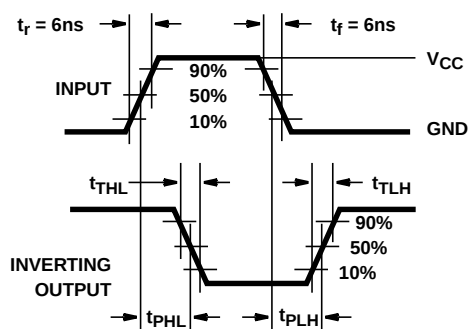


FIGURE 1. HC TRANSITION TIMES AND PROPAGATION DELAY TIMES, COMBINATION LOGIC

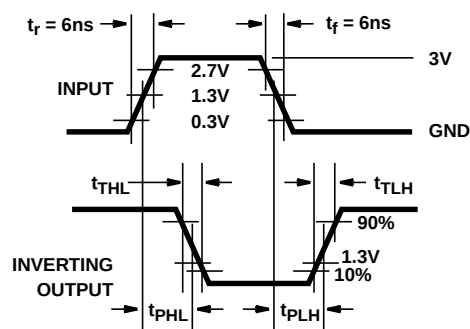


FIGURE 2. HCT TRANSITION TIMES AND PROPAGATION DELAY TIMES, COMBINATION LOGIC

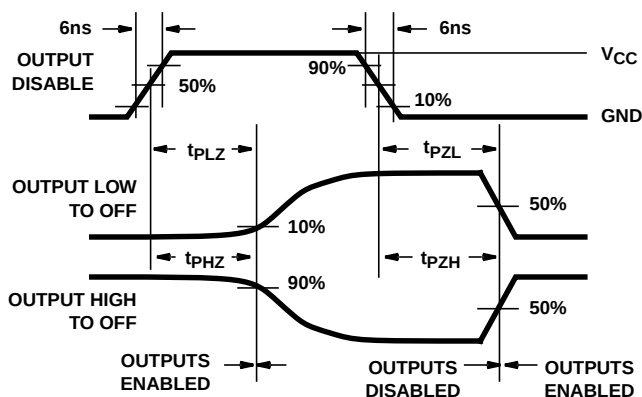


FIGURE 3. HC THREE-STATE PROPAGATION DELAY WAVEFORM

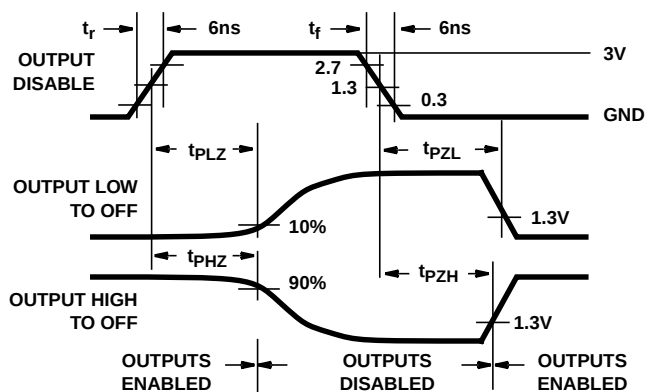
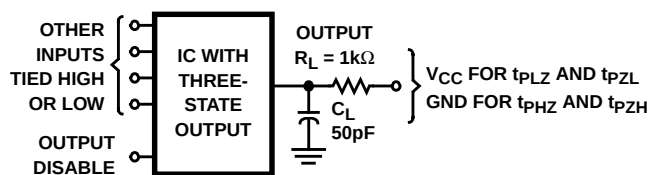


FIGURE 4. HCT THREE-STATE PROPAGATION DELAY WAVEFORM



NOTE: Open drain waveforms  $t_{PLZ}$  and  $t_{PZL}$  are the same as those for three-state shown on the left. The test circuit is Output  $R_L = 1k\Omega$  to  $V_{CC}$ ,  $C_L = 50pF$ .

