

High-Speed CMOS Logic 4-Bit Binary Full Adder with Fast Carry

Features

- Adds Two Binary Numbers
- Full Internal Lookahead
- Fast Ripple Carry for Economical Expansion
- Operates with Both Positive and Negative Logic
- 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 'HC283 and 'HCT283 binary full adders add two 4-bit binary numbers and generate a carry-out bit if the sum exceeds 15.

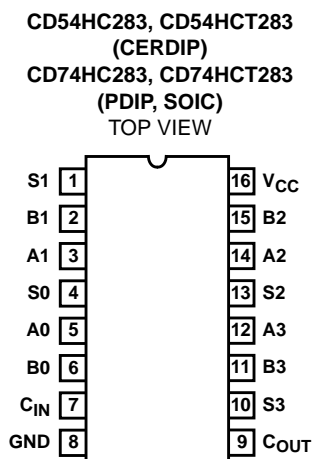
Because of the symmetry of the add function, this device can be used with either all active-high operands (positive logic) or with all active-low operands (negative logic). When using positive logic the carry-in input must be tied low if there is no carry-in.

Ordering Information

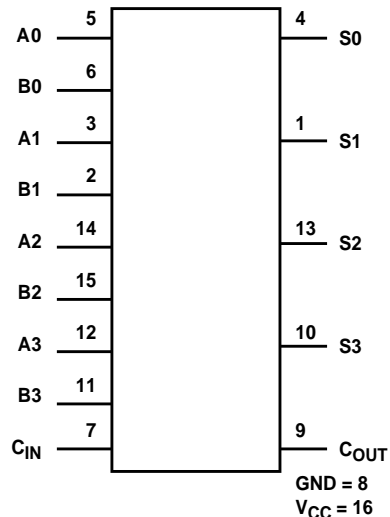
| PART NUMBER | TEMP. RANGE (°C) | PACKAGE |
|---------------|------------------|--------------|
| CD54HC283F3A | -55 to 125 | 16 Ld CERDIP |
| CD54HCT283F3A | -55 to 125 | 16 Ld CERDIP |
| CD74HC283E | -55 to 125 | 16 Ld PDIP |
| CD74HC283M | -55 to 125 | 16 Ld SOIC |
| CD74HC283MT | -55 to 125 | 16 Ld SOIC |
| CD74HC283M96 | -55 to 125 | 16 Ld SOIC |
| CD74HCT283E | -55 to 125 | 16 Ld PDIP |
| CD74HCT283M | -55 to 125 | 16 Ld SOIC |
| CD74HCT283MT | -55 to 125 | 16 Ld SOIC |
| CD74HCT283M96 | -55 to 125 | 16 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



Functional Diagram



CD54HC283, CD74HC283, CD54HCT283, CD74HCT283

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 $-0.5V < V_O < V_{CC} + 0.5V$ | $\pm 25mA$ |
| 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} | $\pm 50mA$ |

Thermal Information

| | |
|--|---|
| Thermal Resistance (Typical, Note 1) | θ_{JA} ($^{\circ}C/W$) |
| E (PDIP) Package | 67 |
| M (SOIC) Package | 73 |
| 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 |
| 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:

