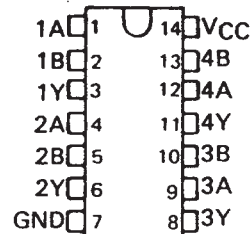


## SDLS047 – DECEMBER 1983 – REVISED MARCH 1988

- (TOP VIEW)**



NC-No internal connection

positive logic:  $Y = \overline{AB}$  or  $Y = \overline{A} + \overline{B}$

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

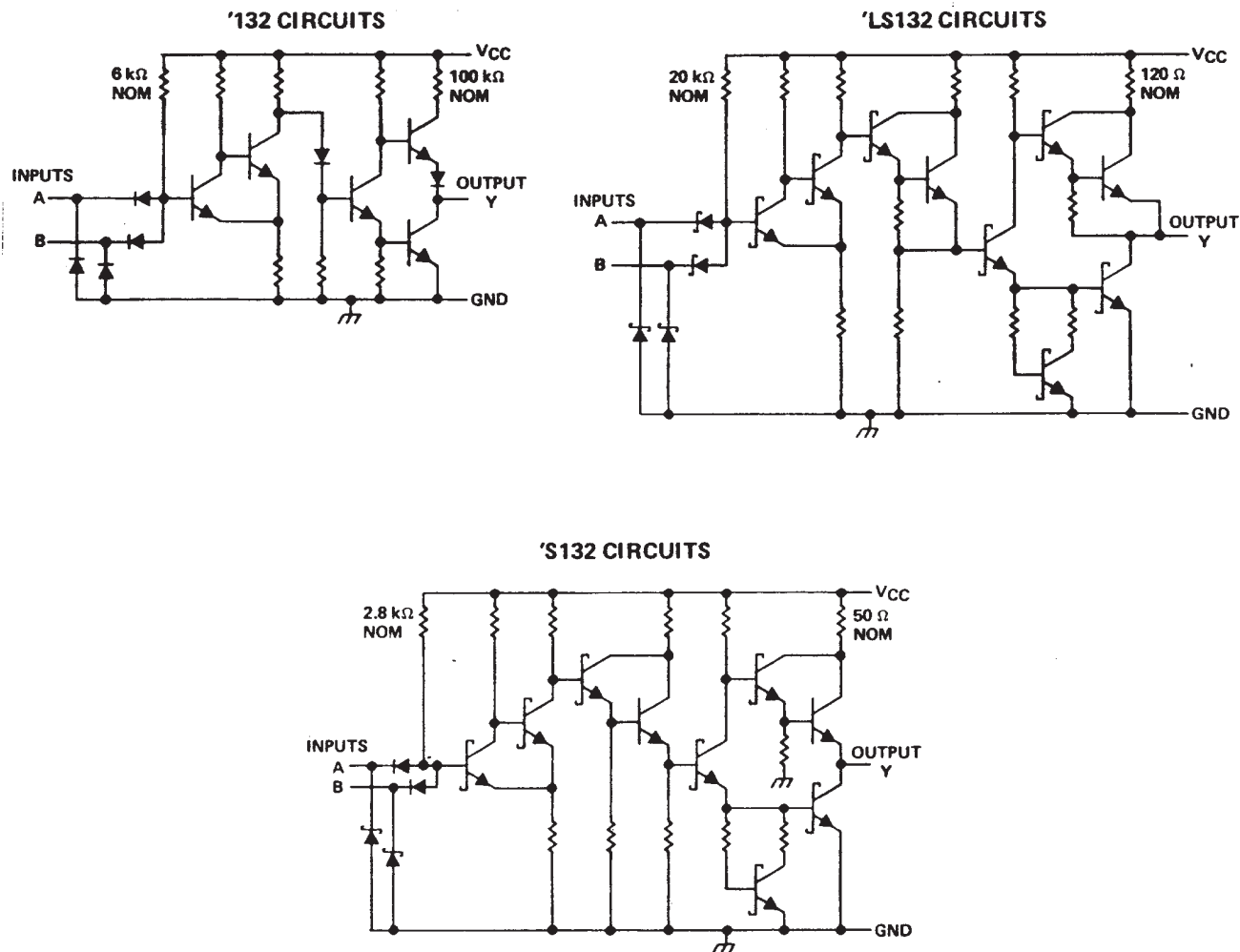


1

# SN54132, SN54LS132, SN54S132, SN74132, SN74LS132, SN74S132 QUADRUPLE 2-INPUT POSITIVE-NAND SCHMITT TRIGGERS

SDLS047 – DECEMBER 1983 – REVISED MARCH 1988

## schematics



Resistor values shown are nominal.

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

|                                            |                 |
|--------------------------------------------|-----------------|
| Supply voltage, $V_{CC}$ (see Note 1)..... | 7 V             |
| Input voltage: '132, 'S132.....            | 5.5 V           |
| 'LS132.....                                | 7 V             |
| Operating free-air temperature: SN54'..... | – 55°C to 125°C |
| SN74'.....                                 | 0°C to 70°C     |
| Storage temperature range.....             | – 65°C to 150°C |

NOTE 1: Voltages values are with respect to network ground terminal.



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# SN54132, SN74132

## QUADRUPLE 2-INPUT POSITIVE-NAND SCHMITT TRIGGERS

SDLS047 – DECEMBER 1983 – REVISED MARCH 1988

### recommended operating conditions

|                                               | SN54132 |     |       | SN74132 |     |       | UNIT |
|-----------------------------------------------|---------|-----|-------|---------|-----|-------|------|
|                                               | MIN     | NOM | MAX   | MIN     | NOM | MAX   |      |
| V <sub>CC</sub> Supply voltage                | 4.5     | 5   | 5.5   | 4.75    | 5   | 5.25  | V    |
| I <sub>OH</sub> High-level output current     |         |     | – 0.8 |         |     | – 0.8 | mA   |
| I <sub>OL</sub> Low-level output current      |         |     | 16    |         |     | 16    | mA   |
| T <sub>A</sub> Operating free-air temperature | – 55    |     | 125   | 0       |     | 70    | °C   |

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

| PARAMETER                                                | TEST CONDITIONS†                                                          | MIN    | TYP‡ | MAX   | UNIT |
|----------------------------------------------------------|---------------------------------------------------------------------------|--------|------|-------|------|
| V <sub>T+</sub>                                          | V <sub>CC</sub> = 5 V                                                     | 1.5    | 1.7  | 2     | V    |
| V <sub>T–</sub>                                          | V <sub>CC</sub> = 5 V                                                     | 0.6    | 0.9  | 1.1   | V    |
| V <sub>hys</sub><br>(V <sub>T+</sub> – V <sub>T–</sub> ) | V <sub>CC</sub> = 5 V                                                     | 0.4    | 0.8  |       | V    |
| V <sub>IK</sub>                                          | V <sub>CC</sub> = MIN, I <sub>I</sub> = – 12 mA                           |        |      | – 1.5 | V    |
| V <sub>OH</sub>                                          | V <sub>CC</sub> = MIN, V <sub>I</sub> = 0.6 V, I <sub>OH</sub> = – 0.8 mA | 2.4    | 3.4  |       | V    |
| V <sub>OL</sub>                                          | V <sub>CC</sub> = MIN, V <sub>I</sub> = 2 V, I <sub>OL</sub> = 16 mA      |        | 0.2  | 0.4   | V    |
| I <sub>T+</sub>                                          | V <sub>CC</sub> = 5 V, V <sub>I</sub> = V <sub>T+</sub>                   | – 0.43 |      |       | mA   |
| I <sub>T–</sub>                                          | V <sub>CC</sub> = 5 V, V <sub>I</sub> = V <sub>T–</sub>                   | – 0.56 |      |       | mA   |
| I <sub>I</sub>                                           | V <sub>CC</sub> = MAX, V <sub>I</sub> = 5.5 V                             |        |      | 1     | mA   |
| I <sub>IH</sub>                                          | V <sub>CC</sub> = MAX, V <sub>I</sub> = 2.4 V                             |        |      | 40    | μA   |
| I <sub>IL</sub>                                          | V <sub>CC</sub> = MAX, V <sub>IL</sub> = 0.4 V                            | – 0.8  |      | – 1.2 | mA   |
| I <sub>OS</sub> §                                        | V <sub>CC</sub> = MAX                                                     | – 18   |      | – 55  | mA   |
| I <sub>CCH</sub>                                         | V <sub>CC</sub> = MAX                                                     |        | 15   | 24    | mA   |
| I <sub>CCL</sub>                                         | V <sub>CC</sub> = MAX                                                     |        | 26   | 40    | mA   |

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

‡ All typical values are at V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C.

§ Not more than one output should be shorted at a time.

