

# **SN54HC365 THRU SN54HC368** **SN74HC365 THRU SN74HC368** **HEX BUS DRIVERS WITH 3-STATE OUTPUTS**

SCLS139 D2684, DECEMBER 1982—REVISED JUNE 1989

- High-Current 3-State Outputs Drive Bus Lines, Buffer Memory Address Registers, or Up to 15 LSTTL Loads
- Choice of True or Inverting Outputs
- Package Options Include Plastic "Small Outline" Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs
- Dependable Texas Instruments Quality and Reliability

'HC365, HC367  
'HC366, HC368

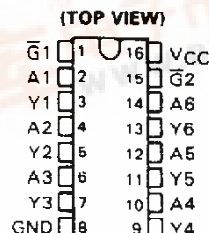
True Outputs  
Inverting Outputs

## **description**

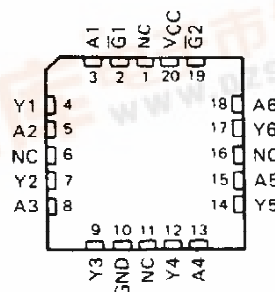
These Hex buffers and line drivers are designed specifically to improve both the performance and density of three-state memory address drivers, clock drivers, and bus-oriented receivers and transmitters. The designer has a choice of selected combinations of inverting and noninverting outputs, symmetrical G (active-low control) inputs.

The SN54HC' family is characterized for operation over the full military temperature range of  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ . The SN74HC' family is characterized for operation from  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$ .

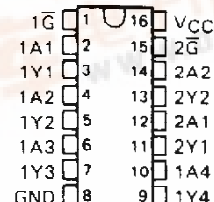
SN54HC365, SN54HC366 ... J PACKAGE  
SN74HC365, SN74HC366 ... D<sup>†</sup> OR N PACKAGE



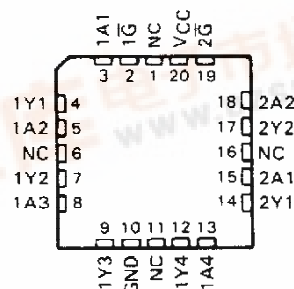
SN54HC365, SN54HC366 ... FK PACKAGE  
(TOP VIEW)



SN54HC367, SN54HC368 ... J PACKAGE  
SN74HC367, SN74HC368 ... D<sup>†</sup> OR N PACKAGE  
(TOP VIEW)



SN54HC367, SN54HC368 ... FK PACKAGE  
(TOP VIEW)



NC—No internal connection

<sup>†</sup> Contact the factory for D availability.

PRODUCTION DATA documents contain information 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.

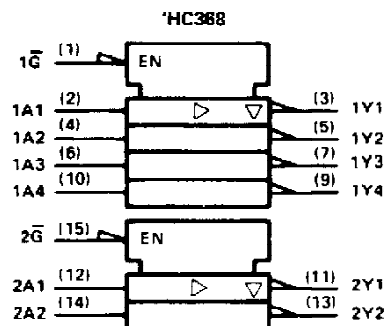
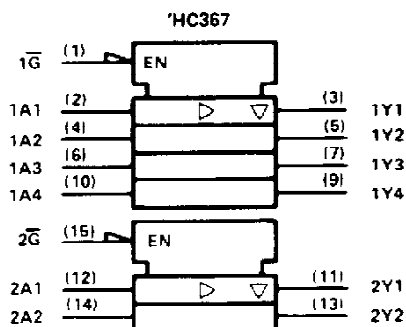
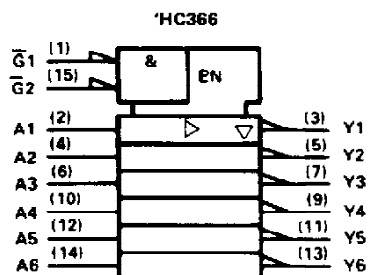
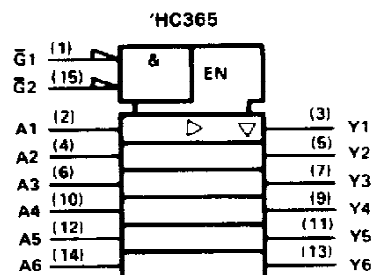
**TEXAS**  
**INSTRUMENTS**  
POST OFFICE BOX 665012 • DALLAS, TEXAS 75265

Copyright © 1989, Texas Instruments Incorporated

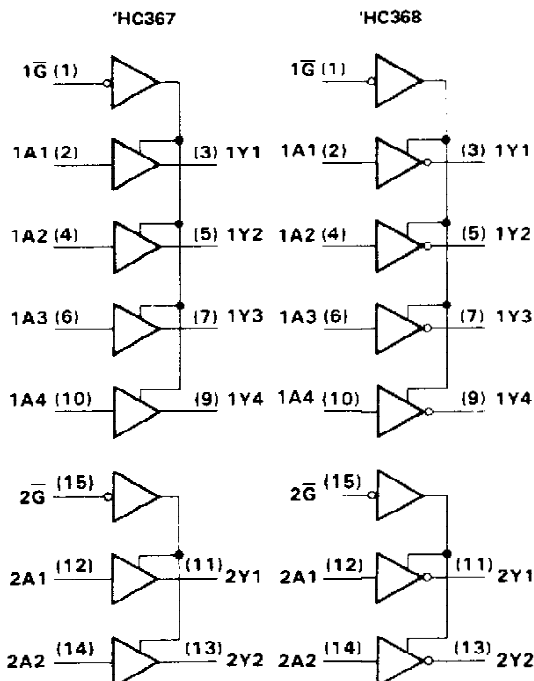
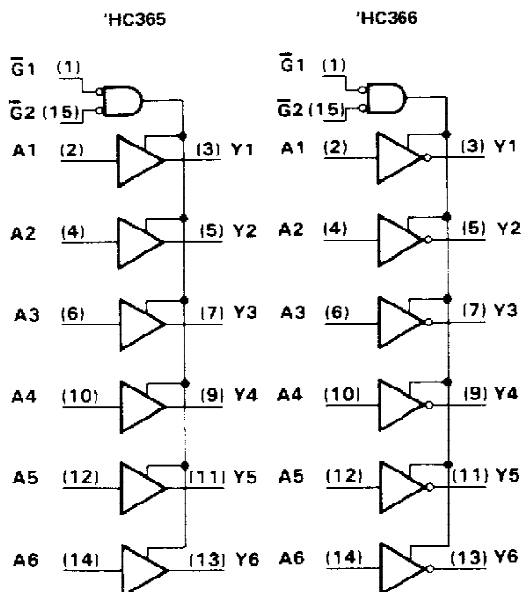


**SN54HC365 THRU SN54HC368  
SN74HC365 THRU SN74HC368  
HEX BUS DRIVERS WITH 3-STATE OUTPUTS**

logic symbols†



logic diagrams (positive logic)



†These symbols are in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

Pin numbers shown are for D, J, and N packages.