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

DC Electrical Specifications

| PARAMETER | SYMBOL | TEST CONDITIONS | | V_{CC} (V) | 25 $^{\circ}C$ | | | -40 $^{\circ}C$ TO 85 $^{\circ}C$ | | -55 $^{\circ}C$ TO 125 $^{\circ}C$ | | UNITS |
|---|----------|----------------------|------------|--------------|----------------|-----|-----------|-----------------------------------|---------|------------------------------------|---------|---------|
| | | V_I (V) | I_O (mA) | | MIN | TYP | MAX | MIN | MAX | MIN | MAX | |
| HC TYPES | | | | | | | | | | | | |
| High Level Input Voltage | V_{IH} | - | - | 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_{IL} | - | - | 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 CMOS Loads | V_{OH} | V_{IH} or V_{IL} | -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 TTL Loads | V_{OH} | V_{IH} or V_{IL} | - | - | - | - | - | - | - | - | - | V |
| | | | -4 | 4.5 | 3.98 | - | - | 3.84 | - | 3.7 | - | V |
| | | | -5.2 | 6 | 5.48 | - | - | 5.34 | - | 5.2 | - | V |
| Low Level Output Voltage CMOS Loads | V_{OL} | V_{IH} or V_{IL} | 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 TTL Loads | V_{OL} | V_{IH} or V_{IL} | - | - | - | - | - | - | - | - | - | V |
| | | | 4 | 4.5 | - | - | 0.26 | - | 0.33 | - | 0.4 | V |
| | | | 5.2 | 6 | - | - | 0.26 | - | 0.33 | - | 0.4 | V |
| Input Leakage Current | I_I | V_{CC} or GND | - | 6 | - | - | ± 0.1 | - | ± 1 | - | ± 1 | μA |
| Quiescent Device Current | I_{CC} | V_{CC} or GND | 0 | 6 | - | - | 8 | - | 80 | - | 160 | μA |

CD54HC283, CD74HC283, CD54HCT283, CD74HCT283

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 | |
| HCT Types | | | | | | | | | | | | |
| 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 CMOS Loads | V _{OH} | V _{IL} or V _{IH} | -0.02 | 4.5 | 4.4 | - | - | 4.4 | - | 4.4 | - | V |
| High Level Output Voltage TTL Loads | V _{OH} | V _{IL} or V _{IH} | -4 | 4.5 | 3.98 | - | - | 3.84 | - | 3.7 | - | V |
| Low Level Output Voltage CMOS Loads | V _{OL} | V _{IH} or V _{IL} | 0.02 | 4.5 | - | - | 0.1 | - | 0.1 | - | 0.1 | V |
| Low Level Output Voltage TTL Loads | V _{OL} | V _{IH} or V _{IL} | 4 | 4.5 | - | - | 0.26 | - | 0.33 | - | 0.4 | V |
| Input Leakage Current | I _I | V _{CC} to GND | - | 5.5 | - | - | ±0.1 | - | ±1 | - | ±1 | μA |
| Quiescent Device Current | I _{CC} | V _{CC} or GND | - | 5.5 | - | - | 8 | - | 80 | - | 160 | μA |
| Additional Quiescent Device Current Per Input Pin: 1 Unit Load | ΔI _{CC} (Note 2) | V _{CC} - 2.1 | - | 4.5 to 5.5 | - | 100 | 360 | - | 450 | - | 490 | μA |

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 |
|-----------------|------------|
| C _{IN} | 1.5 |
| B1, A1, A0 | 1 |
| B0 | 0.4 |
| B3, A3, A2, B2 | 0.5 |

NOTE: Unit Load is ΔI_{CC} limit specified in DC Electrical Specifications table, e.g., 360μA max at 25°C.

Switching Specifications Input t_r, t_f = 6ns

| PARAMETER | SYMBOL | TEST CONDITIONS | V _{CC} (V) | 25°C | | | -40°C TO 85°C | | -55°C TO 125°C | | UNITS |
|--|-------------------------------------|-----------------------|---------------------|------|-----|-----|---------------|-----|----------------|-----|-------|
| | | | | MIN | TYP | MAX | MIN | MAX | MIN | MAX | |
| HC TYPES | | | | | | | | | | | |
| Propagation Delay C _{IN} to S0 | t _{PLH} , t _{PHL} | C _L = 50pF | 2 | - | - | 160 | - | 200 | - | 240 | ns |
| | | | 4.5 | - | - | 32 | - | 40 | - | 48 | ns |
| | | C _L = 15pF | 5 | - | 13 | - | - | - | - | - | ns |
| | | | 6 | - | - | 27 | - | 34 | - | 41 | ns |