### switching characteristics, V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C (see figure 1)

| PARAMETER        | FROM<br>(INPUT) | TO<br>(OUTPUT) | TEST CONDITIONS                                | MIN | TYP | MAX | UNIT |
|------------------|-----------------|----------------|------------------------------------------------|-----|-----|-----|------|
| t <sub>PLH</sub> | Any             | Y              | R <sub>L</sub> = 400 Ω, C <sub>L</sub> = 15 pF |     | 15  | 22  | ns   |
| t <sub>PHL</sub> |                 |                |                                                |     | 15  | 22  | ns   |



# SN54LS132, SN74LS132

## QUADRUPLE 2-INPUT POSITIVE-NAND SCHMITT TRIGGERS

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### recommended operating conditions

|                                      | SN54LS132 |     |      | SN74LS132 |     |      | UNIT |
|--------------------------------------|-----------|-----|------|-----------|-----|------|------|
|                                      | MIN       | NOM | MAX  | MIN       | NOM | MAX  |      |
| $V_{CC}$ Supply voltage              | 4.5       | 5   | 5.5  | 4.75      | 5   | 5.25 | V    |
| $I_{OH}$ High-level output current   |           |     | -0.4 |           |     | -0.4 | mA   |
| $I_{OL}$ Low-level output current    |           |     | 4    |           |     | 8    | mA   |
| $T_A$ Operating free-air temperature | -55       |     | 125  | 0         |     | 70   | °C   |

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

| PARAMETER                          | TEST CONDITIONS†                                                   | SN54LS132              |      |      | SN74LS132 |                        |      | UNIT |    |
|------------------------------------|--------------------------------------------------------------------|------------------------|------|------|-----------|------------------------|------|------|----|
|                                    |                                                                    | MIN                    | TYP‡ | MAX  | MIN       | TYP‡                   | MAX  |      |    |
| $V_{T+}$                           | $V_{CC} = 5\text{ V}$                                              | 1.4                    | 1.6  | 1.9  | 1.4       | 1.6                    | 1.9  | V    |    |
| $V_{T-}$                           | $V_{CC} = 5\text{ V}$                                              | 0.5                    | 0.8  | 1    | 0.5       | 0.8                    | 1    | V    |    |
| $V_{hys}$<br>( $V_{T+} - V_{T-}$ ) | $V_{CC} = 5\text{ V}$                                              | 0.4                    | 0.8  |      | 0.4       | 0.8                    |      | V    |    |
| $V_{IK}$                           | $V_{CC} = \text{MIN}, I_I = -18\text{ mA}$                         | -1.5                   |      |      | -1.5      |                        |      | V    |    |
| $V_{OH}$                           | $V_{CC} = \text{MIN}, V_I = 0.5\text{ V}, I_{OH} = -0.4\text{ mA}$ | 2.5                    | 3.4  |      | 2.7       | 3.4                    |      | V    |    |
| $V_{OL}$                           | $V_{CC} = \text{MIN}, V_I = 1.9\text{ V}$                          | $I_{OL} = 4\text{ mA}$ |      | 0.25 | 0.4       | $I_{OL} = 4\text{ mA}$ |      | V    |    |
|                                    |                                                                    | $I_{OL} = 8\text{ mA}$ |      |      |           | $I_{OL} = 8\text{ mA}$ |      |      |    |
| $I_{T+}$                           | $V_{CC} = 5\text{ V}, V_I = V_{T+}$                                | -0.14                  |      |      | -0.14     |                        |      | mA   |    |
| $I_{T-}$                           | $V_{CC} = 5\text{ V}, V_I = V_{T-}$                                | -0.18                  |      |      | -0.18     |                        |      | mA   |    |
| $I_I$                              | $V_{CC} = \text{MAX}, V_I = 7\text{ V}$                            | 0.1                    |      |      | 0.1       |                        |      | mA   |    |
| $I_{IH}$                           | $V_{CC} = \text{MAX}, V_I = 2.7\text{ V}$                          | 20                     |      |      | 20        |                        |      | µA   |    |
| $I_{IL}$                           | $V_{CC} = \text{MAX}, V_{IL} = 0.4\text{ V}$                       | -0.4                   |      |      | -0.4      |                        |      | mA   |    |
| $I_{OS} §$                         | $V_{CC} = \text{MAX}$                                              | -20                    |      | -100 | -20       |                        | -100 | mA   |    |
| $I_{CCH}$                          | $V_{CC} = \text{MAX}$                                              | 5.9                    |      |      | 11        | 5.9                    |      | 11   | mA |
| $I_{CCL}$                          | $V_{CC} = \text{MAX}$                                              | 8.2                    |      |      | 14        | 8.2                    |      | 14   | mA |

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

‡ All typical values are at  $V_{CC} = 5\text{ V}, T_A = 25^\circ\text{C}$ .

§ Not more than one output should be shorted at a time, and duration of the short-circuit should not exceed one second

### switching characteristics, $V_{CC} = 5\text{ V}, T_A = 25^\circ\text{C}$ (see figure 1)

| PARAMETER | FROM<br>(INPUT) | TO<br>(OUTPUT) | TEST CONDITIONS                              | MIN | TYP | MAX | UNIT |
|-----------|-----------------|----------------|----------------------------------------------|-----|-----|-----|------|
| $t_{PLH}$ | Any             | Y              | $R_L = 2\text{ k}\Omega, C_L = 15\text{ pF}$ |     | 15  | 22  | ns   |
| $t_{PHL}$ |                 |                |                                              |     | 15  | 22  | ns   |



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# SN54S132, SN74S132

## QUADRUPLE 2-INPUT POSITIVE-NAND SCHMITT TRIGGERS

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### recommended operating conditions

|                                      | SN54S132 |     |     | SN74S132 |     |      | UNIT |
|--------------------------------------|----------|-----|-----|----------|-----|------|------|
|                                      | MIN      | NOM | MAX | MIN      | NOM | MAX  |      |
| $V_{CC}$ Supply voltage              | 4.5      | 5   | 5.5 | 4.75     | 5   | 5.25 | V    |
| $I_{OH}$ High-level output current   |          |     | – 1 |          |     | – 1  | mA   |
| $I_{OL}$ Low-level output current    |          |     | 20  |          |     | 20   | mA   |
| $T_A$ Operating free-air temperature | – 55     |     | 125 | 0        |     | 70   | °C   |

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

| PARAMETER                          | TEST CONDITIONS†                                                 | SN54S132 |       |       | SN74S132 |       |       | UNIT |
|------------------------------------|------------------------------------------------------------------|----------|-------|-------|----------|-------|-------|------|
|                                    |                                                                  | MIN      | TYP‡  | MAX   | MIN      | TYP‡  | MAX   |      |
| $V_{T+}$                           | $V_{CC} = 5\text{ V}$                                            | 1.6      | 1.77  | 1.9   | 1.6      | 1.77  | 1.9   | V    |
| $V_{T-}$                           | $V_{CC} = 5\text{ V}$                                            | 1.1      | 1.22  | 1.4   | 1.1      | 1.22  | 1.4   | V    |
| $V_{hys}$<br>( $V_{T+} - V_{T-}$ ) | $V_{CC} = 5\text{ V}$                                            | 0.2      | 0.55  |       | 0.2      | 0.55  |       | V    |
| $V_{IK}$                           | $V_{CC} = \text{MIN}, I_I = -18\text{ mA}$                       |          |       | – 1.2 |          |       | – 1.2 | V    |
| $V_{OH}$                           | $V_{CC} = \text{MIN}, V_I = 1.1\text{ V}, I_{OH} = -1\text{ mA}$ | 2.5      | 3.4   |       | 2.7      | 3.4   |       | V    |
| $V_{OL}$                           | $V_{CC} = \text{MIN}, V_I = 1.9\text{ V}, I_{OL} = 20\text{ mA}$ |          |       | 0.5   |          |       | 0.5   | V    |
| $I_{T+}$                           | $V_{CC} = 5\text{ V}, V_I = V_{T+}$                              |          | – 0.9 |       |          | – 0.9 |       | mA   |
| $I_{T-}$                           | $V_{CC} = 5\text{ V}, V_I = V_{T-}$                              |          | – 1.1 |       |          | – 1.1 |       | mA   |
| $I_I$                              | $V_{CC} = \text{MAX}, V_I = 5.5\text{ V}$                        |          |       | 1     |          |       | 1     | mA   |
| $I_{IH}$                           | $V_{CC} = \text{MAX}, V_I = 2.7\text{ V}$                        |          |       | 50    |          |       | 50    | μA   |
| $I_{IL}$                           | $V_{CC} = \text{MAX}, V_{IL} = 0.5\text{ V}$                     |          |       | – 2   |          |       | – 2   | mA   |
| $I_{OS}§$                          | $V_{CC} = \text{MAX}$                                            | – 40     |       | – 100 | – 40     |       | – 100 | mA   |
| $I_{CCH}$                          | $V_{CC} = \text{MAX}$                                            |          | 28    | 44    |          | 28    | 44    | mA   |
| $I_{CCL}$                          | $V_{CC} = \text{MAX}$                                            |          | 44    | 68    |          | 44    | 68    | mA   |

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

‡ All typical values are at  $V_{CC} = 5\text{ V}, T_A = 25^\circ\text{C}$ .

§ Not more than one output should be shorted at a time, and duration of the short-circuit should not exceed one second.