**SN54HC365 THRU SN54HC368**  
**SN74HC365 THRU SN74HC368**  
**HEX BUS DRIVERS WITH 3-STATE OUTPUTS**

**absolute maximum ratings over operating free-air temperature range†**

Supply voltage,  $V_{CC}$  ..... -0.5 V to 7 V  
 Input clamp current,  $I_{IK}$  ( $V_I < 0$  or  $V_I > V_{CC}$ ) .....  $\pm 20$  mA  
 Output clamp current,  $I_{OK}$  ( $V_O < 0$  or  $V_O > V_{CC}$ ) .....  $\pm 20$  mA  
 Continuous output current,  $I_O$  ( $V_O = 0$  to  $V_{CC}$ ) .....  $\pm 35$  mA  
 Continuous current through  $V_{CC}$  or GND pins .....  $\pm 70$  mA  
 Lead temperature 1,6 mm (1/16 in) from case for 60 s: FK or J package ..... 300°C  
 Lead temperature 1,6 mm (1/16 in) from case for 10 s: D or N package ..... 260°C  
 Storage temperature range ..... -65°C to 150°C

†Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

**recommended operating conditions**

|          |                                        |                                                      | SN54HC365<br>thru<br>SN54HC368 |                    |          | SN74HC365<br>thru<br>SN74HC368 |                    |          | UNIT |
|----------|----------------------------------------|------------------------------------------------------|--------------------------------|--------------------|----------|--------------------------------|--------------------|----------|------|
|          |                                        |                                                      | MIN                            | NOM                | MAX      | MIN                            | NOM                | MAX      |      |
| $V_{CC}$ | Supply voltage                         |                                                      | 2                              | 5                  | 6        | 2                              | 5                  | 6        | V    |
| $V_{IH}$ | High-level input voltage               | $V_{CC} = 2$ V<br>$V_{CC} = 4.5$ V<br>$V_{CC} = 6$ V | 1.5<br>3.15<br>4.2             |                    |          | 1.5<br>3.15<br>4.2             |                    |          | V    |
| $V_{IL}$ | Low-level input voltage                | $V_{CC} = 2$ V<br>$V_{CC} = 4.5$ V<br>$V_{CC} = 6$ V | 0<br>0<br>0                    | 0.3<br>0.9<br>1.2  |          | 0<br>0<br>0                    | 0.3<br>0.9<br>1.2  |          | V    |
| $V_I$    | Input voltage                          |                                                      | 0                              |                    | $V_{CC}$ | 0                              |                    | $V_{CC}$ | V    |
| $V_O$    | Output voltage                         |                                                      | 0                              |                    | $V_{CC}$ | 0                              |                    | $V_{CC}$ | V    |
| $t_t$    | Input transition (rise and fall) times | $V_{CC} = 2$ V<br>$V_{CC} = 4.5$ V<br>$V_{CC} = 6$ V | 0<br>0<br>0                    | 1000<br>500<br>400 |          | 0<br>0<br>0                    | 1000<br>500<br>400 |          | ns   |
| $T_A$    | Operating free-air temperature         |                                                      | -55                            |                    | 125      | -40                            |                    | 85       | °C   |

**SN54HC365 THRU SN54HC368  
SN74HC365 THRU SN74HC368  
HEX BUS DRIVERS WITH 3-STATE OUTPUTS**

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 |       |     | SN54HC365<br>thru<br>SN54HC368 |     | SN74HC365<br>thru<br>SN74HC368 |     | UNIT |
|-----------------|---------------------------------------------------------------------------------|-----------------|-----------------------|-------|-----|--------------------------------|-----|--------------------------------|-----|------|
|                 |                                                                                 |                 | MIN                   | TYP   | MAX | MIN                            | MAX | MIN                            | MAX |      |
| V <sub>OH</sub> | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> , I <sub>OH</sub> = -20 µA  | 2 V             | 1.9                   | 1.998 |     | 1.9                            |     | 1.9                            |     | V    |
|                 |                                                                                 | 4.5 V           | 4.4                   | 4.499 |     | 4.4                            |     | 4.4                            |     |      |
|                 |                                                                                 | 6 V             | 5.9                   | 5.999 |     | 5.9                            |     | 5.9                            |     |      |
|                 | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> , I <sub>OH</sub> = -6 mA   | 4.5 V           | 3.98                  | 4.30  |     | 3.7                            |     | 3.84                           |     |      |
|                 | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> , I <sub>OH</sub> = -7.8 mA | 6 V             | 5.48                  | 5.80  |     | 5.2                            |     | 5.34                           |     |      |
| V <sub>OL</sub> | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> , I <sub>OL</sub> = 20 µA   | 2 V             | 0.002                 | 0.1   |     | 0.1                            |     | 0.1                            |     | V    |
|                 |                                                                                 | 4.5 V           | 0.001                 | 0.1   |     | 0.1                            |     | 0.1                            |     |      |
|                 |                                                                                 | 6 V             | 0.001                 | 0.1   |     | 0.1                            |     | 0.1                            |     |      |
|                 | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> , I <sub>OL</sub> = 6 mA    | 4.5 V           | 0.17                  | 0.26  |     | 0.4                            |     | 0.33                           |     |      |
|                 | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> , I <sub>OL</sub> = 7.8 mA  | 6 V             | 0.15                  | 0.26  |     | 0.4                            |     | 0.33                           |     |      |
| I <sub>I</sub>  | V <sub>I</sub> = V <sub>CC</sub> or 0                                           | 6 V             | ±0.1                  | ±100  |     | ±1000                          |     | ±1000                          |     | nA   |
| I <sub>OZ</sub> | V <sub>O</sub> = V <sub>CC</sub> or 0                                           | 6               | ±0.01                 | ±0.5  |     | ±10                            |     | ±5                             |     | µA   |
| I <sub>CC</sub> | V <sub>I</sub> = V <sub>CC</sub> or 0, I <sub>O</sub> = 0                       | 6 V             |                       |       | 8   | 160                            |     | 80                             |     | µA   |
| C <sub>i</sub>  |                                                                                 | 2 to 6 V        |                       | 3     | 10  |                                | 10  |                                | 10  | pF   |

**SN54HC365 THRU SN54HC368**  
**SN74HC365 THRU SN74HC368**  
**HEX BUS DRIVERS WITH 3-STATE OUTPUTS**

switching characteristics over recommended operating free-air temperature range (unless otherwise noted),  $C_L = 50$  pF (see Note 1)

| PARAMETER        | FROM (INPUT)   | TO (OUTPUT) | V <sub>CC</sub> | T <sub>A</sub> = 25°C |     |     | SN54HC' |     | SN74HC' |     | UNIT |
|------------------|----------------|-------------|-----------------|-----------------------|-----|-----|---------|-----|---------|-----|------|
|                  |                |             |                 | MIN                   | TYP | MAX | MIN     | MAX | MIN     | MAX |      |
| t <sub>pd</sub>  | A              | Y           | 2 V             |                       | 50  | 95  |         | 145 |         | 120 | ns   |
|                  |                |             | 4.5 V           |                       | 12  | 19  |         | 29  |         | 24  |      |
|                  |                |             | 6 V             |                       | 10  | 16  |         | 25  |         | 20  |      |
| t <sub>en</sub>  | $\overline{G}$ | Y           | 2 V             |                       | 100 | 190 |         | 285 |         | 238 | ns   |
|                  |                |             | 4.5 V           |                       | 26  | 38  |         | 57  |         | 48  |      |
|                  |                |             | 6 V             |                       | 21  | 32  |         | 48  |         | 41  |      |
| t <sub>dis</sub> | $\overline{G}$ | Y           | 2 V             |                       | 50  | 175 |         | 265 |         | 240 | ns   |
|                  |                |             | 4.5 V           |                       | 21  | 35  |         | 53  |         | 48  |      |
|                  |                |             | 6 V             |                       | 19  | 30  |         | 45  |         | 41  |      |
| t <sub>t</sub>   |                | Any         | 2 V             |                       | 28  | 60  |         | 90  |         | 75  | ns   |
|                  |                |             | 4.5 V           |                       | 8   | 12  |         | 18  |         | 15  |      |
|                  |                |             | 6 V             |                       | 6   | 10  |         | 15  |         | 13  |      |