FIGURE 5. HC AND HCT THREE-STATE PROPAGATION DELAY TEST CIRCUIT

**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                 |
|------------------|---------------|--------------|--------------------|------|----------------|----------------------------|-------------------------|----------------------|--------------|--------------------------------|-------------------------|
| CD54HC125F       | ACTIVE        | CDIP         | J                  | 14   | 1              | TBD                        | A42                     | N / A for Pkg Type   | -55 to 125   | CD54HC125F                     | <a href="#">Samples</a> |
| CD54HC125F3A     | ACTIVE        | CDIP         | J                  | 14   | 1              | TBD                        | A42                     | N / A for Pkg Type   | -55 to 125   | 5962-8772101CA<br>CD54HC125F3A | <a href="#">Samples</a> |
| CD54HCT125F3A    | ACTIVE        | CDIP         | J                  | 14   | 1              | TBD                        | A42                     | N / A for Pkg Type   | -55 to 125   | CD54HCT125F3A                  | <a href="#">Samples</a> |
| CD74HC125E       | ACTIVE        | PDIP         | N                  | 14   | 25             | Pb-Free<br>(RoHS)          | CU NIPDAU               | N / A for Pkg Type   | -55 to 125   | CD74HC125E                     | <a href="#">Samples</a> |
| CD74HC125EE4     | ACTIVE        | PDIP         | N                  | 14   | 25             | Pb-Free<br>(RoHS)          | CU NIPDAU               | N / A for Pkg Type   | -55 to 125   | CD74HC125E                     | <a href="#">Samples</a> |
| CD74HC125M       | ACTIVE        | SOIC         | D                  | 14   | 50             | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -55 to 125   | HC125M                         | <a href="#">Samples</a> |
| CD74HC125M96     | ACTIVE        | SOIC         | D                  | 14   | 2500           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -55 to 125   | HC125M                         | <a href="#">Samples</a> |
| CD74HC125M96E4   | ACTIVE        | SOIC         | D                  | 14   | 2500           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -55 to 125   | HC125M                         | <a href="#">Samples</a> |
| CD74HC125M96G4   | ACTIVE        | SOIC         | D                  | 14   |                | TBD                        | Call TI                 | Call TI              | -55 to 125   | HC125M                         | <a href="#">Samples</a> |
| CD74HC125ME4     | ACTIVE        | SOIC         | D                  | 14   | 50             | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -55 to 125   | HC125M                         | <a href="#">Samples</a> |
| CD74HC125MG4     | ACTIVE        | SOIC         | D                  | 14   | 50             | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -55 to 125   | HC125M                         | <a href="#">Samples</a> |
| CD74HC125MT      | ACTIVE        | SOIC         | D                  | 14   | 250            | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -55 to 125   | HC125M                         | <a href="#">Samples</a> |
| CD74HC125MTE4    | ACTIVE        | SOIC         | D                  | 14   |                | TBD                        | Call TI                 | Call TI              | -55 to 125   | HC125M                         | <a href="#">Samples</a> |
