

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

SDLS047 - DECEMBER 1983 - REVISED MARCH 1988

- Operation from Very Slow Edges
- Improved Line-Receiving Characteristics
- High Noise Immunity

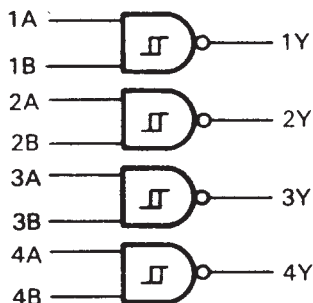
description

Each circuit functions as a 2-input NAND gate, but because of the Schmitt action, it has different input threshold levels for positive (V_{T+}) and for negative going (V_{T-}) signals.

These circuits are temperature-compensated and can be triggered from the slowest of input ramps and still give clear, jitter-free output signals.

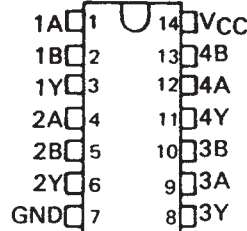
The SN54132, SN54LS132, and SN54S132 are characterized for operation over the full military temperature range of -55°C to 125°C . The SN74132, SN74LS132, and SN74S132 are characterized for operation from 0°C to 70°C .

logic diagram (positive logic)



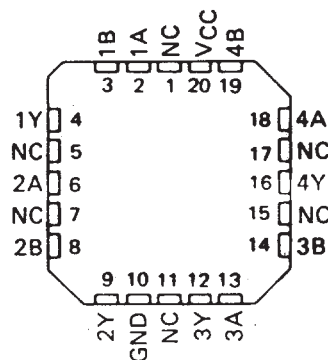
SN54132, SN54LS132, SN54S132 . . . J OR W PACKAGE
SN74132 . . . N PACKAGE
SN74LS132, SN74S132 . . . D OR N PACKAGE

(TOP VIEW)



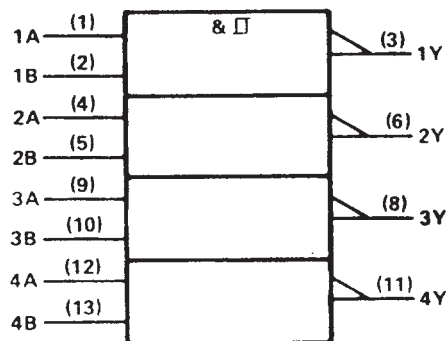
SN54LS132, SN54S132 . . . FK PACKAGE

(TOP VIEW)