CD54HC283, CD74HC283, CD54HCT283, CD74HCT283

Switching Specifications Input $t_r, t_f = 6\text{ns}$ (Continued)

| PARAMETER | SYMBOL | TEST CONDITIONS | V_{CC} (V) | 25°C | | | -40°C TO 85°C | | -55°C TO 125°C | | UNITS |
|---|--------------------|---------------------|--------------|------|-----|-----|---------------|-----|----------------|-----|-------|
| | | | | MIN | TYP | MAX | MIN | MAX | MIN | MAX | |
| C_{IN} to S1 | t_{PLH}, t_{PHL} | $C_L = 50\text{pF}$ | 2 | - | - | 180 | - | 225 | - | 270 | ns |
| | | | 4.5 | - | - | 36 | - | 45 | - | 54 | ns |
| | | $C_L = 15\text{pF}$ | 5 | - | 15 | - | - | - | - | - | ns |
| | | $C_L = 50\text{pF}$ | 6 | - | - | 31 | - | 38 | - | 46 | ns |
| C_{IN} to S2, C_{IN} to C_{OUT} | t_{PLH}, t_{PHL} | $C_L = 50\text{pF}$ | 2 | - | - | 195 | - | 245 | - | 295 | ns |
| | | | 4.5 | - | - | 39 | - | 49 | - | 59 | ns |
| | | $C_L = 15\text{pF}$ | 5 | - | 16 | - | - | - | - | - | ns |
| | | $C_L = 50\text{pF}$ | 6 | - | - | 33 | - | 42 | - | 50 | ns |
| C_{IN} to S3 | t_{PLH}, t_{PHL} | $C_L = 50\text{pF}$ | 2 | - | - | 230 | - | 290 | - | 345 | ns |
| | | | 4.5 | - | - | 46 | - | 58 | - | 69 | ns |
| | | $C_L = 15\text{pF}$ | 5 | - | 19 | - | - | - | - | - | ns |
| | | $C_L = 50\text{pF}$ | 6 | - | - | 39 | - | 49 | - | 59 | ns |
| An, Bn to C_{OUT} | t_{PLH}, t_{PHL} | $C_L = 50\text{pF}$ | 2 | - | - | 195 | - | 245 | - | 295 | ns |
| | | | 4.5 | - | - | 39 | - | 49 | - | 59 | ns |
| | | $C_L = 15\text{pF}$ | 5 | - | 16 | - | - | - | - | - | ns |
| | | $C_L = 50\text{pF}$ | 6 | - | - | 33 | - | 42 | - | 50 | ns |
| An, Bn to Sn | t_{PLH}, t_{PHL} | $C_L = 50\text{pF}$ | 2 | - | - | 210 | - | 265 | - | 315 | ns |
| | | | 4.5 | - | - | 42 | - | 53 | - | 63 | ns |
| | | $C_L = 15\text{pF}$ | 5 | - | 18 | - | - | - | - | - | ns |
| | | $C_L = 50\text{pF}$ | 6 | - | - | 36 | - | 45 | - | 54 | ns |
| Output Transition Time | t_{TLH}, t_{THL} | $C_L = 50\text{pF}$ | 2 | - | - | 75 | - | 95 | - | 110 | ns |
| | | | 4.5 | - | - | 15 | - | 19 | - | 22 | ns |
| | | | 6 | - | - | 13 | - | 16 | - | 19 | ns |
| Input Capacitance | C_{IN} | $C_L = 50\text{pF}$ | - | - | - | 10 | - | 10 | - | 10 | pF |
| Power Dissipation Capacitance, (Notes 3, 4) | C_{PD} | - | 5 | - | 70 | - | - | - | - | - | pF |