| CD74HC125MTG4    | ACTIVE        | SOIC         | D                  | 14   |                | TBD                        | Call TI                 | Call TI              | -55 to 125   | HC125M                         | <a href="#">Samples</a> |
| CD74HCT125E      | ACTIVE        | PDIP         | N                  | 14   | 25             | Pb-Free<br>(RoHS)          | CU NIPDAU               | N / A for Pkg Type   | -55 to 125   | CD74HCT125E                    | <a href="#">Samples</a> |
| CD74HCT125EE4    | ACTIVE        | PDIP         | N                  | 14   |                | TBD                        | Call TI                 | Call TI              | -55 to 125   | CD74HCT125E                    | <a href="#">Samples</a> |
| CD74HCT125M      | ACTIVE        | SOIC         | D                  | 14   | 50             | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -55 to 125   | HCT125M                        | <a href="#">Samples</a> |
| CD74HCT125M96    | ACTIVE        | SOIC         | D                  | 14   | 2500           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -55 to 125   | HCT125M                        | <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<br>(6) | MSL Peak Temp<br>(3) | Op Temp (°C) | Device Marking<br>(4/5) | Samples                 |
|------------------|---------------|--------------|--------------------|------|----------------|----------------------------|-------------------------|----------------------|--------------|-------------------------|-------------------------|
| CD74HCT125M96E4  | ACTIVE        | SOIC         | D                  | 14   | 2500           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -55 to 125   | HCT125M                 | <a href="#">Samples</a> |
| CD74HCT125M96G4  | ACTIVE        | SOIC         | D                  | 14   | 2500           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -55 to 125   | HCT125M                 | <a href="#">Samples</a> |
| CD74HCT125ME4    | ACTIVE        | SOIC         | D                  | 14   |                | TBD                        | Call TI                 | Call TI              | -55 to 125   | HCT125M                 | <a href="#">Samples</a> |
| CD74HCT125MG4    | ACTIVE        | SOIC         | D                  | 14   |                | TBD                        | Call TI                 | Call TI              | -55 to 125   | HCT125M                 | <a href="#">Samples</a> |
| CD74HCT125MT     | ACTIVE        | SOIC         | D                  | 14   | 250            | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -55 to 125   | HCT125M                 | <a href="#">Samples</a> |
| CD74HCT125MTE4   | ACTIVE        | SOIC         | D                  | 14   |                | TBD                        | Call TI                 | Call TI              | -55 to 125   | HCT125M                 | <a href="#">Samples</a> |
| CD74HCT125MTG4   | ACTIVE        | SOIC         | D                  | 14   |                | TBD                        | Call TI                 | Call TI              | -55 to 125   | HCT125M                 | <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) 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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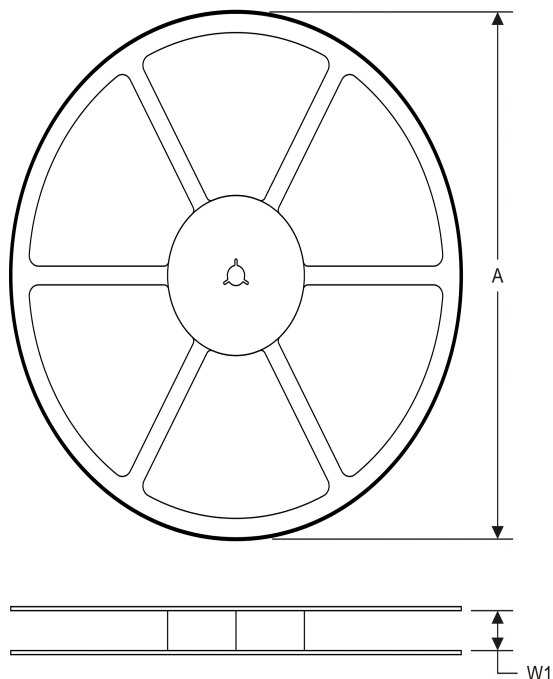
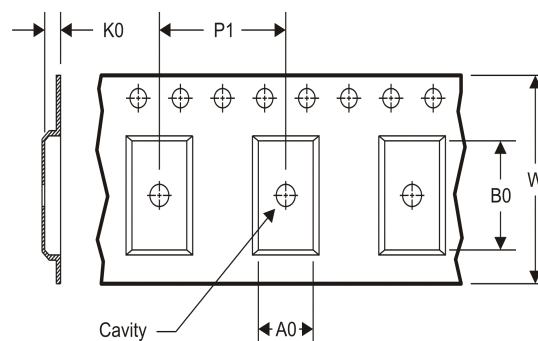
In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