|                 |                                          |                                |           |
|-----------------|------------------------------------------|--------------------------------|-----------|
| C <sub>pd</sub> | Power dissipation capacitance per driver | No load, T <sub>A</sub> = 25°C | 35 pF typ |
|-----------------|------------------------------------------|--------------------------------|-----------|

switching characteristics over recommended operating free-air temperature range (unless otherwise noted),  $C_L = 150$  pF (see Note 1)

| PARAMETER       | FROM (INPUT)   | TO (OUTPUT) | V <sub>CC</sub> | T <sub>A</sub> = 25°C |     |     | SN54HC' |     | SN74HC' |     | UNIT |
|-----------------|----------------|-------------|-----------------|-----------------------|-----|-----|---------|-----|---------|-----|------|
|                 |                |             |                 | MIN                   | TYP | MAX | MIN     | MAX | MIN     | MAX |      |
| t <sub>pd</sub> | A              | Y           | 2 V             |                       | 70  | 120 |         | 180 |         | 150 | ns   |
|                 |                |             | 4.5 V           |                       | 17  | 24  |         | 36  |         | 30  |      |
|                 |                |             | 6 V             |                       | 14  | 20  |         | 31  |         | 25  |      |
| t <sub>en</sub> | $\overline{G}$ | Y           | 2 V             |                       | 140 | 230 |         | 345 |         | 285 | ns   |
|                 |                |             | 4.5 V           |                       | 30  | 46  |         | 69  |         | 57  |      |
|                 |                |             | 6 V             |                       | 28  | 39  |         | 59  |         | 48  |      |
| t <sub>t</sub>  |                |             | 2 V             |                       | 45  | 210 |         | 315 |         | 265 | ns   |
|                 |                |             | 4.5 V           |                       | 17  | 42  |         | 63  |         | 53  |      |
|                 |                |             | 6 V             |                       | 13  | 36  |         | 53  |         | 45  |      |

NOTE 1: Load circuit and voltage waveforms are shown in Section 1.

## IMPORTANT NOTICE

Texas Instruments (TI) reserves the right to make changes to its products or to discontinue any semiconductor product or service without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is current.

TI warrants performance of its semiconductor products and related software to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are utilized to the extent TI deems necessary to support this warranty. Specific testing of all parameters of each device is not necessarily performed, except those mandated by government requirements.

Certain applications using semiconductor products may involve potential risks of death, personal injury, or severe property or environmental damage ("Critical Applications").

TI SEMICONDUCTOR PRODUCTS ARE NOT DESIGNED, INTENDED, AUTHORIZED, OR WARRANTED TO BE SUITABLE FOR USE IN LIFE-SUPPORT APPLICATIONS, DEVICES OR SYSTEMS OR OTHER CRITICAL APPLICATIONS.

Inclusion of TI products in such applications is understood to be fully at the risk of the customer. Use of TI products in such applications requires the written approval of an appropriate TI officer. Questions concerning potential risk applications should be directed to TI through a local SC sales office.

In order to minimize risks associated with the customer's applications, adequate design and operating safeguards should be provided by the customer to minimize inherent or procedural hazards.

TI assumes no liability for applications assistance, customer product design, software performance, or infringement of patents or services described herein. Nor does TI warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right of TI covering or relating to any combination, machine, or process in which such semiconductor products or services might be or are used.

## PACKAGING INFORMATION

| Orderable Device | Status <sup>(1)</sup> | Package Type | Package Drawing | Pins | Package Qty | Eco Plan <sup>(2)</sup> | Lead/Ball Finish | MSL Peak Temp <sup>(3)</sup> |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| 5962-86812012A   | ACTIVE                | LCCC         | FK              | 20   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| 5962-8681201EA   | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| 5962-8681201EA   | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| 5962-86828012A   | OBSOLETE              | LCCC         | FK              | 20   |             | TBD                     | Call TI          | Call TI                      |
| 5962-86828012A   | OBSOLETE              | LCCC         | FK              | 20   |             | TBD                     | Call TI          | Call TI                      |
| 5962-8682801EA   | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| 5962-8682801EA   | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| 85001012A        | ACTIVE                | LCCC         | FK              | 20   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| 85001012A        | ACTIVE                | LCCC         | FK              | 20   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| 8500101EA        | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| 8500101EA        | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| 85002012A        | ACTIVE                | LCCC         | FK              | 20   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| 85002012A        | ACTIVE                | LCCC         | FK              | 20   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| 8500201EA        | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| 8500201EA        | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| JM38510/65706BEA | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| JM38510/65706BEA | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| JM38510/65708BEA | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| JM38510/65708BEA | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| JM38510/65708BFA | ACTIVE                | CFP          | W               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| JM38510/65708BFA | ACTIVE                | CFP          | W               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| JM38510/65709BEA | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| JM38510/65709BEA | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| SN54HC365J       | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| SN54HC365J       | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| SN54HC366J       | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| SN54HC366J       | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| SN54HC367J       | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| SN54HC367J       | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| SN54HC368J       | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| SN54HC368J       | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| SN74HC365D       | ACTIVE                | SOIC         | D               | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365D       | ACTIVE                | SOIC         | D               | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365DE4     | ACTIVE                | SOIC         | D               | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365DE4     | ACTIVE                | SOIC         | D               | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365DR      | ACTIVE                | SOIC         | D               | 16   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365DR      | ACTIVE                | SOIC         | D               | 16   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365DRE4    | ACTIVE                | SOIC         | D               | 16   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |

| Orderable Device | Status <sup>(1)</sup> | Package Type | Package Drawing | Pins | Package Qty | Eco Plan <sup>(2)</sup> | Lead/Ball Finish | MSL Peak Temp <sup>(3)</sup> |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
|                  |                       |              |                 |      |             | no Sb/Br)               |                  |                              |
| SN74HC365DRE4    | ACTIVE                | SOIC         | D               | 16   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365DT      | ACTIVE                | SOIC         | D               | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365DT      | ACTIVE                | SOIC         | D               | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365DTE4    | ACTIVE                | SOIC         | D               | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365DTE4    | ACTIVE                | SOIC         | D               | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365N       | ACTIVE                | PDIP         | N               | 16   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | Level-NC-NC-NC               |
| SN74HC365N       | ACTIVE                | PDIP         | N               | 16   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | Level-NC-NC-NC               |
| SN74HC365NSR     | ACTIVE                | SO           | NS              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365NSR     | ACTIVE                | SO           | NS              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365NSRE4   | ACTIVE                | SO           | NS              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365NSRE4   | ACTIVE                | SO           | NS              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365PW      | ACTIVE                | TSSOP        | PW              | 16   | 90          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365PW      | ACTIVE                | TSSOP        | PW              | 16   | 90          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365PWE4    | ACTIVE                | TSSOP        | PW              | 16   | 90          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365PWE4    | ACTIVE                | TSSOP        | PW              | 16   | 90          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365PWR     | ACTIVE                | TSSOP        | PW              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365PWR     | ACTIVE                | TSSOP        | PW              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365PWRE4   | ACTIVE                | TSSOP        | PW              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365PWRE4   | ACTIVE                | TSSOP        | PW              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365PWT     | ACTIVE                | TSSOP        | PW              | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365PWT     | ACTIVE                | TSSOP        | PW              | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365PWTE4   | ACTIVE                | TSSOP        | PW              | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC365PWTE4   | ACTIVE                | TSSOP        | PW              | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367D       | ACTIVE                | SOIC         | D               | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367D       | ACTIVE                | SOIC         | D               | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |

## PACKAGE OPTION ADDENDUM

26-Sep-2005

| Orderable Device | Status <sup>(1)</sup> | Package Type | Package Drawing | Pins | Package Qty | Eco Plan <sup>(2)</sup> | Lead/Ball Finish | MSL Peak Temp <sup>(3)</sup> |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| SN74HC367DE4     | ACTIVE                | SOIC         | D               | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367DE4     | ACTIVE                | SOIC         | D               | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367DR      | ACTIVE                | SOIC         | D               | 16   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367DR      | ACTIVE                | SOIC         | D               | 16   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367DRE4    | ACTIVE                | SOIC         | D               | 16   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367DRE4    | ACTIVE                | SOIC         | D               | 16   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367DT      | ACTIVE                | SOIC         | D               | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367DT      | ACTIVE                | SOIC         | D               | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367DTE4    | ACTIVE                | SOIC         | D               | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367DTE4    | ACTIVE                | SOIC         | D               | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367N       | ACTIVE                | PDIP         | N               | 16   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | Level-NC-NC-NC               |
| SN74HC367N       | ACTIVE                | PDIP         | N               | 16   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | Level-NC-NC-NC               |
| SN74HC367NE4     | ACTIVE                | PDIP         | N               | 16   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | Level-NC-NC-NC               |
| SN74HC367NE4     | ACTIVE                | PDIP         | N               | 16   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | Level-NC-NC-NC               |
| SN74HC367NSR     | ACTIVE                | SO           | NS              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367NSR     | ACTIVE                | SO           | NS              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367NSRE4   | ACTIVE                | SO           | NS              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367NSRE4   | ACTIVE                | SO           | NS              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367PW      | ACTIVE                | TSSOP        | PW              | 16   | 90          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367PW      | ACTIVE                | TSSOP        | PW              | 16   | 90          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367PWE4    | ACTIVE                | TSSOP        | PW              | 16   | 90          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367PWE4    | ACTIVE                | TSSOP        | PW              | 16   | 90          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367PWR     | ACTIVE                | TSSOP        | PW              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367PWR     | ACTIVE                | TSSOP        | PW              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367PWRE4   | ACTIVE                | TSSOP        | PW              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367PWRE4   | ACTIVE                | TSSOP        | PW              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |

| Orderable Device | Status <sup>(1)</sup> | Package Type | Package Drawing | Pins | Package Qty | Eco Plan <sup>(2)</sup> | Lead/Ball Finish | MSL Peak Temp <sup>(3)</sup> |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| SN74HC367PWT     | ACTIVE                | TSSOP        | PW              | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367PWT     | ACTIVE                | TSSOP        | PW              | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367PWTE4   | ACTIVE                | TSSOP        | PW              | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC367PWTE4   | ACTIVE                | TSSOP        | PW              | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368D       | ACTIVE                | SOIC         | D               | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368D       | ACTIVE                | SOIC         | D               | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368DBR     | ACTIVE                | SSOP         | DB              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368DBR     | ACTIVE                | SSOP         | DB              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368DBRE4   | ACTIVE                | SSOP         | DB              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368DBRE4   | ACTIVE                | SSOP         | DB              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368DE4     | ACTIVE                | SOIC         | D               | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368DE4     | ACTIVE                | SOIC         | D               | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368DR      | ACTIVE                | SOIC         | D               | 16   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368DR      | ACTIVE                | SOIC         | D               | 16   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368DRE4    | ACTIVE                | SOIC         | D               | 16   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368DRE4    | ACTIVE                | SOIC         | D               | 16   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368DT      | ACTIVE                | SOIC         | D               | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368DT      | ACTIVE                | SOIC         | D               | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368DTE4    | ACTIVE                | SOIC         | D               | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368DTE4    | ACTIVE                | SOIC         | D               | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368N       | ACTIVE                | PDIP         | N               | 16   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | Level-NC-NC-NC               |
| SN74HC368N       | ACTIVE                | PDIP         | N               | 16   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | Level-NC-NC-NC               |
| SN74HC368NE4     | ACTIVE                | PDIP         | N               | 16   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | Level-NC-NC-NC               |
| SN74HC368NE4     | ACTIVE                | PDIP         | N               | 16   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | Level-NC-NC-NC               |
| SN74HC368NSR     | ACTIVE                | SO           | NS              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368NSR     | ACTIVE                | SO           | NS              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |

| Orderable Device | Status <sup>(1)</sup> | Package Type | Package Drawing | Pins | Package Qty | Eco Plan <sup>(2)</sup> | Lead/Ball Finish | MSL Peak Temp <sup>(3)</sup> |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| SN74HC368NSRE4   | ACTIVE                | SO           | NS              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368NSRE4   | ACTIVE                | SO           | NS              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368PW      | ACTIVE                | TSSOP        | PW              | 16   | 90          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368PW      | ACTIVE                | TSSOP        | PW              | 16   | 90          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368PWE4    | ACTIVE                | TSSOP        | PW              | 16   | 90          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368PWE4    | ACTIVE                | TSSOP        | PW              | 16   | 90          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368PWR     | ACTIVE                | TSSOP        | PW              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368PWR     | ACTIVE                | TSSOP        | PW              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368PWRE4   | ACTIVE                | TSSOP        | PW              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368PWRE4   | ACTIVE                | TSSOP        | PW              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368PWT     | ACTIVE                | TSSOP        | PW              | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368PWT     | ACTIVE                | TSSOP        | PW              | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368PWTE4   | ACTIVE                | TSSOP        | PW              | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC368PWTE4   | ACTIVE                | TSSOP        | PW              | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SNJ54HC365FK     | ACTIVE                | LCCC         | FK              | 20   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| SNJ54HC365FK     | ACTIVE                | LCCC         | FK              | 20   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| SNJ54HC365J      | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| SNJ54HC365J      | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| SNJ54HC366FK     | OBSOLETE              |              |                 | 20   |             | TBD                     | Call TI          | Call TI                      |
| SNJ54HC366FK     | OBSOLETE              |              |                 | 20   |             | TBD                     | Call TI          | Call TI                      |
| SNJ54HC366J      | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| SNJ54HC366J      | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| SNJ54HC367FK     | ACTIVE                | LCCC         | FK              | 20   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| SNJ54HC367FK     | ACTIVE                | LCCC         | FK              | 20   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| SNJ54HC367J      | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| SNJ54HC367J      | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| SNJ54HC368FK     | ACTIVE                | LCCC         | FK              | 20   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| SNJ54HC368FK     | ACTIVE                | LCCC         | FK              | 20   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| SNJ54HC368J      | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |
| SNJ54HC368J      | ACTIVE                | CDIP         | J               | 16   | 1           | TBD                     | Call TI          | Level-NC-NC-NC               |

<sup>(1)</sup> 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.