### switching characteristics, $V_{CC} = 5\text{ V}, T_A = 25^\circ\text{C}$ (see figure 1)

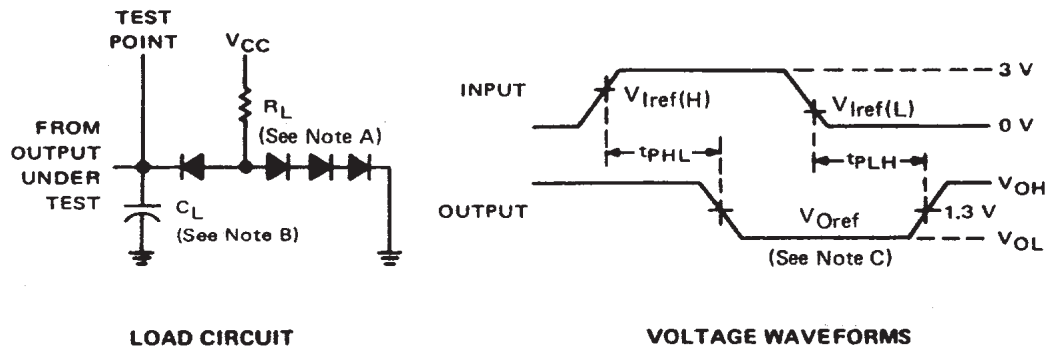
| PARAMETER | FROM<br>(INPUT) | TO<br>(OUTPUT) | TEST CONDITIONS      |                      | MIN | TYP | MAX  | UNIT |
|-----------|-----------------|----------------|----------------------|----------------------|-----|-----|------|------|
| $t_{PLH}$ | A or B          | Y              | $R_L = 280\ \Omega,$ | $C_L = 15\text{ pF}$ |     | 7   | 10.5 | ns   |
| $t_{PHL}$ |                 |                |                      |                      |     | 8.5 | 13   | ns   |



SN54132, SN54LS132, SN54S132,  
SN74132, SN74LS132, SN74S132  
QUADRUPLE 2-INPUT POSITIVE-NAND SCHMITT TRIGGERS

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PARAMETER MEASUREMENT INFORMATION



- NOTES: A. All diodes are 1N3064 or equivalent.  
 B.  $C_L$  includes probe and jig capacitance.  
 C. Generator characteristics and reference voltages are:

|                 | Generator Characteristics |       |        |        | Reference Voltages |                 |              |
|-----------------|---------------------------|-------|--------|--------|--------------------|-----------------|--------------|
|                 | $Z_{out}$                 | PRR   | $t_r$  | $t_f$  | $V_{I\ ref(H)}$    | $V_{I\ ref(L)}$ | $V_{O\ ref}$ |
| SN54'/SN74'     | 50                        | 1 MHz | 10 ns  | 10 ns  | 1.7 V              | 0.9 V           | 1.5 V        |
| SN54LS'/SN74LS' | 50                        | 1 MHz | 15 ns  | 6 ns   | 1.6 V              | 0.8 V           | 1.3 V        |
| 'S132           | 50                        | 1 MHz | 2.5 ns | 2.5 ns | 1.8 V              | 1.2 V           | 1.5 V        |

FIGURE 1

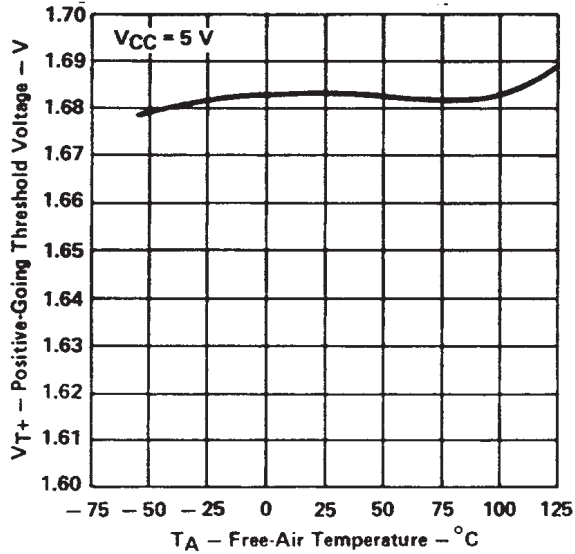
# SN54132, SN74132

## QUADRUPLE 2-INPUT POSITIVE-NAND SCHMITT TRIGGERS

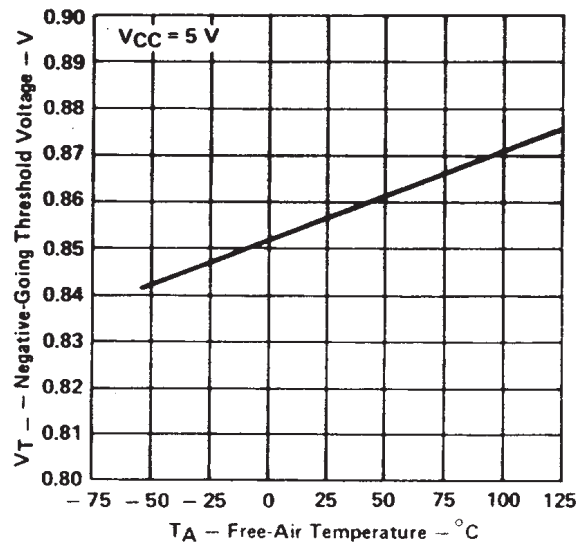
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### TYPICAL CHARACTERISTICS OF '132 CIRCUITS

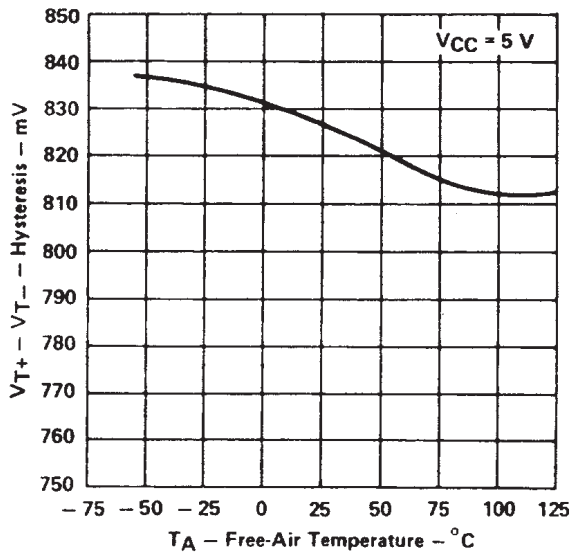
POSITIVE-GOING THRESHOLD VOLTAGE  
vs  
FREE-AIR TEMPERATURE



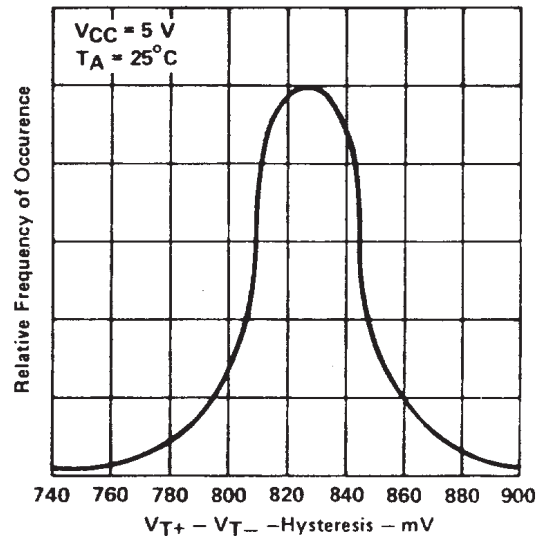
NEGATIVE-GOING THRESHOLD VOLTAGE  
vs  
FREE-AIR TEMPERATURE



HYSTERESIS  
vs  
FREE-AIR TEMPERATURE



DISTRIBUTION OF UNITS  
FOR HYSTERESIS

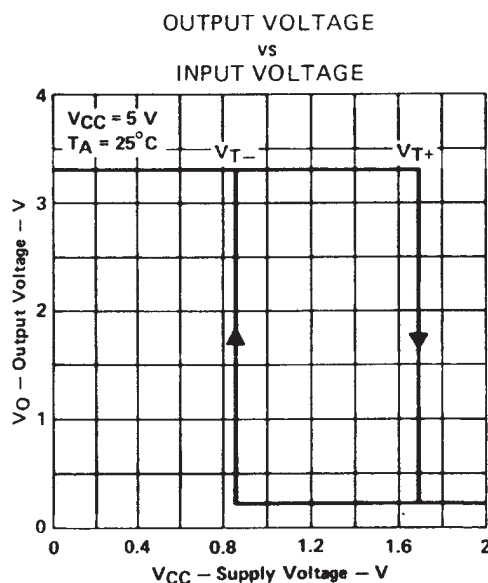
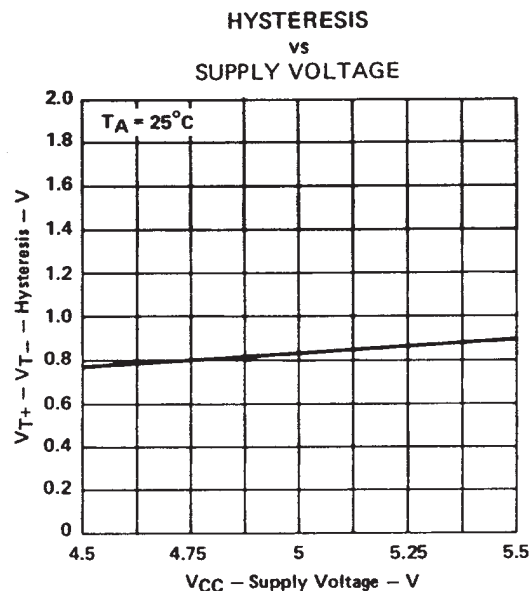
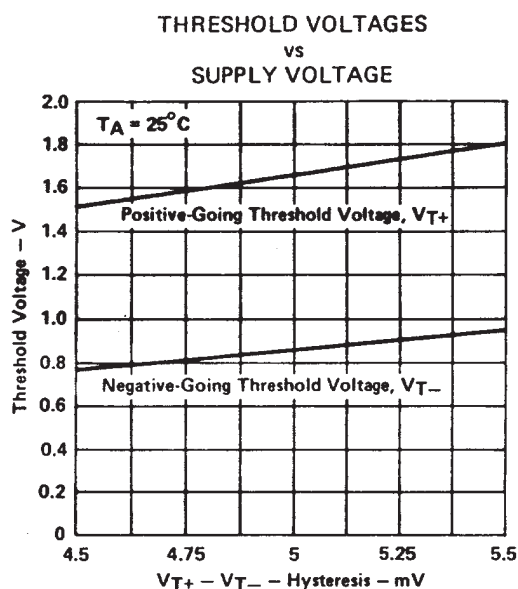