**OTHER QUALIFIED VERSIONS OF CD54HC125, CD54HCT125, CD74HC125, CD74HCT125 :**

- Catalog: [CD74HC125](#), [CD74HCT125](#)
- Automotive: [CD74HC125-Q1](#), [CD74HC125-Q1](#)
- Military: [CD54HC125](#), [CD54HCT125](#)

**NOTE: Qualified Version Definitions:**

- Catalog - TI's standard catalog product
- Automotive - Q100 devices qualified for high-reliability automotive applications targeting zero defects
- Military - QML certified for Military and Defense Applications

**TAPE AND REEL INFORMATION**
**REEL DIMENSIONS**

**TAPE DIMENSIONS**


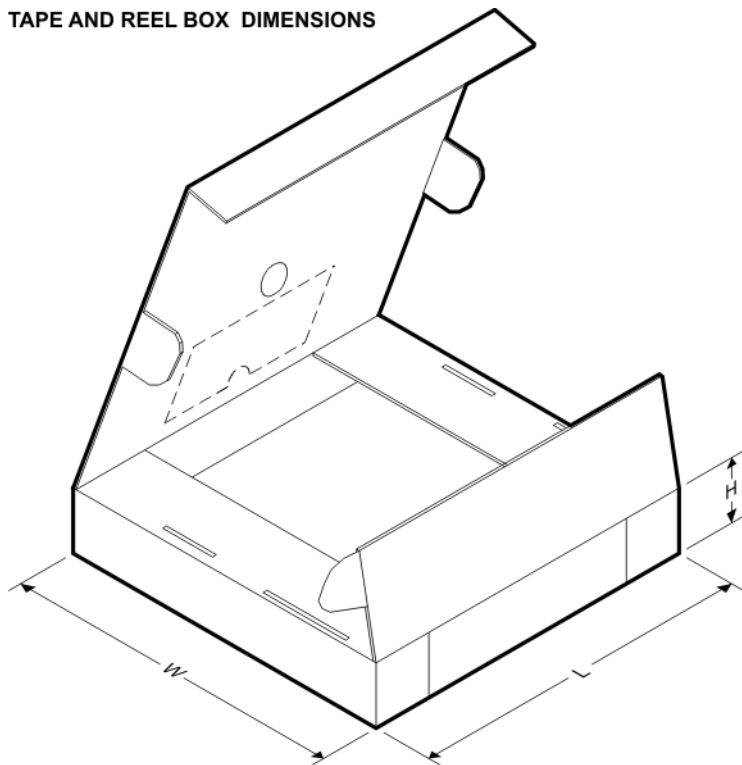
|    |                                                           |
|----|-----------------------------------------------------------|
| A0 | Dimension designed to accommodate the component width     |
| B0 | Dimension designed to accommodate the component length    |
| K0 | Dimension designed to accommodate the component thickness |
| W  | Overall width of the carrier tape                         |
| P1 | Pitch between successive cavity centers                   |

**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 |
|---------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| CD74HC125M96  | SOIC         | D               | 14   | 2500 | 330.0              | 16.4               | 6.5     | 9.0     | 2.1     | 8.0     | 16.0   | Q1            |
| CD74HC125MT   | SOIC         | D               | 14   | 250  | 330.0              | 16.4               | 6.5     | 9.0     | 2.1     | 8.0     | 16.0   | Q1            |
| CD74HCT125M96 | SOIC         | D               | 14   | 2500 | 330.0              | 16.4               | 6.5     | 9.0     | 2.1     | 8.0     | 16.0   | Q1            |
| CD74HCT125MT  | SOIC         | D               | 14   | 250  | 330.0              | 16.4               | 6.5     | 9.0     | 2.1     | 8.0     | 16.0   | Q1            |

## TAPE AND REEL BOX DIMENSIONS



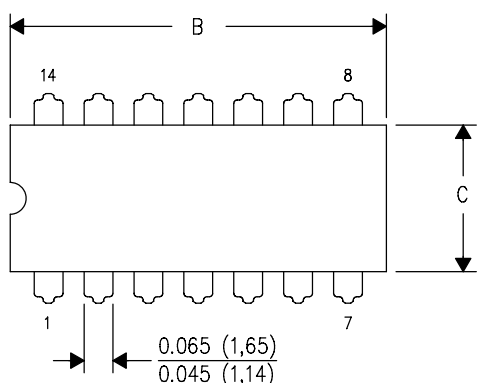
\*All dimensions are nominal

| Device        | Package Type | Package Drawing | Pins | SPQ  | Length (mm) | Width (mm) | Height (mm) |
|---------------|--------------|-----------------|------|------|-------------|------------|-------------|
| CD74HC125M96  | SOIC         | D               | 14   | 2500 | 367.0       | 367.0      | 38.0        |
| CD74HC125MT   | SOIC         | D               | 14   | 250  | 367.0       | 367.0      | 38.0        |
| CD74HCT125M96 | SOIC         | D               | 14   | 2500 | 367.0       | 367.0      | 38.0        |
| CD74HCT125MT  | SOIC         | D               | 14   | 250  | 367.0       | 367.0      | 38.0        |