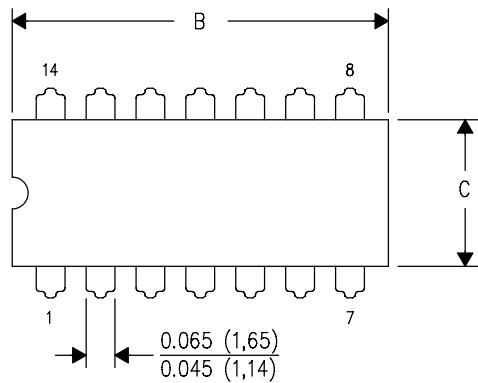
**Important Information and Disclaimer:** The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. TI has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

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.

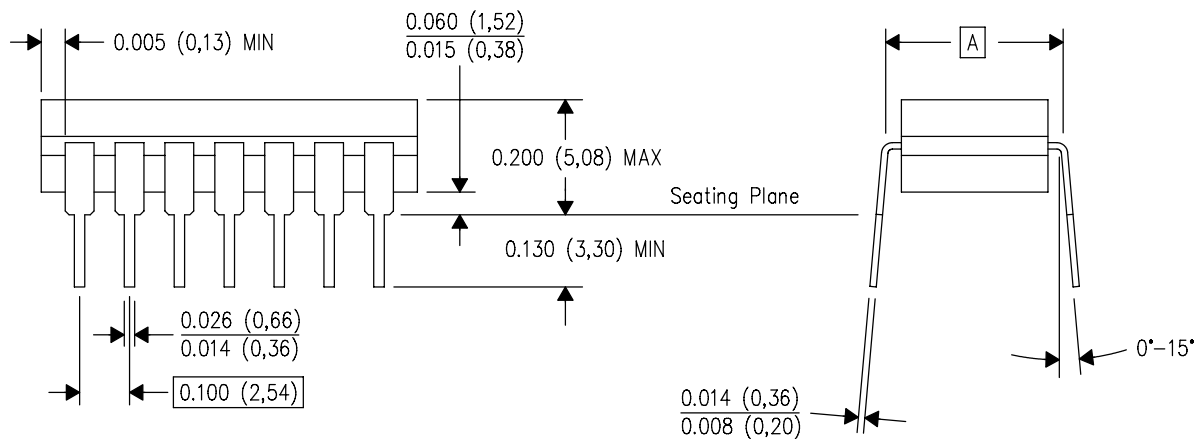
J (R-GDIP-T\*\*)

14 LEADS SHOWN

# CERAMIC DUAL IN-LINE PACKAGE



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



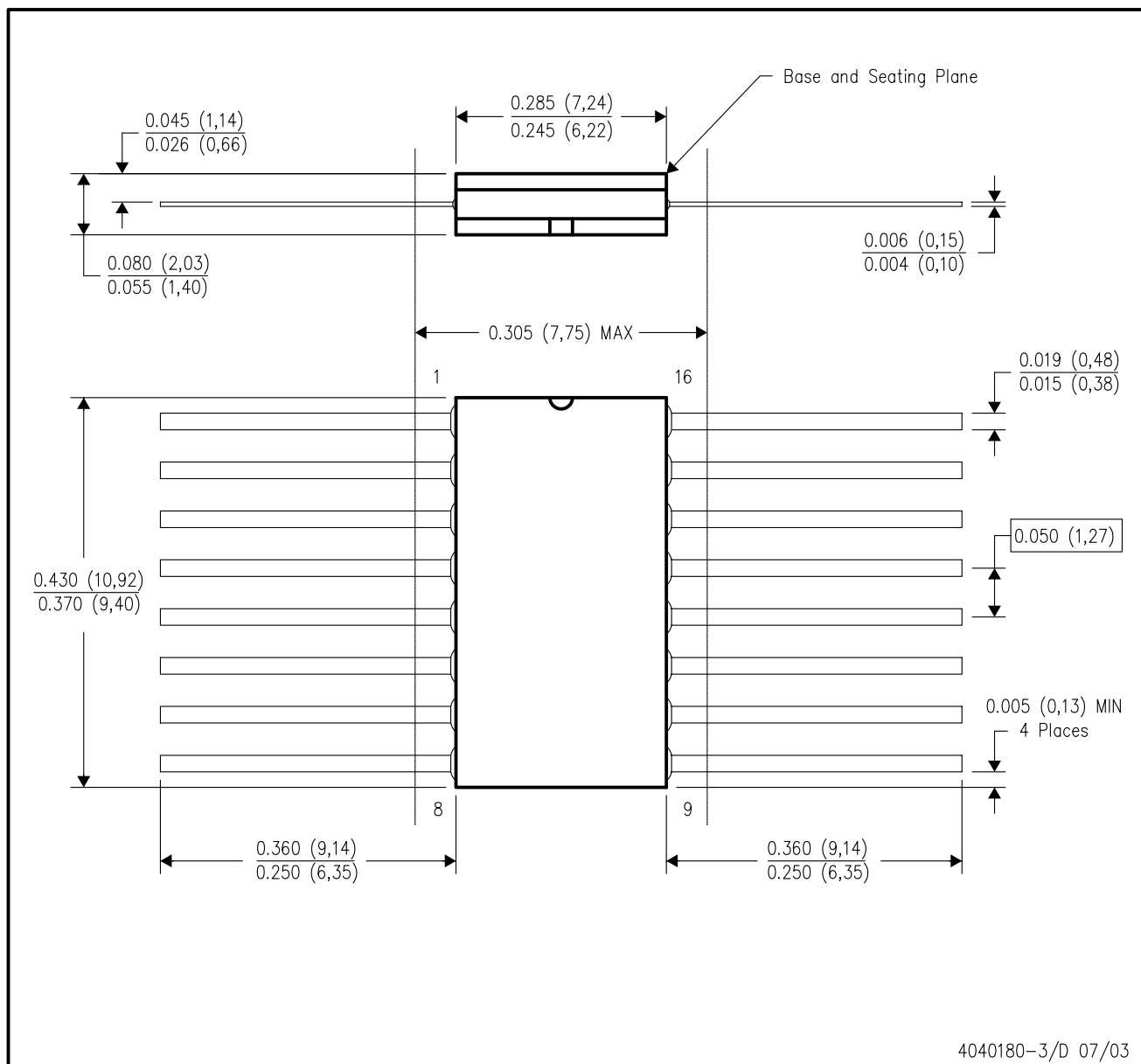
4040083/F 03/03

- NOTES:
- 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

W (R-GDFP-F16)

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 GDFP1-F16 and JEDEC MO-092AC