# SN54132, SN74132

## QUADRUPLE 2-INPUT POSITIVE-NAND SCHMITT TRIGGERS

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### TYPICAL CHARACTERISTICS OF '132 CIRCUITS



† Data for temperatures below  $0^\circ\text{C}$  and  $70^\circ\text{C}$  and supply below 4.75 V and above 5.25 V are applicable for SN54132 only.



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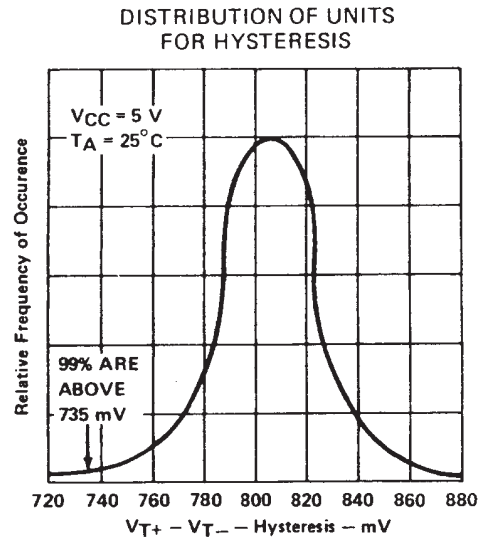
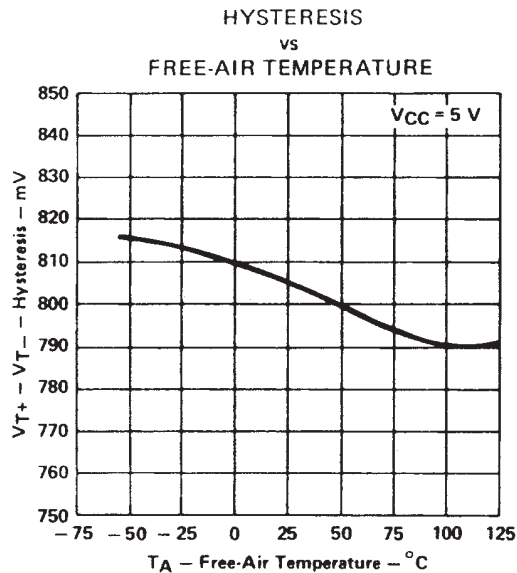
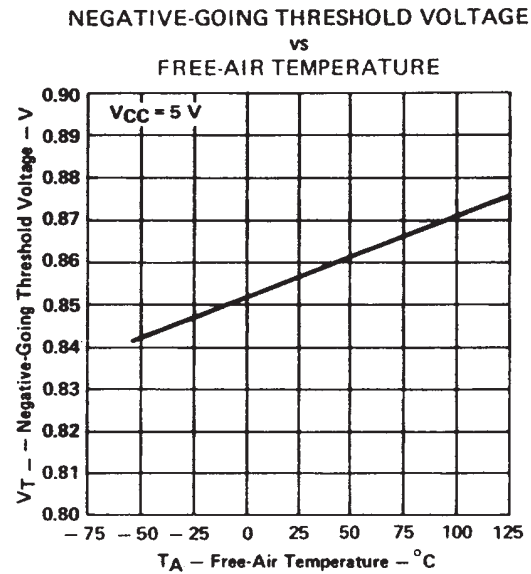
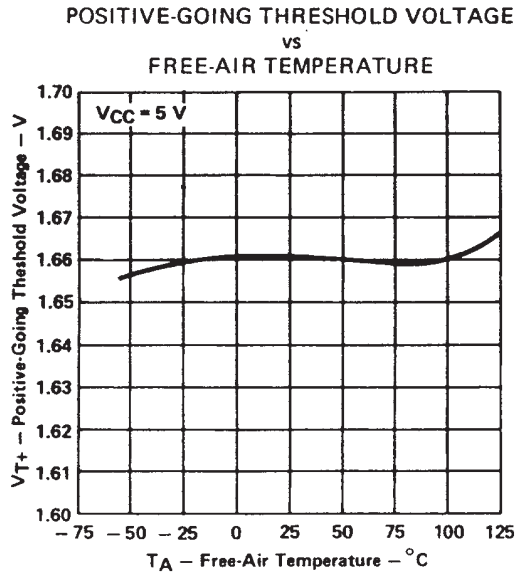


# SN54LS132, SN74LS132

## QUADRUPLE 2-INPUT POSITIVE-NAND SCHMITT TRIGGERS

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### TYPICAL CHARACTERISTICS OF 'LS132 CIRCUITS



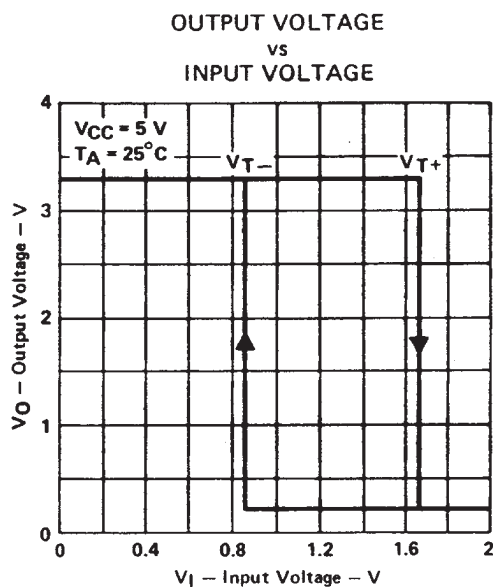
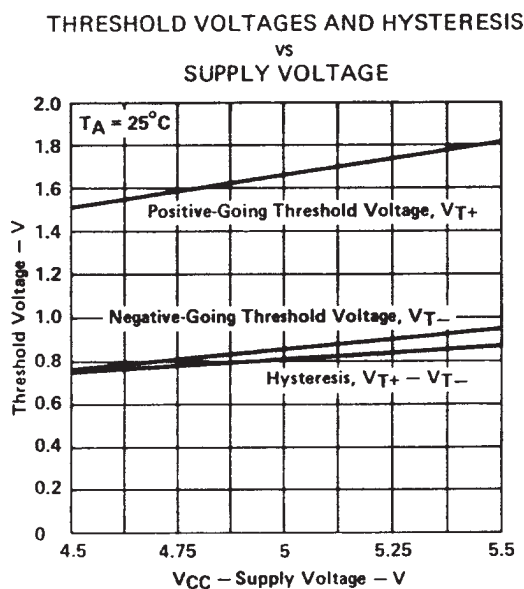
Data for temperatures below  $0^{\circ}\text{C}$  and above  $70^{\circ}\text{C}$  and supply voltages below 4.75 V and above 5.25 V are applicable for SN54LS132 only.