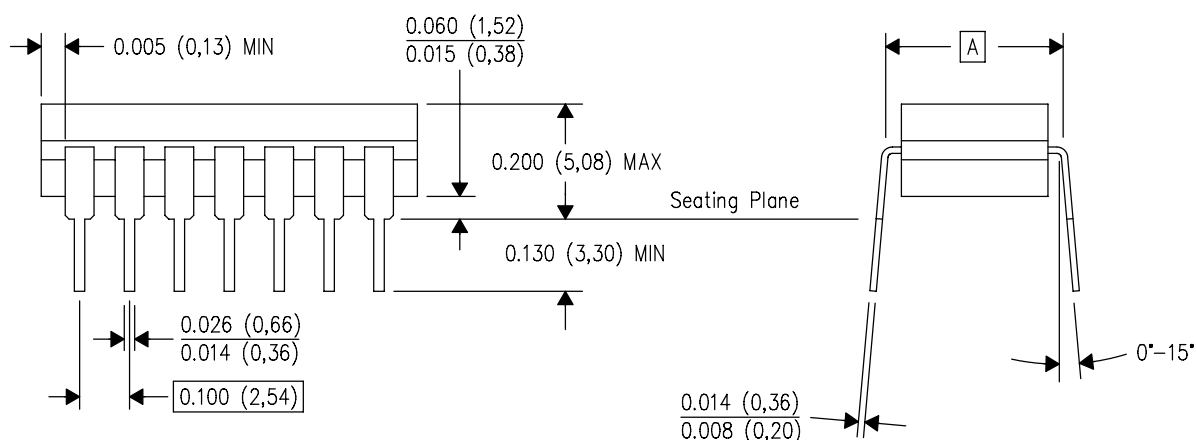
J (R-GDIP-T\*\*)

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)        |



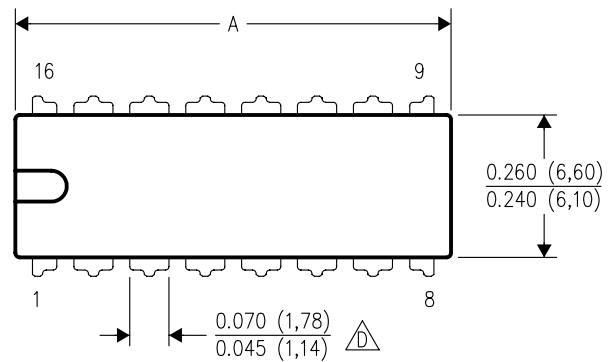
4040083/F 03/03

- 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.

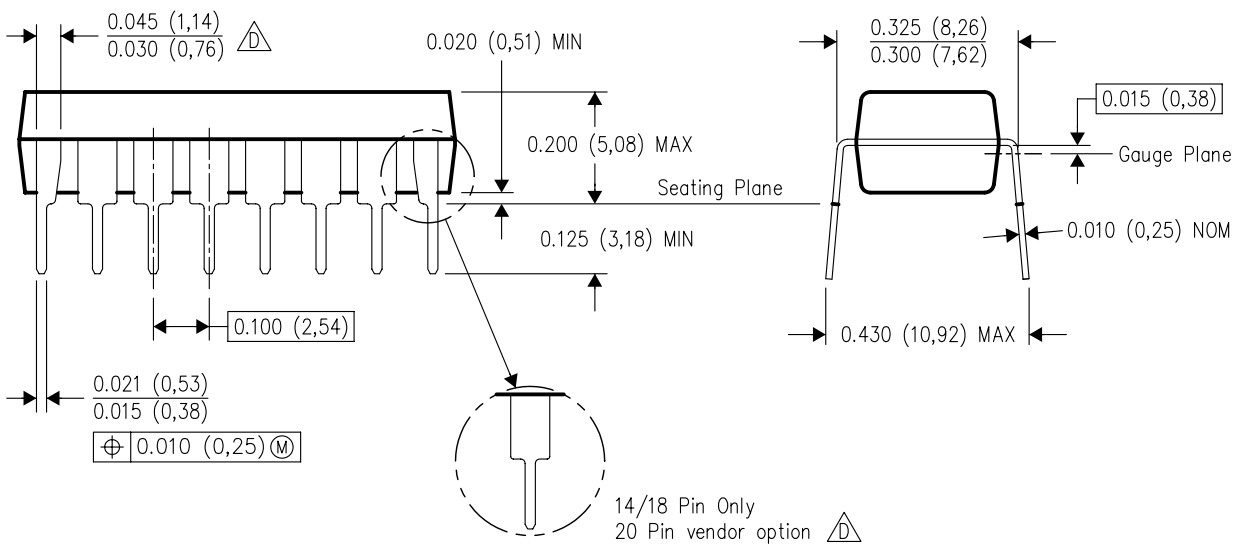
## N (R-PDIP-T\*\*)