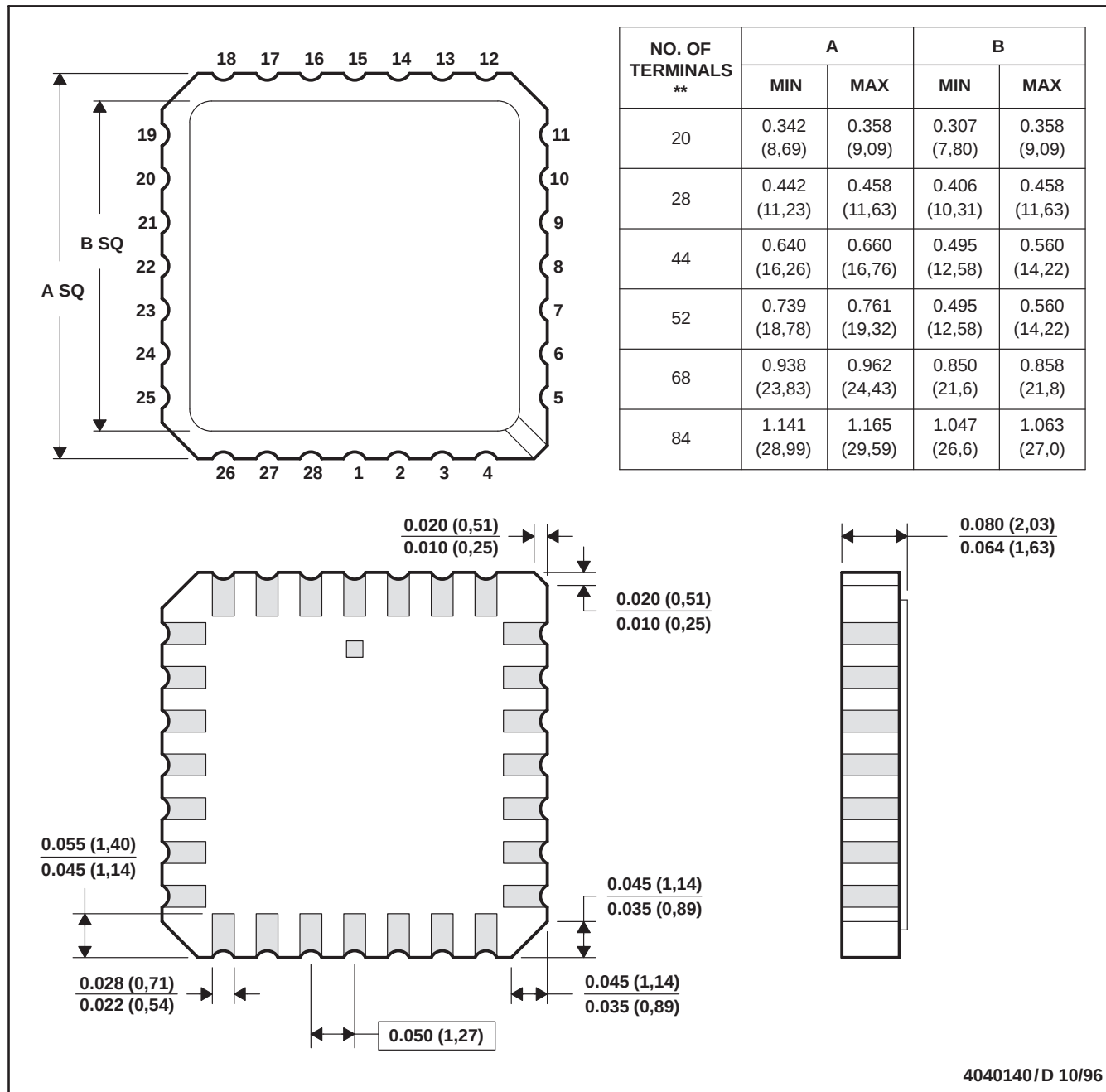
# MECHANICAL DATA

MLCC006B – OCTOBER 1996

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

LEADLESS CERAMIC CHIP CARRIER

28 TERMINAL SHOWN



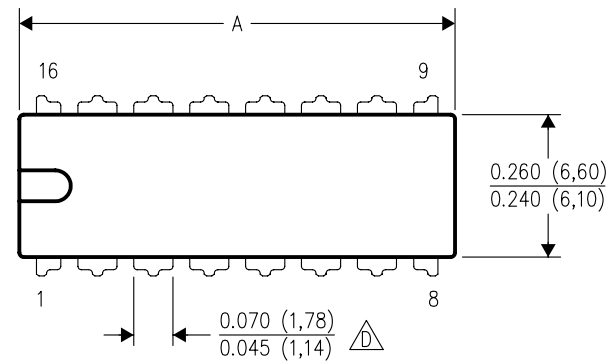
- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - C. This package can be hermetically sealed with a metal lid.
  - D. The terminals are gold plated.
  - E. Falls within JEDEC MS-004

## MECHANICAL DATA

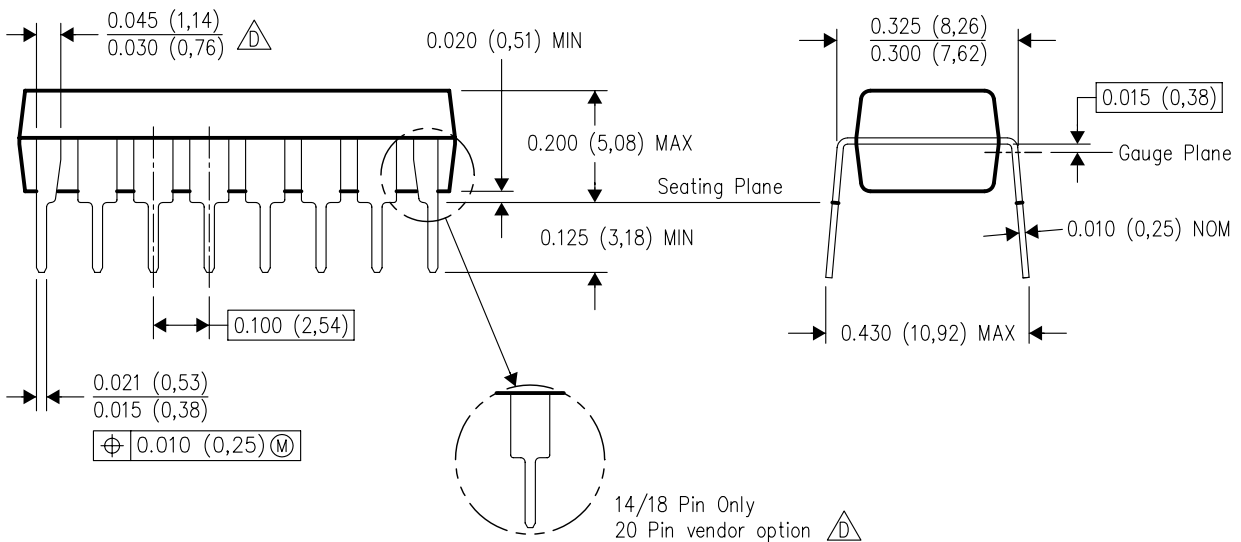
N (R-PDIP-T\*\*)