# SN54LS132, SN74LS132

## QUADRUPLE 2-INPUT POSITIVE-NAND SCHMITT TRIGGERS

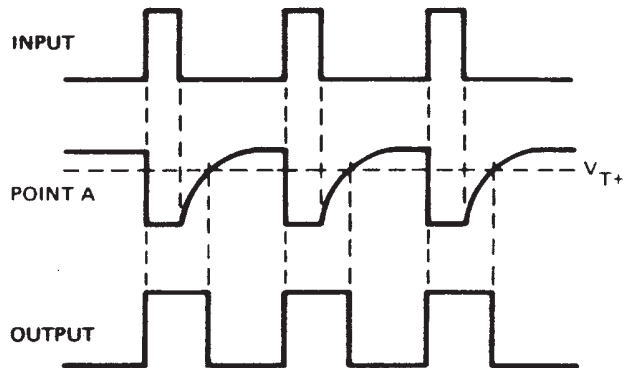
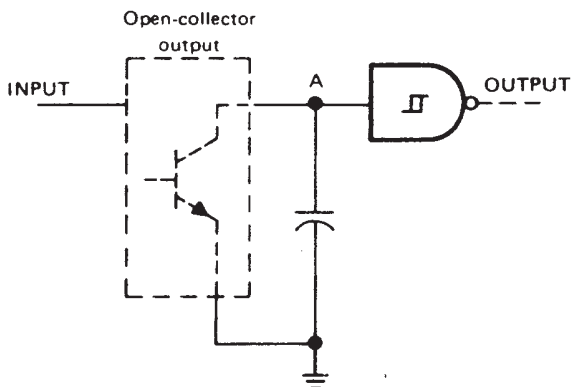
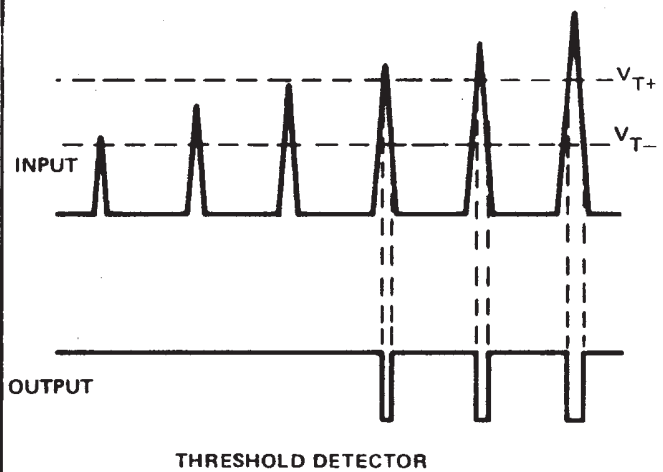
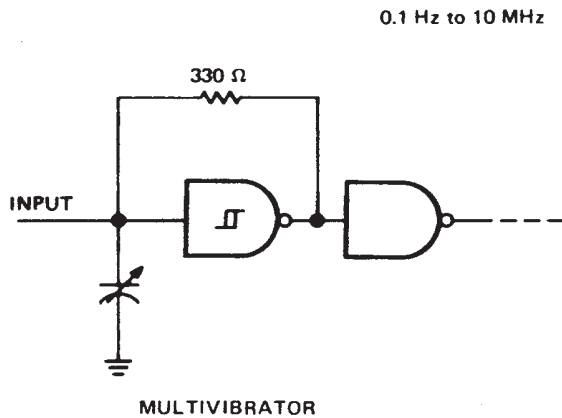
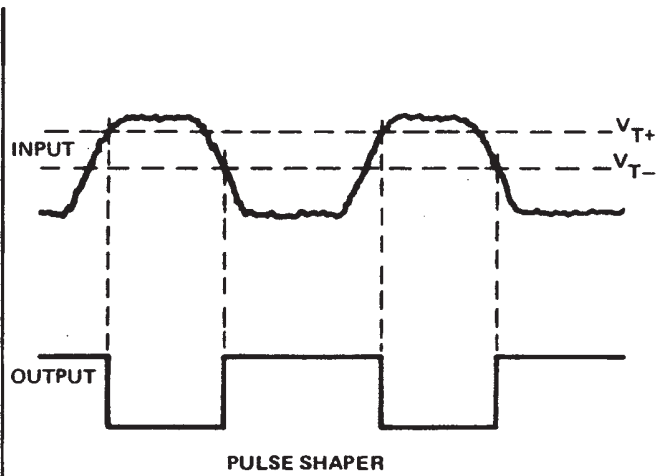
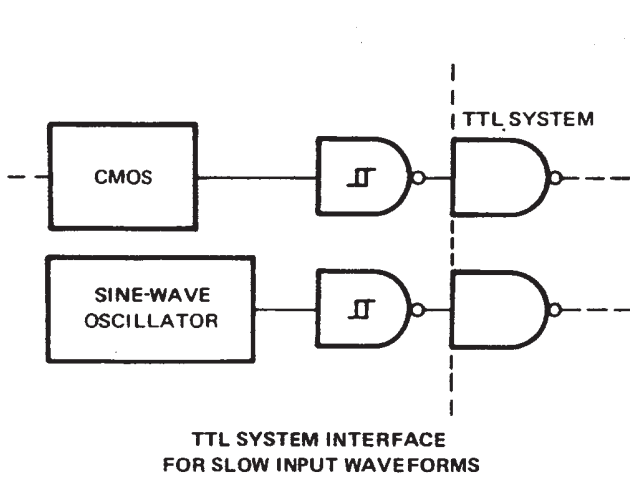
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### TYPICAL CHARACTERISTICS OF 'LS132 CIRCUITS



† Data for temperatures below  $0^\circ\text{C}$  and above  $70^\circ\text{C}$  and supply voltages below 4.75 V and above 5.25 V are applicable for SN54LS132 only.

TYPICAL APPLICATION DATA



PULSE STRETCHER

**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> |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| 7600401CA        | ACTIVE                | CDIP         | J               | 14   | 1           | TBD                     | A42 SNPB         | N / A for Pkg Type           |
| 7600401DA        | ACTIVE                | CFP          | W               | 14   | 1           | TBD                     | A42              | N / A for Pkg Type           |
| 7600401DA        | ACTIVE                | CFP          | W               | 14   | 1           | TBD                     | A42              | N / A for Pkg Type           |
| JM38510/31303BCA | ACTIVE                | CDIP         | J               | 14   | 1           | TBD                     | A42 SNPB         | N / A for Pkg Type           |
| JM38510/31303BCA | ACTIVE                | CDIP         | J               | 14   | 1           | TBD                     | A42 SNPB         | N / A for Pkg Type           |
| SN54132J         | OBSOLETE              | CDIP         | J               | 14   |             | TBD                     | Call TI          | Call TI                      |
| SN54132J         | OBSOLETE              | CDIP         | J               | 14   |             | TBD                     | Call TI          | Call TI                      |
| SN54LS132J       | ACTIVE                | CDIP         | J               | 14   | 1           | TBD                     | A42 SNPB         | N / A for Pkg Type           |
| SN54LS132J       | ACTIVE                | CDIP         | J               | 14   | 1           | TBD                     | A42 SNPB         | N / A for Pkg Type           |
| SN54S132J        | ACTIVE                | CDIP         | J               | 14   | 1           | TBD                     | A42 SNPB         | N / A for Pkg Type           |
| SN54S132J        | ACTIVE                | CDIP         | J               | 14   | 1           | TBD                     | A42 SNPB         | N / A for Pkg Type           |
| SN74132N         | OBSOLETE              | PDIP         | N               | 14   |             | TBD                     | Call TI          | Call TI                      |
| SN74132N         | OBSOLETE              | PDIP         | N               | 14   |             | TBD                     | Call TI          | Call TI                      |
| SN74132N3        | OBSOLETE              | PDIP         | N               | 14   |             | TBD                     | Call TI          | Call TI                      |
| SN74132N3        | OBSOLETE              | PDIP         | N               | 14   |             | TBD                     | Call TI          | Call TI                      |
| SN74LS132D       | ACTIVE                | SOIC         | D               | 14   | 50          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS132D       | ACTIVE                | SOIC         | D               | 14   | 50          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS132DE4     | ACTIVE                | SOIC         | D               | 14   | 50          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS132DE4     | ACTIVE                | SOIC         | D               | 14   | 50          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS132DG4     | ACTIVE                | SOIC         | D               | 14   | 50          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS132DG4     | ACTIVE                | SOIC         | D               | 14   | 50          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS132DR      | ACTIVE                | SOIC         | D               | 14   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS132DR      | ACTIVE                | SOIC         | D               | 14   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS132DRE4    | ACTIVE                | SOIC         | D               | 14   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS132DRE4    | ACTIVE                | SOIC         | D               | 14   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS132DRG4    | ACTIVE                | SOIC         | D               | 14   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS132DRG4    | ACTIVE                | SOIC         | D               | 14   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS132J       | OBSOLETE              | CDIP         | J               | 14   |             | TBD                     | Call TI          | Call TI                      |
| SN74LS132J       | OBSOLETE              | CDIP         | J               | 14   |             | TBD                     | Call TI          | Call TI                      |
| SN74LS132N       | ACTIVE                | PDIP         | N               | 14   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | N / A for Pkg Type           |
| SN74LS132N       | ACTIVE                | PDIP         | N               | 14   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | N / A for Pkg Type           |
| SN74LS132N3      | OBSOLETE              | PDIP         | N               | 14   |             | TBD                     | Call TI          | Call TI                      |