16 PINS SHOWN

## PLASTIC DUAL-IN-LINE PACKAGE



| PINS **             | 14               | 16               | 18               | 20               |
|---------------------|------------------|------------------|------------------|------------------|
| DIM                 |                  |                  |                  |                  |
| 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               |



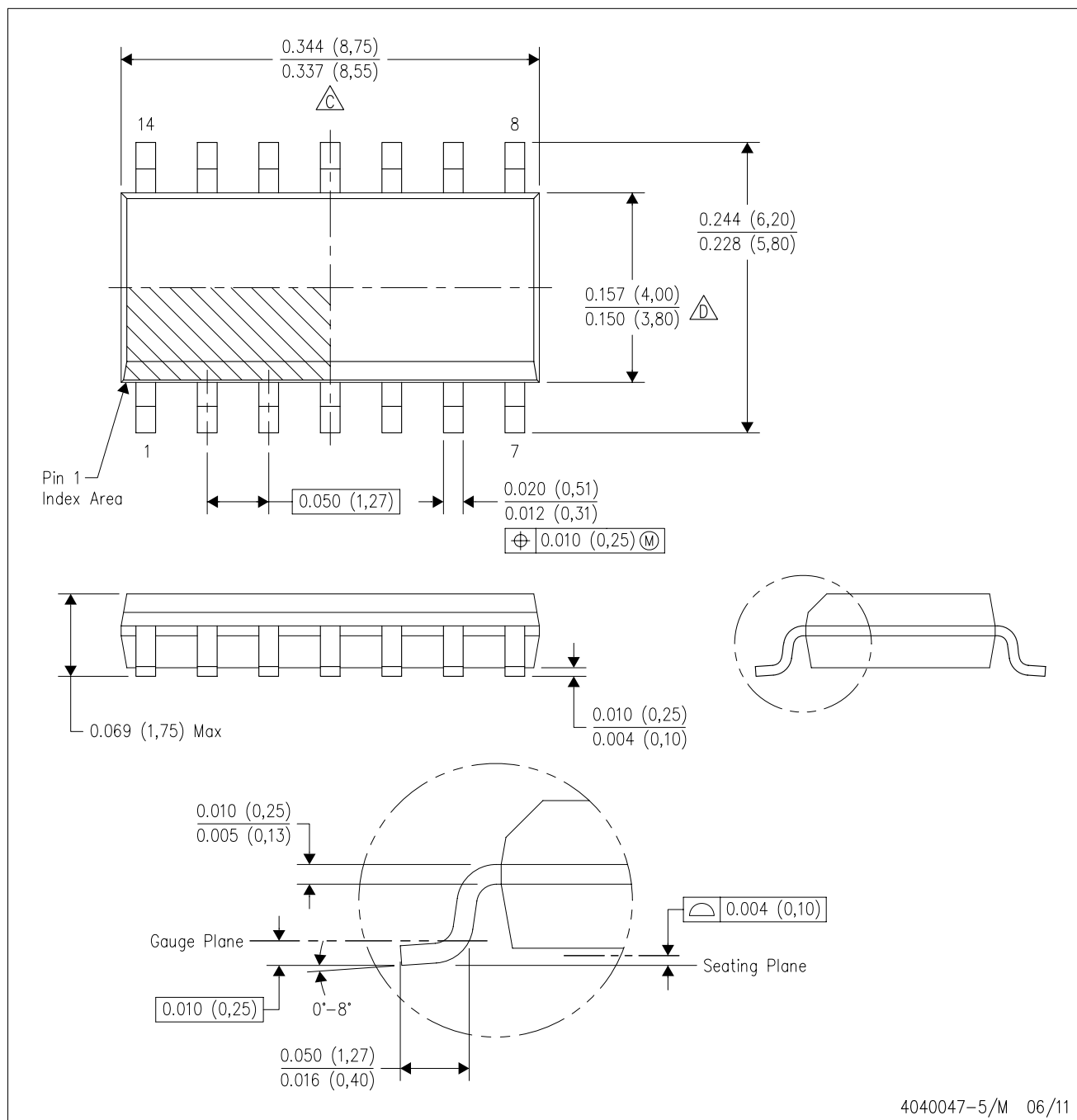
14/18 Pin Only  
20 Pin vendor option

4040049/E 12/2002

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

D (R-PDSO-G14)