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

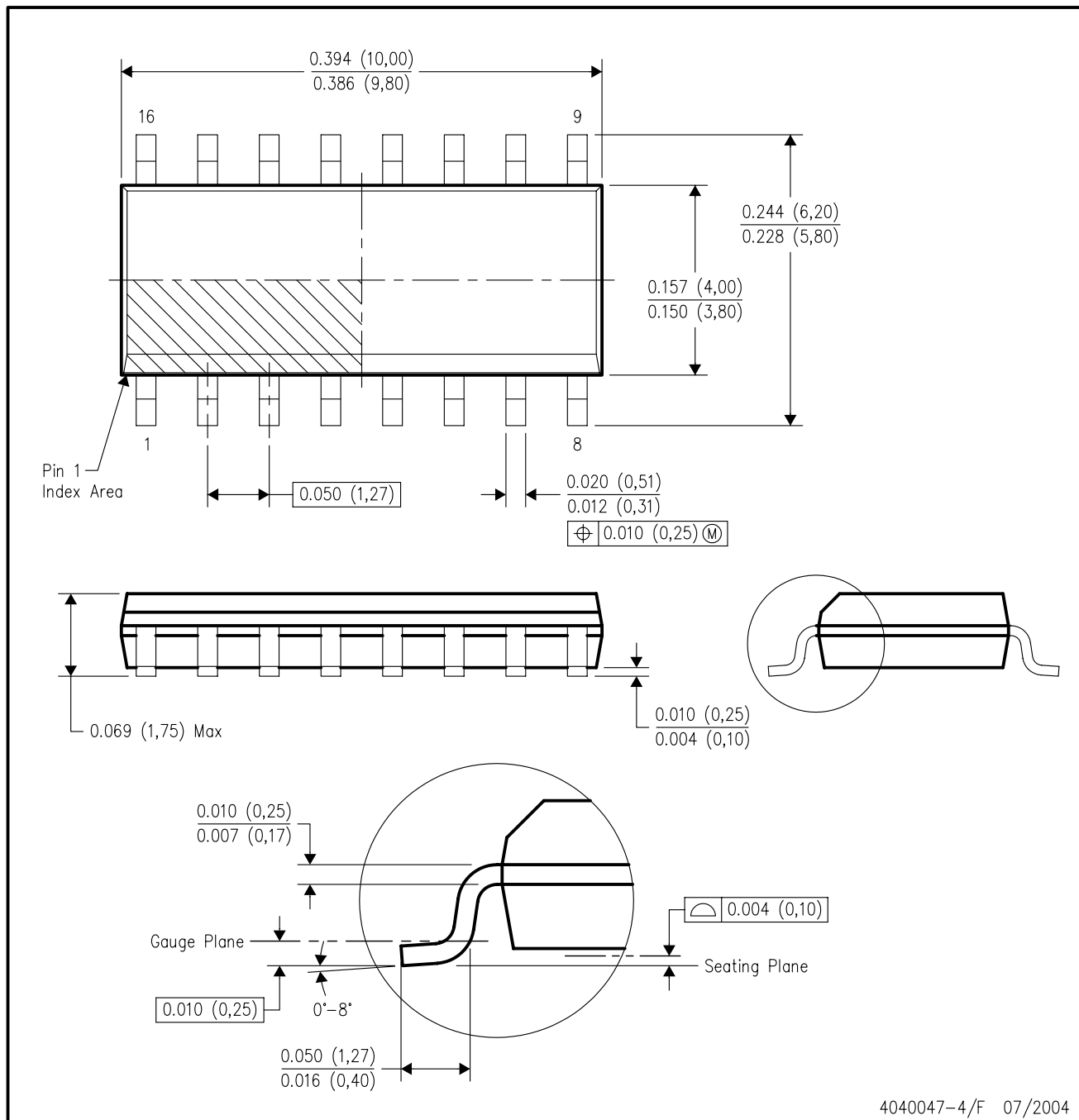
NOTES:

- 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.

# MECHANICAL DATA

## D (R-PDSO-G16)

## PLASTIC SMALL-OUTLINE PACKAGE



4040047-4/F 07/2004

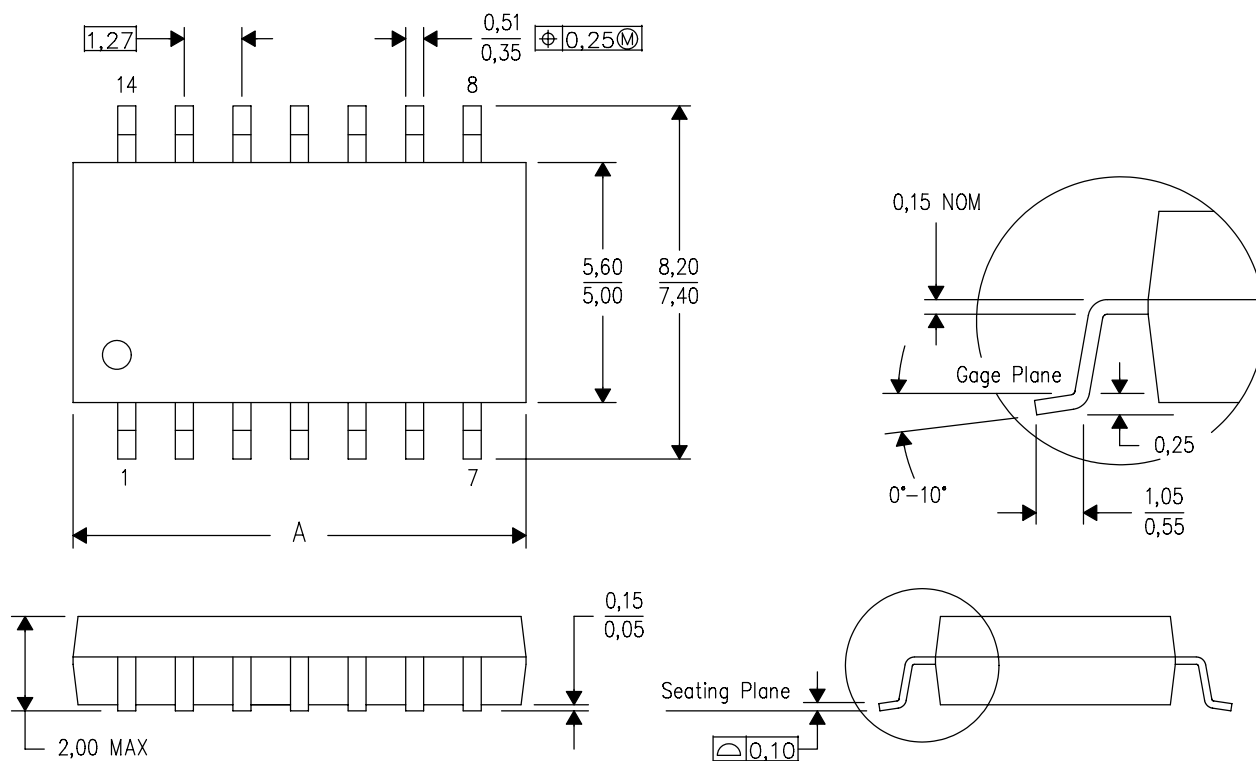
- NOTES:
- All linear dimensions are in inches (millimeters).
  - This drawing is subject to change without notice.
  - Body dimensions do not include mold flash or protrusion not to exceed 0.006 (0,15).
  - Falls within JEDEC MS-012 variation AC.