| 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> |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| SN74LS132N3      | OBSOLETE              | PDIP         | N               | 14   |             | TBD                     | Call TI          | Call TI                      |
| SN74LS132NE4     | ACTIVE                | PDIP         | N               | 14   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | N / A for Pkg Type           |
| SN74LS132NE4     | ACTIVE                | PDIP         | N               | 14   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | N / A for Pkg Type           |
| SN74LS132NSR     | ACTIVE                | SO           | NS              | 14   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS132NSR     | ACTIVE                | SO           | NS              | 14   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS132NSRE4   | ACTIVE                | SO           | NS              | 14   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS132NSRE4   | ACTIVE                | SO           | NS              | 14   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS132NSRG4   | ACTIVE                | SO           | NS              | 14   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74LS132NSRG4   | ACTIVE                | SO           | NS              | 14   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74S132D        | ACTIVE                | SOIC         | D               | 14   | 50          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74S132D        | ACTIVE                | SOIC         | D               | 14   | 50          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74S132DE4      | ACTIVE                | SOIC         | D               | 14   | 50          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74S132DE4      | ACTIVE                | SOIC         | D               | 14   | 50          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74S132DG4      | ACTIVE                | SOIC         | D               | 14   | 50          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74S132DG4      | ACTIVE                | SOIC         | D               | 14   | 50          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74S132DR       | ACTIVE                | SOIC         | D               | 14   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74S132DR       | ACTIVE                | SOIC         | D               | 14   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74S132DRE4     | ACTIVE                | SOIC         | D               | 14   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74S132DRE4     | ACTIVE                | SOIC         | D               | 14   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74S132DRG4     | ACTIVE                | SOIC         | D               | 14   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74S132DRG4     | ACTIVE                | SOIC         | D               | 14   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74S132N        | ACTIVE                | PDIP         | N               | 14   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | N / A for Pkg Type           |
| SN74S132N        | ACTIVE                | PDIP         | N               | 14   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | N / A for Pkg Type           |
| SN74S132N3       | OBSOLETE              | PDIP         | N               | 14   |             | TBD                     | Call TI          | Call TI                      |
| SN74S132N3       | OBSOLETE              | PDIP         | N               | 14   |             | TBD                     | Call TI          | Call TI                      |
| SN74S132NE4      | ACTIVE                | PDIP         | N               | 14   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | N / A for Pkg Type           |
| SN74S132NE4      | ACTIVE                | PDIP         | N               | 14   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | N / A for Pkg Type           |

| 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> |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| SNJ54132J        | OBSOLETE              | CDIP         | J               | 14   |             | TBD                     | Call TI          | Call TI                      |
| SNJ54132J        | OBSOLETE              | CDIP         | J               | 14   |             | TBD                     | Call TI          | Call TI                      |
| SNJ54LS132FK     | ACTIVE                | LCCC         | FK              | 20   | 1           | TBD                     | POST-PLATE       | N / A for Pkg Type           |
| SNJ54LS132FK     | ACTIVE                | LCCC         | FK              | 20   | 1           | TBD                     | POST-PLATE       | N / A for Pkg Type           |
| SNJ54LS132J      | ACTIVE                | CDIP         | J               | 14   | 1           | TBD                     | A42 SNPB         | N / A for Pkg Type           |
| SNJ54LS132J      | ACTIVE                | CDIP         | J               | 14   | 1           | TBD                     | A42 SNPB         | N / A for Pkg Type           |
| SNJ54LS132W      | ACTIVE                | CFP          | W               | 14   | 1           | TBD                     | A42              | N / A for Pkg Type           |
| SNJ54LS132W      | ACTIVE                | CFP          | W               | 14   | 1           | TBD                     | A42              | N / A for Pkg Type           |
| SNJ54S132FK      | ACTIVE                | LCCC         | FK              | 20   | 1           | TBD                     | POST-PLATE       | N / A for Pkg Type           |
| SNJ54S132FK      | ACTIVE                | LCCC         | FK              | 20   | 1           | TBD                     | POST-PLATE       | N / A for Pkg Type           |
| SNJ54S132J       | ACTIVE                | CDIP         | J               | 14   | 1           | TBD                     | A42 SNPB         | N / A for Pkg Type           |
| SNJ54S132J       | ACTIVE                | CDIP         | J               | 14   | 1           | TBD                     | A42 SNPB         | N / A for Pkg Type           |
| SNJ54S132W       | ACTIVE                | CFP          | W               | 14   | 1           | TBD                     | A42              | N / A for Pkg Type           |
| SNJ54S132W       | ACTIVE                | CFP          | W               | 14   | 1           | TBD                     | A42              | N / A for Pkg Type           |

<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.

<sup>(2)</sup> Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

**TBD:** The Pb-Free/Green conversion plan has not been defined.

**Pb-Free (RoHS):** TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

**Pb-Free (RoHS Exempt):** This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

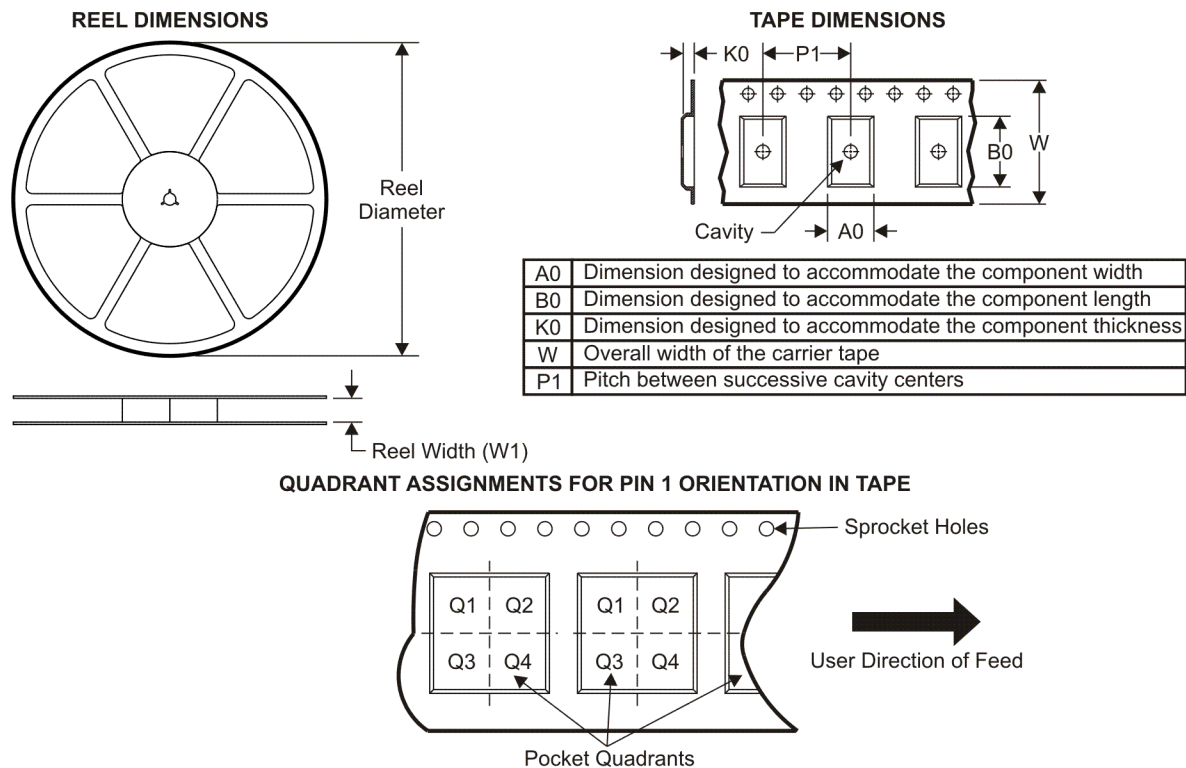
**Green (RoHS & no Sb/Br):** TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

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

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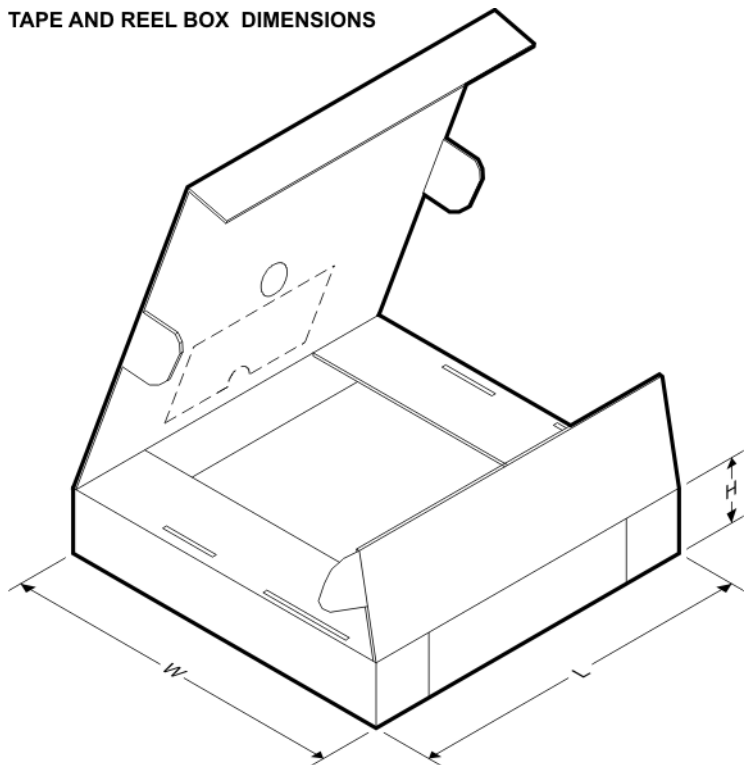
**TAPE AND REEL INFORMATION**



\*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 |
|--------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| SN74LS132DR  | SOIC         | D               | 14   | 2500 | 330.0              | 16.4               | 6.5     | 9.0     | 2.1     | 8.0     | 16.0   | Q1            |
| SN74LS132NSR | SO           | NS              | 14   | 2000 | 330.0              | 16.4               | 8.2     | 10.5    | 2.5     | 12.0    | 16.0   | Q1            |
| SN74S132DR   | SOIC         | D               | 14   | 2500 | 330.0              | 16.4               | 6.5     | 9.0     | 2.1     | 8.0     | 16.0   | Q1            |