HCT TYPES

| | | | | | | | | | | | |
|---------------------------------------|--------------------|---------------------|-----|---|----|----|---|----|---|----|----|
| Propagation Delay C_{IN} to S0 | t_{PLH}, t_{PHL} | $C_L = 15\text{pF}$ | 5 | - | 13 | - | - | - | - | - | ns |
| | | $C_L = 50\text{pF}$ | 4.5 | - | - | 31 | - | 39 | - | 47 | ns |
| C_{IN} to S1 | t_{PLH}, t_{PHL} | $C_L = 15\text{pF}$ | 5 | - | 18 | - | - | - | - | - | ns |
| | | $C_L = 50\text{pF}$ | 4.5 | - | - | 43 | - | 54 | - | 65 | ns |
| C_{IN} to S2, C_{IN} to C_{OUT} | t_{PLH}, t_{PHL} | $C_L = 15\text{pF}$ | 5 | - | 19 | - | - | - | - | - | ns |
| | | $C_L = 50\text{pF}$ | 4.5 | - | - | 46 | - | 58 | - | 69 | ns |
| C_{IN} to S3 | t_{PLH}, t_{PHL} | $C_L = 15\text{pF}$ | 5 | - | 22 | - | - | - | - | - | ns |
| | | $C_L = 50\text{pF}$ | 4.5 | - | - | 53 | - | 66 | - | 80 | ns |
| An, Bn to C_{OUT} | t_{PLH}, t_{PHL} | $C_L = 15\text{pF}$ | 5 | - | 20 | - | - | - | - | - | ns |
| | | $C_L = 50\text{pF}$ | 4.5 | - | - | 48 | - | 60 | - | 72 | ns |
| An, Bn to Sn | t_{PLH}, t_{PHL} | $C_L = 15\text{pF}$ | 5 | - | 21 | - | - | - | - | - | ns |
| | | $C_L = 50\text{pF}$ | 4.5 | - | - | 49 | - | 61 | - | 74 | ns |
| Output Transition Time | t_{TLH}, t_{THL} | $C_L = 50\text{pF}$ | 4.5 | - | - | 15 | - | 19 | - | 22 | ns |

CD54HC283, CD74HC283, CD54HCT283, CD74HCT283

Switching Specifications Input $t_r, t_f = 6\text{ns}$ (Continued)

| PARAMETER | SYMBOL | TEST CONDITIONS | V_{CC} (V) | 25°C | | | -40°C TO 85°C | | -55°C TO 125°C | | UNITS |
|---|----------|-----------------|--------------|------|-----|-----|---------------|-----|----------------|-----|-------|
| | | | | MIN | TYP | MAX | MIN | MAX | MIN | MAX | |
| Input Capacitance | C_{IN} | - | - | - | - | 10 | - | 10 | - | 10 | pF |
| Power Dissipation Capacitance, (Notes 3, 4) | C_{PD} | - | 5 | - | 82 | - | - | - | - | - | pF |

NOTES:

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

Test Circuits and Waveforms

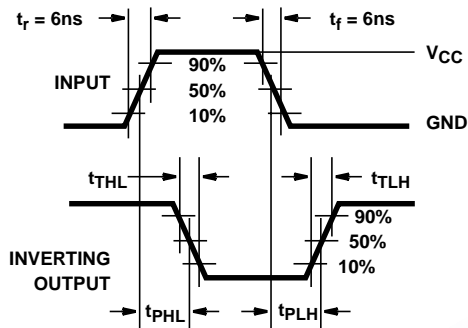


FIGURE 1. HC AND HCU TRANSITION TIMES AND PROPAGATION DELAY TIMES, COMBINATION LOGIC

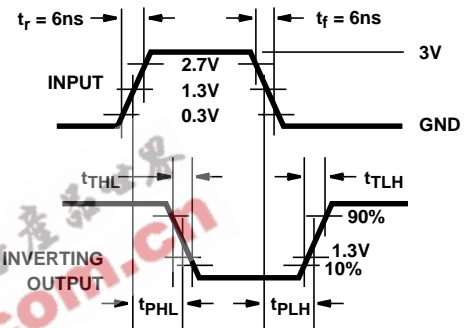


FIGURE 2. HCT TRANSITION TIMES AND PROPAGATION DELAY TIMES, COMBINATION LOGIC

PACKAGING INFORMATION

| Orderable Device | Status ⁽¹⁾ | Package Type | Package Drawing | Pins | Package Qty | Eco Plan ⁽²⁾ | Lead/Ball Finish | MSL Peak Temp ⁽³⁾ |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| 5962-8976501EA | ACTIVE | CDIP | J | 16 | 1 | TBD | Call TI | Level-NC-NC-NC |
| CD54HC283F3A | ACTIVE | CDIP | J | 16 | 1 | TBD | Call TI | Level-NC-NC-NC |
| CD54HCT283F3A | ACTIVE | CDIP | J | 16 | 1 | TBD | Call TI | Level-NC-NC-NC |
| CD74HC283E | ACTIVE | PDIP | N | 16 | 25 | Pb-Free (RoHS) | CU NIPDAU | Level-NC-NC-NC |
| CD74HC283M | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| CD74HC283M96 | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| CD74HC283M96E4 | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| CD74HC283ME4 | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| CD74HC283MT | ACTIVE | SOIC | D | 16 | 250 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| CD74HC283MTE4 | ACTIVE | SOIC | D | 16 | 250 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| CD74HCT283E | ACTIVE | PDIP | N | 16 | 25 | Pb-Free (RoHS) | CU NIPDAU | Level-NC-NC-NC |
| CD74HCT283EE4 | ACTIVE | PDIP | N | 16 | 25 | Pb-Free (RoHS) | CU NIPDAU | Level-NC-NC-NC |
| CD74HCT283M | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| CD74HCT283M96 | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| CD74HCT283M96E4 | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| CD74HCT283ME4 | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| CD74HCT283MT | ACTIVE | SOIC | D | 16 | 250 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| CD74HCT283MTE4 | ACTIVE | SOIC | D | 16 | 250 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |

⁽¹⁾ The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

⁽²⁾ Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS) 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.

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.

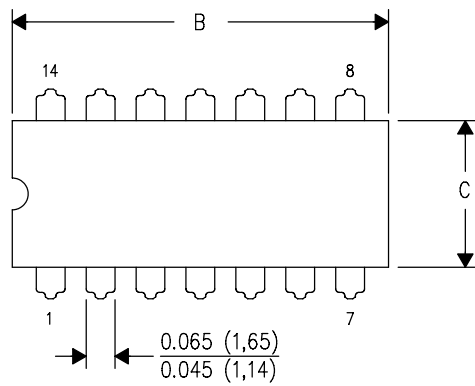
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J (R-GDIP-T**)
14 LEADS SHOWN