## 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.

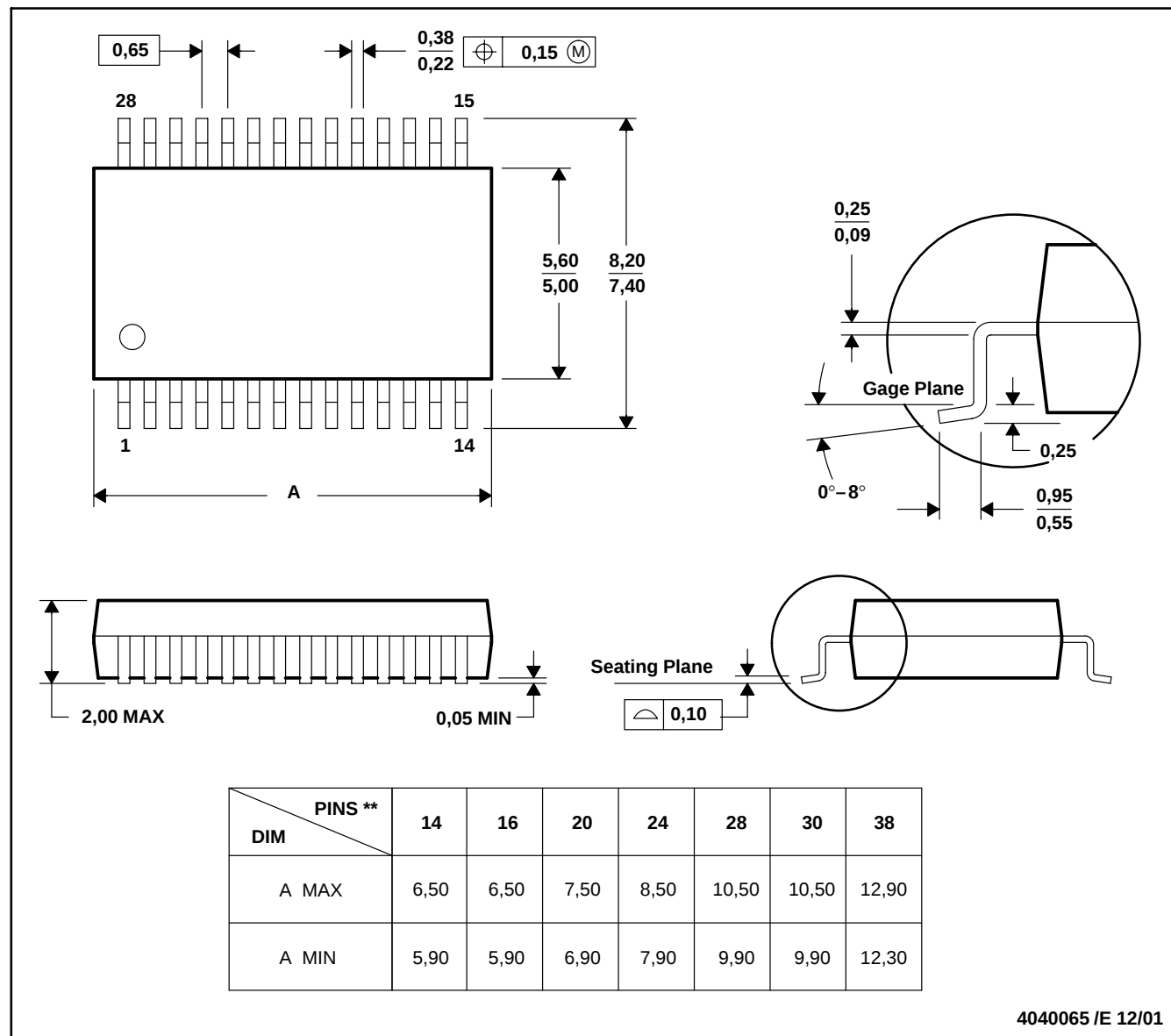
# MECHANICAL DATA

MSS0002E – JANUARY 1995 – REVISED DECEMBER 2001

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

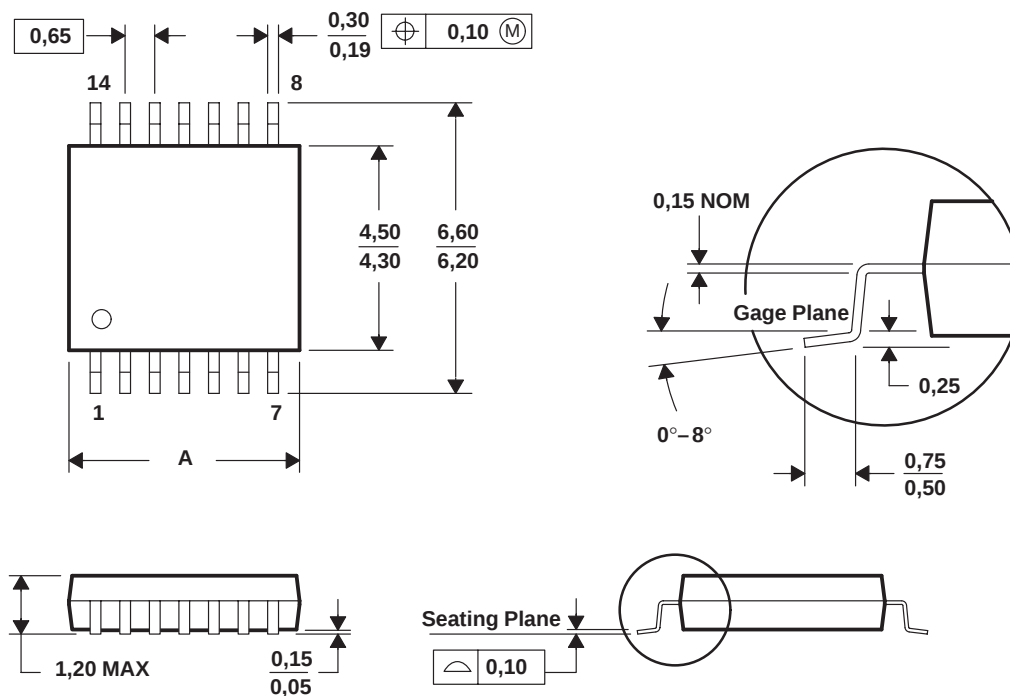
# MECHANICAL DATA

MTSS001C – JANUARY 1995 – REVISED FEBRUARY 1999

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

PLASTIC SMALL-OUTLINE PACKAGE

14 PINS SHOWN



| PINS ** | 8    | 14   | 16   | 20   | 24   | 28   |
|---------|------|------|------|------|------|------|
| DIM     |      |      |      |      |      |      |
| A MAX   | 3,10 | 5,10 | 5,10 | 6,60 | 7,90 | 9,80 |
| A MIN   | 2,90 | 4,90 | 4,90 | 6,40 | 7,70 | 9,60 |

4040064/F 01/97

- NOTES:
- All linear dimensions are in millimeters.
  - This drawing is subject to change without notice.
  - Body dimensions do not include mold flash or protrusion not to exceed 0,15.
  - Falls within JEDEC MO-153

## IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

### Products

|                  |                                                                    |
|------------------|--------------------------------------------------------------------|
| Amplifiers       | <a href="http://amplifier.ti.com">amplifier.ti.com</a>             |
| Data Converters  | <a href="http://dataconverter.ti.com">dataconverter.ti.com</a>     |
| DSP              | <a href="http://dsp.ti.com">dsp.ti.com</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> |

### Applications

|                    |                                                                          |
|--------------------|--------------------------------------------------------------------------|
| Audio              | <a href="http://www.ti.com/audio">www.ti.com/audio</a>                   |
| Automotive         | <a href="http://www.ti.com/automotive">www.ti.com/automotive</a>         |
| Broadband          | <a href="http://www.ti.com/broadband">www.ti.com/broadband</a>           |
| Digital Control    | <a href="http://www.ti.com/digitalcontrol">www.ti.com/digitalcontrol</a> |
| Military           | <a href="http://www.ti.com/military">www.ti.com/military</a>             |
| Optical Networking | <a href="http://www.ti.com/opticalnetwork">www.ti.com/opticalnetwork</a> |
| Security           | <a href="http://www.ti.com/security">www.ti.com/security</a>             |
| Telephony          | <a href="http://www.ti.com/telephony">www.ti.com/telephony</a>           |
| Video & Imaging    | <a href="http://www.ti.com/video">www.ti.com/video</a>                   |
| Wireless           | <a href="http://www.ti.com/wireless">www.ti.com/wireless</a>             |

Mailing Address: Texas Instruments  
Post Office Box 655303 Dallas, Texas 75265