## TAPE AND REEL BOX DIMENSIONS



\*All dimensions are nominal

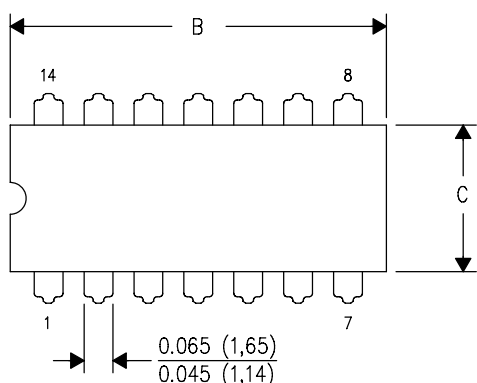
| Device       | Package Type | Package Drawing | Pins | SPQ  | Length (mm) | Width (mm) | Height (mm) |
|--------------|--------------|-----------------|------|------|-------------|------------|-------------|
| SN74LS132DR  | SOIC         | D               | 14   | 2500 | 346.0       | 346.0      | 33.0        |
| SN74LS132NSR | SO           | NS              | 14   | 2000 | 346.0       | 346.0      | 33.0        |
| SN74S132DR   | SOIC         | D               | 14   | 2500 | 346.0       | 346.0      | 33.0        |



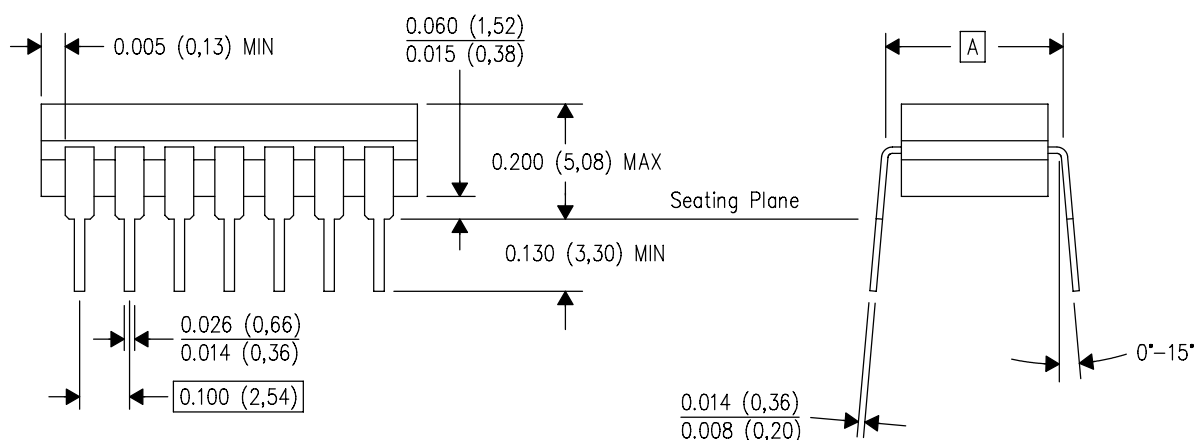
J (R-GDIP-T\*\*)

14 LEADS SHOWN

# CERAMIC DUAL IN-LINE PACKAGE



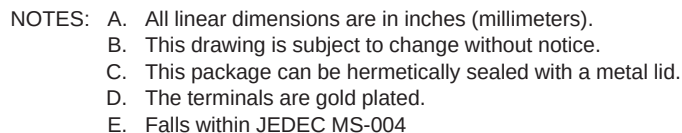
| PINS **<br>DIM | 14                     | 16                     | 18                     | 20                     |
|----------------|------------------------|------------------------|------------------------|------------------------|
| A              | 0.300<br>(7,62)<br>BSC | 0.300<br>(7,62)<br>BSC | 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.

## 28 TERMINAL SHOWN

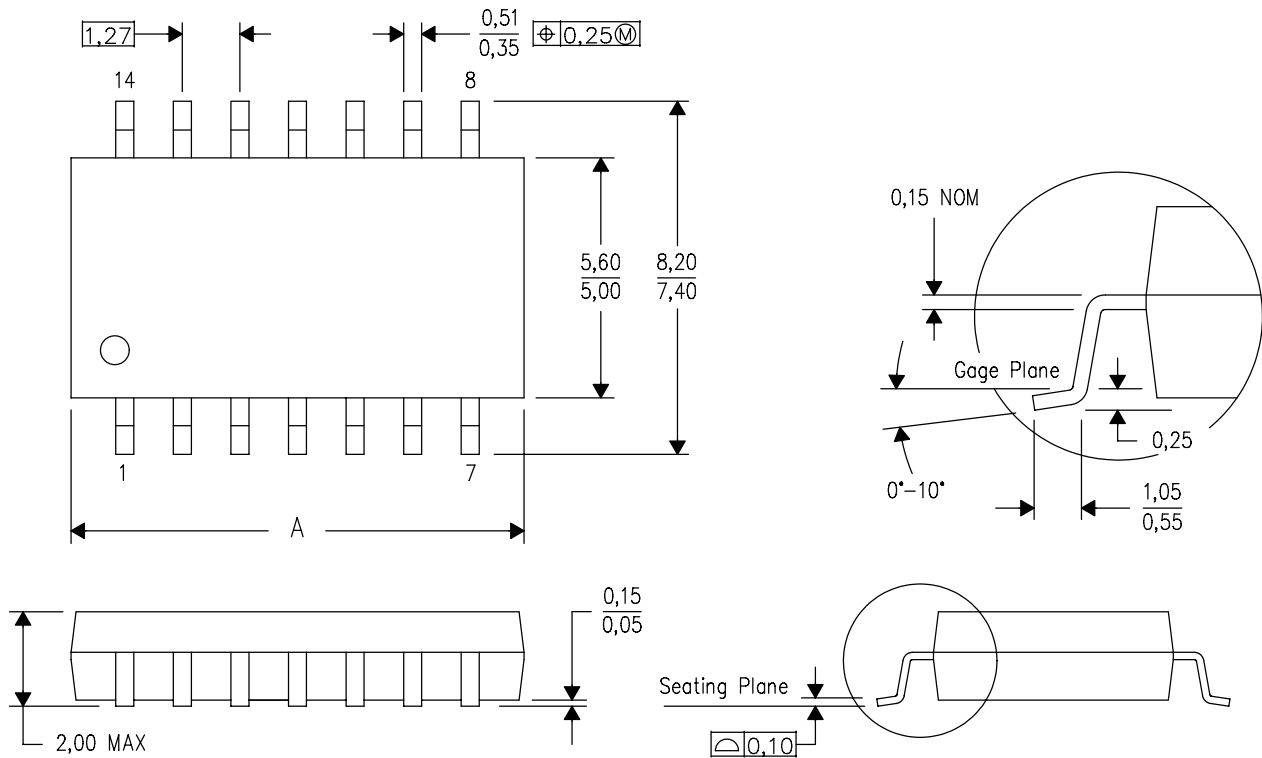


# MECHANICAL DATA

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

PLASTIC SMALL-OUTLINE PACKAGE

14-PINS SHOWN



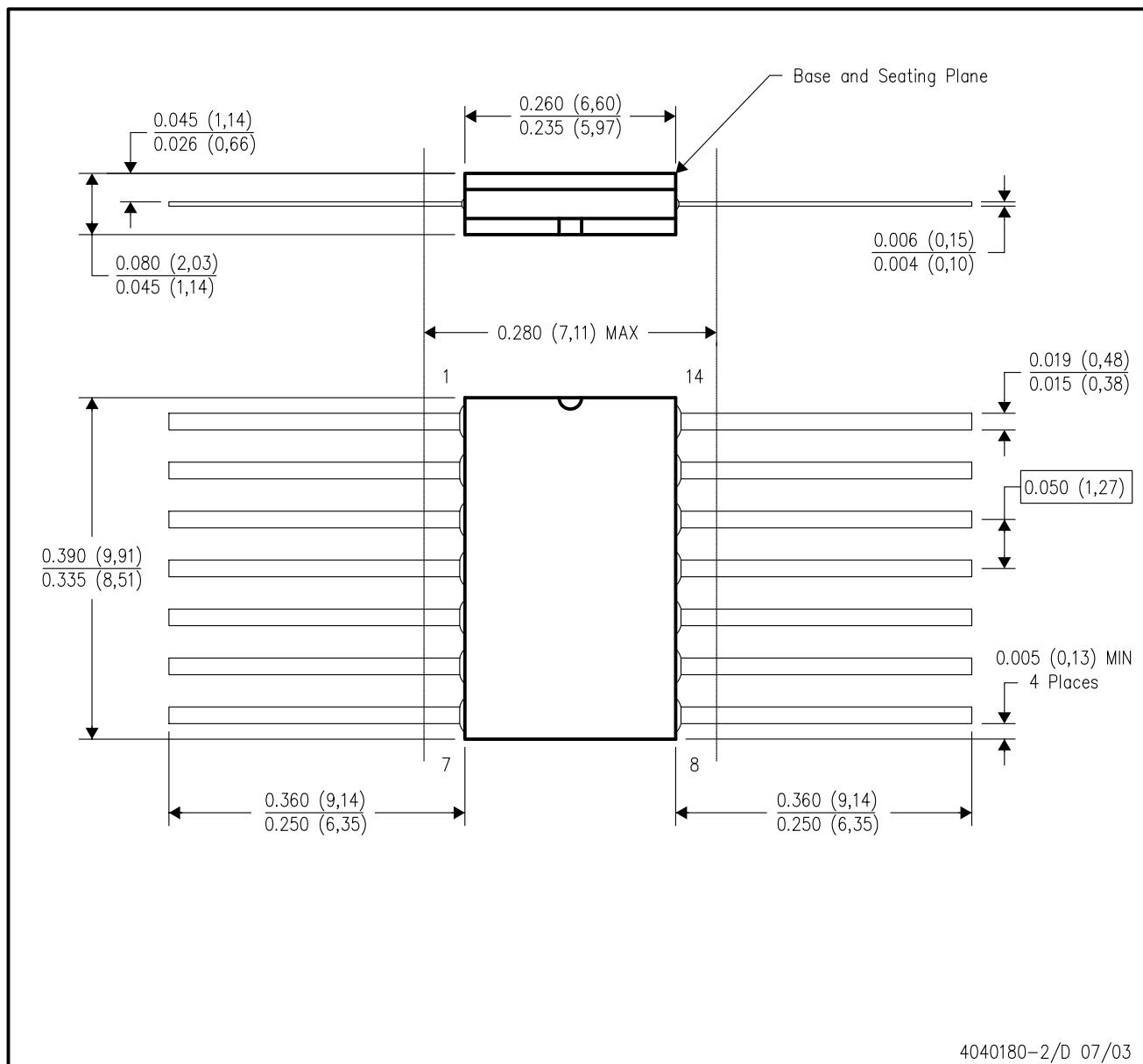
| DIM \ PINS ** | 14    | 16    | 20    | 24    |
|---------------|-------|-------|-------|-------|
| A MAX         | 10,50 | 10,50 | 12,90 | 15,30 |
| A MIN         | 9,90  | 9,90  | 12,30 | 14,70 |