CERAMIC DUAL IN-LINE PACKAGE



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



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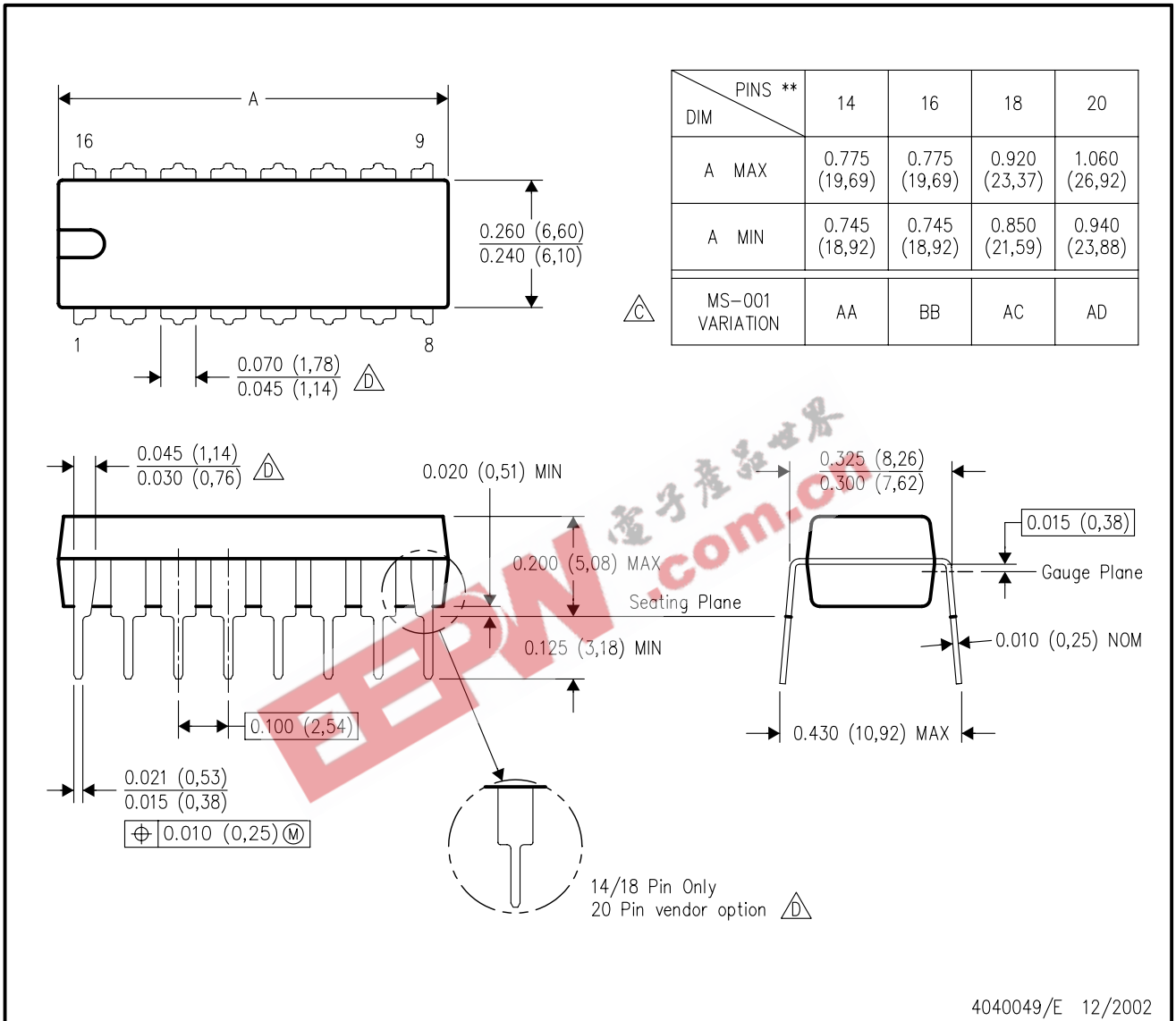
- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. This package is hermetically sealed with a ceramic lid using glass frit.
 - D. Index point is provided on cap for terminal identification only on press ceramic glass frit seal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

MECHANICAL DATA

N (R-PDIP-T**)