PLASTIC SMALL OUTLINE

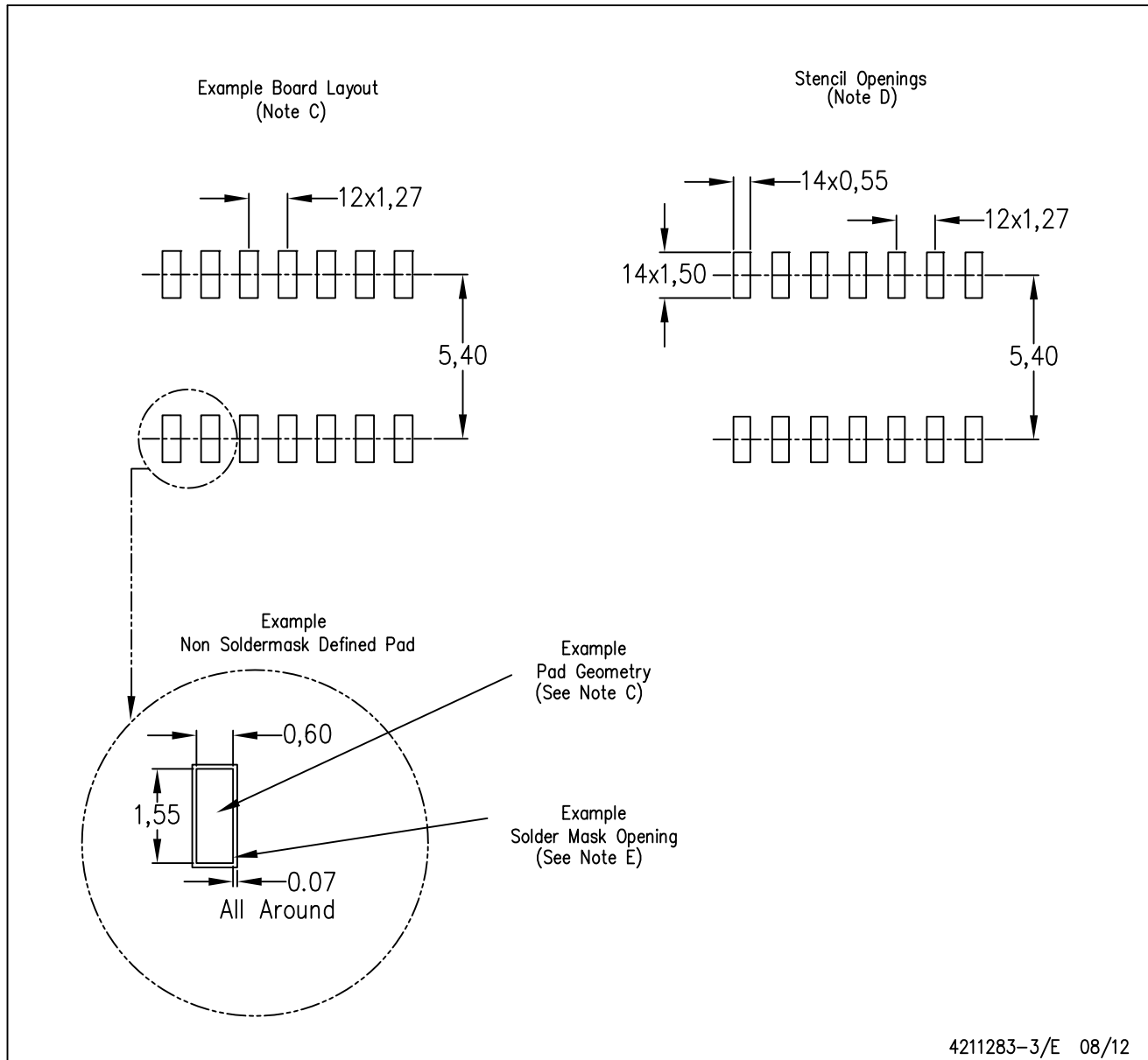


## NOTES:

- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- C. Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.006 (0,15) each side.
- D. Body width does not include interlead flash. Interlead flash shall not exceed 0.017 (0,43) each side.
- E. Reference JEDEC MS-012 variation AB.

D (R-PDSO-G14)

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 designs.
  - 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.

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|                               |                                                                                          |
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