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.

W (R-GDFP-F14)

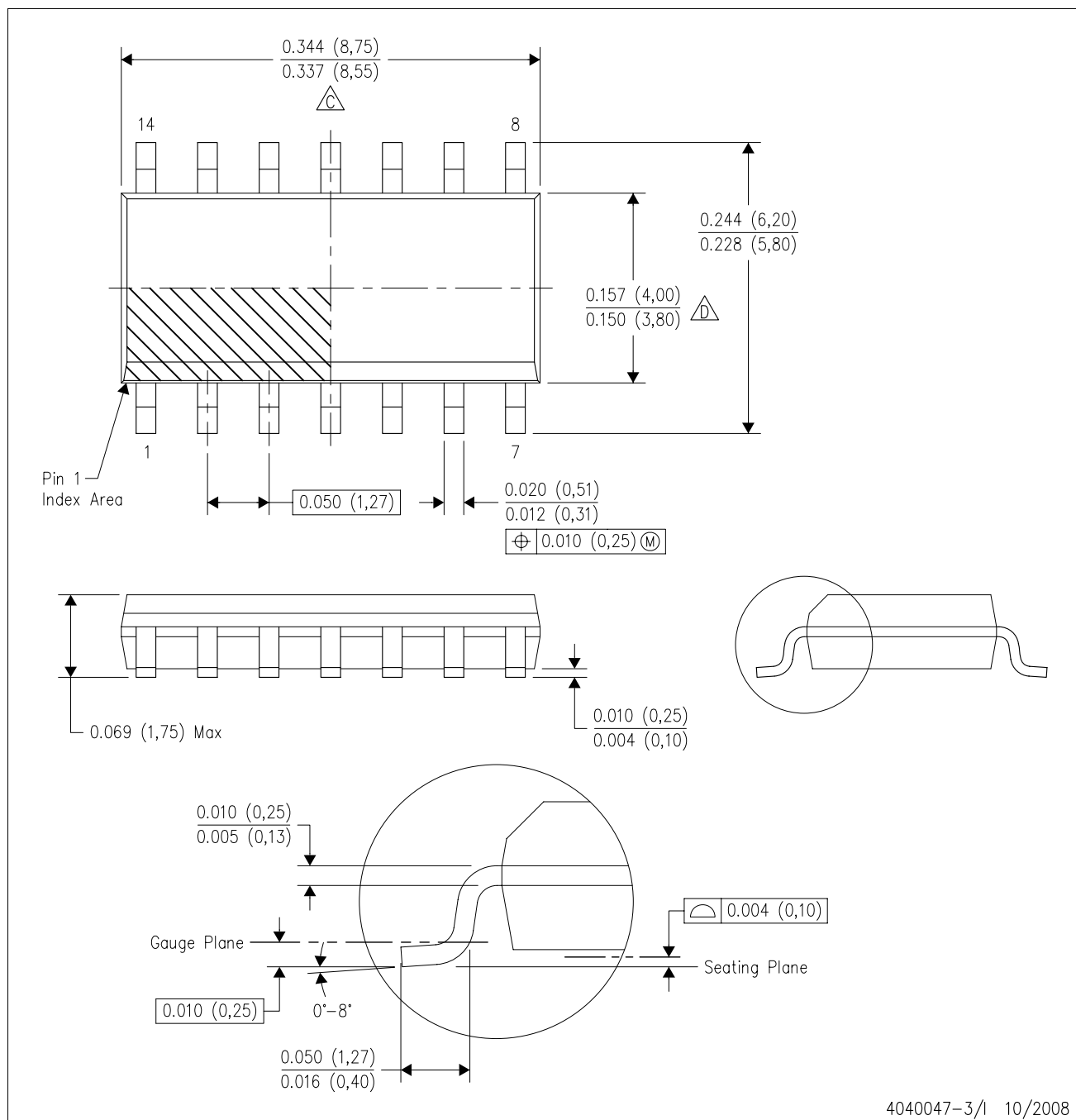
CERAMIC DUAL FLATPACK



- 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-F14 and JEDEC MO-092AB

D (R-PDSO-G14)

PLASTIC SMALL-OUTLINE PACKAGE



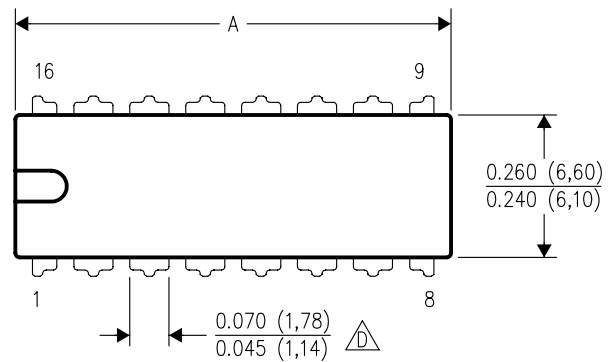
NOTES:

- 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 .006 (0,15) per end.
- D. Body width does not include interlead flash. Interlead flash shall not exceed .017 (0,43) per side.
- E. Reference JEDEC MS-012 variation AB.

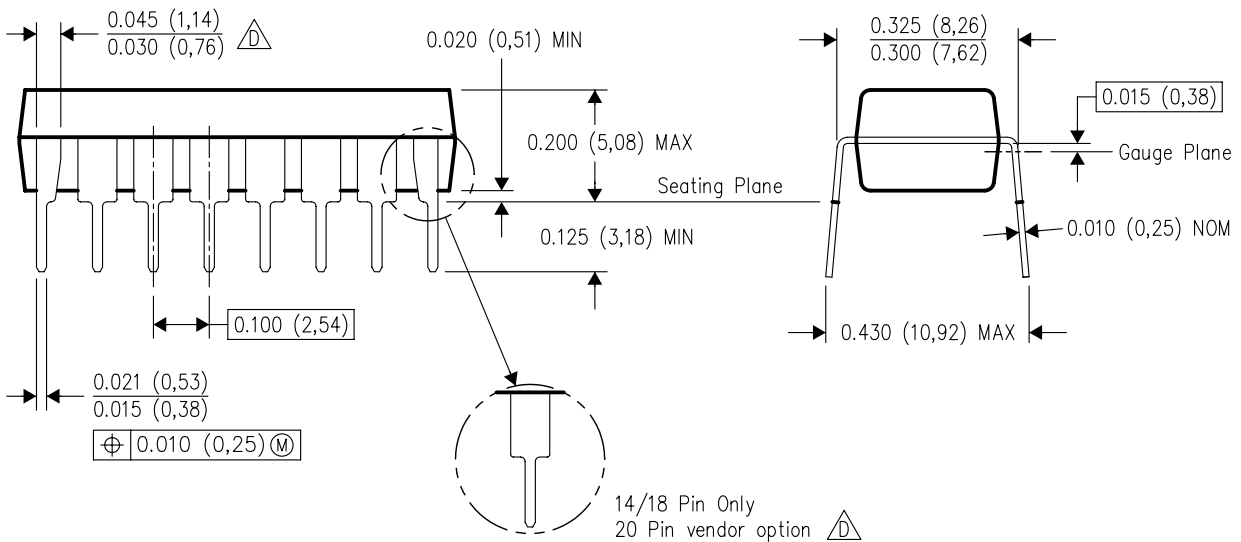
## N (R-PDIP-T\*\*)

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.

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| 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> |
| Medical            | <a href="http://www.ti.com/medical">www.ti.com/medical</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>                   |
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