PLASTIC DUAL-IN-LINE PACKAGE

16 PINS SHOWN



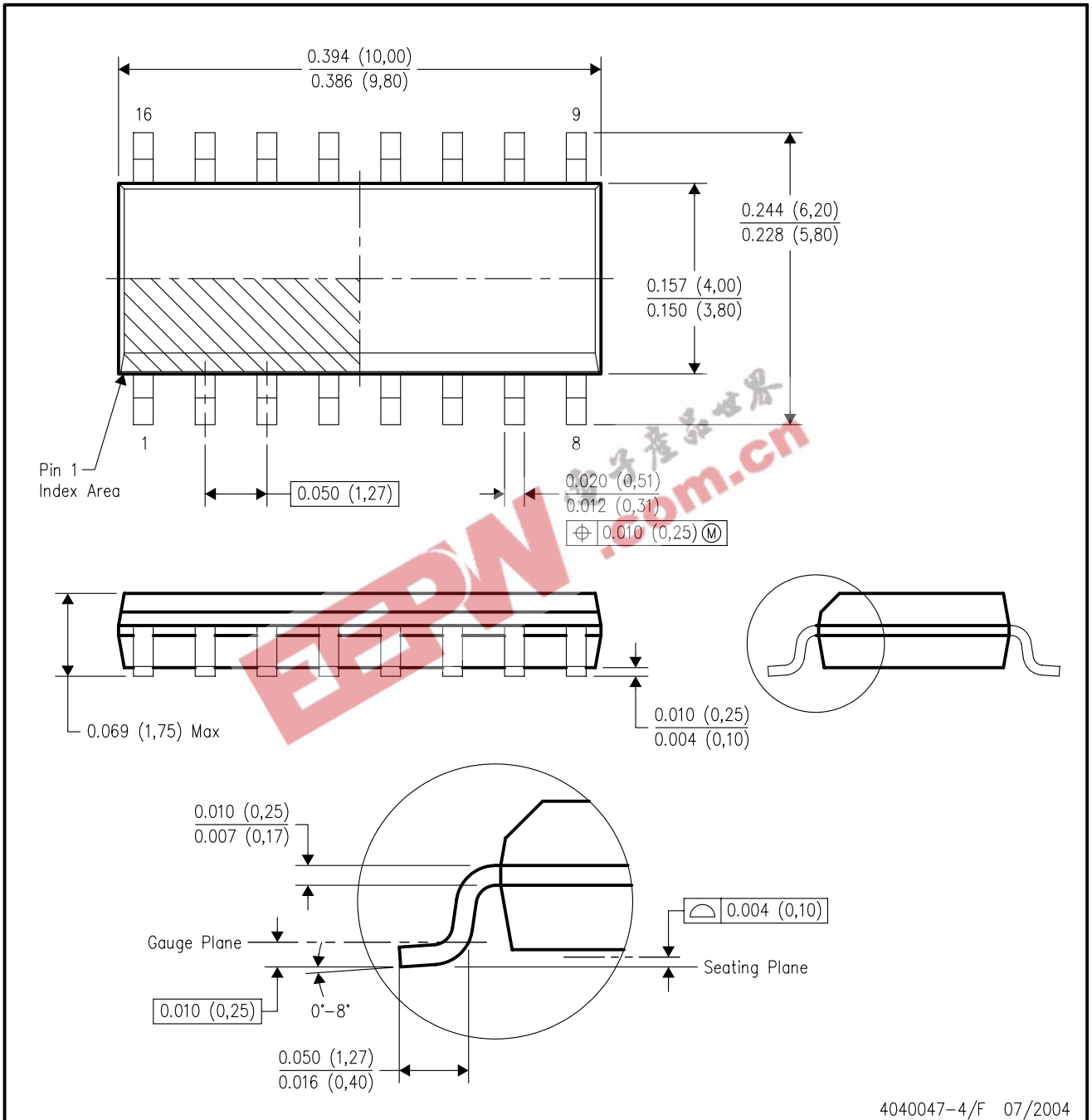
NOTES: A. All linear dimensions are in inches (millimeters).
 B. This drawing is subject to change without notice.

- △ 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.

MECHANICAL DATA

D (R-PDSO-G16)

PLASTIC SMALL-OUTLINE PACKAGE



4040047-4/F 07/2004

- NOTES:
- All linear dimensions are in inches (millimeters).
 - This drawing is subject to change without notice.
 - Body dimensions do not include mold flash or protrusion not to exceed 0.006 (0,15).
 - Falls within JEDEC MS-012 variation AC.

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