NC-No internal connection

logic symbol†



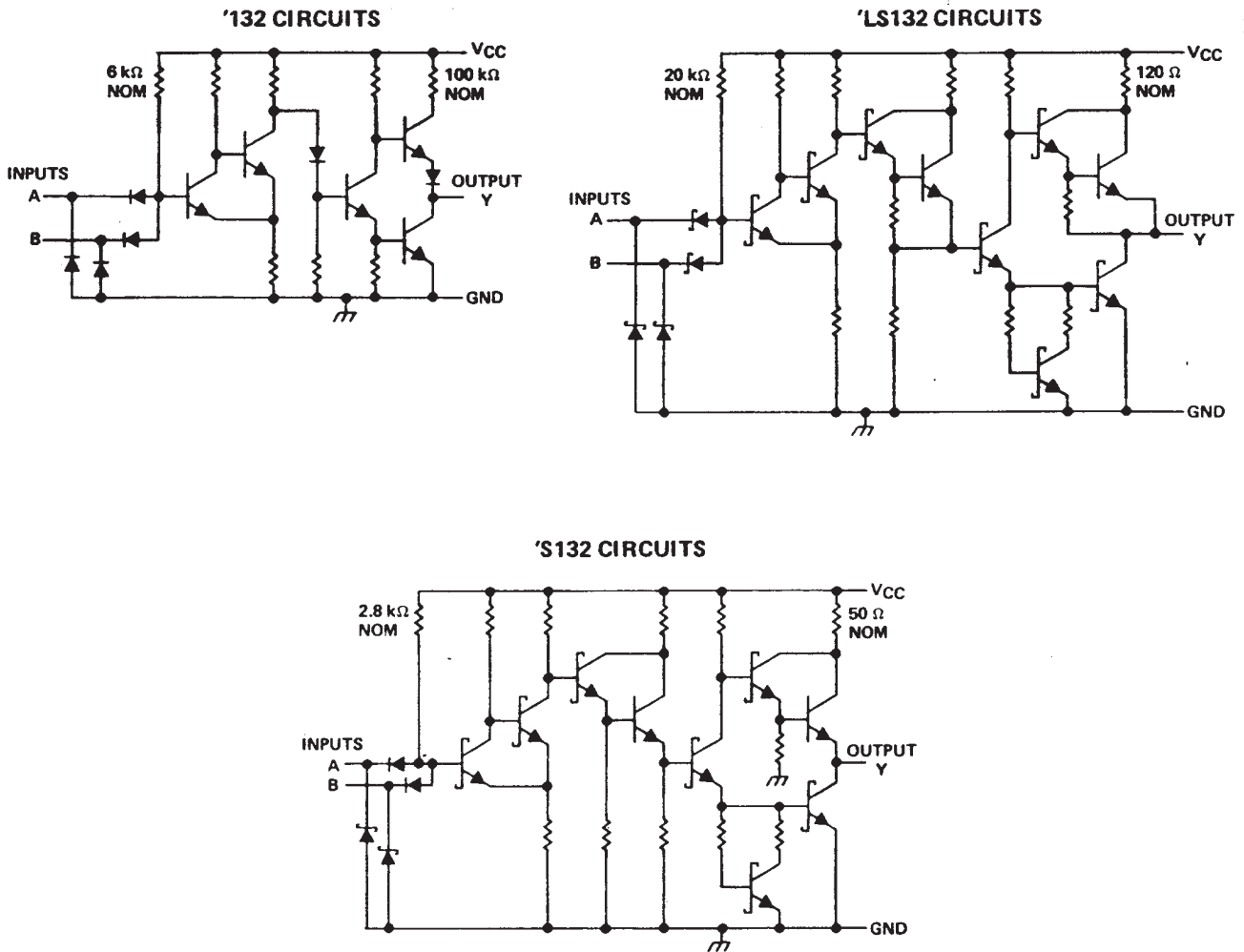
positive logic: $Y = \overline{AB}$ or $Y = \overline{A} + \overline{B}$

†This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.
Pin numbers shown are for D, J, N, and W packages.

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

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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

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recommended operating conditions

| | SN54132 | | | SN74132 | | | 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 | | | -0.8 | | | -0.8 | mA |
| I _{OL} Low-level output current | | | 16 | | | 16 | 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† | MIN | TYP‡ | MAX | UNIT |
|--|--|-------|------|------|------|
| V _{T+} | V _{CC} = 5 V | 1.5 | 1.7 | 2 | V |
| V _{T-} | V _{CC} = 5 V | 0.6 | 0.9 | 1.1 | V |
| V _{hys} (V _{T+} - V _{T-}) | V _{CC} = 5 V | 0.4 | 0.8 | | V |
| V _{IK} | V _{CC} = MIN, I _I = -12 mA | | | -1.5 | V |
| V _{OH} | V _{CC} = MIN, V _I = 0.6 V, I _{OH} = -0.8 mA | 2.4 | 3.4 | | V |
| V _{OL} | V _{CC} = MIN, V _I = 2 V, I _{OL} = 16 mA | | 0.2 | 0.4 | V |
| I _{T+} | V _{CC} = 5 V, V _I = V _{T+} | -0.43 | | | mA |
| I _{T-} | V _{CC} = 5 V, V _I = V _{T-} | -0.56 | | | mA |
| I _I | V _{CC} = MAX, V _I = 5.5 V | | | 1 | mA |
| I _{IH} | V _{CC} = MAX, V _I = 2.4 V | | | 40 | μA |
| I _{IL} | V _{CC} = MAX, V _{IL} = 0.4 V | -0.8 | | -1.2 | mA |
| I _{OS} § | V _{CC} = MAX | -18 | | -55 | mA |
| I _{CCH} | V _{CC} = MAX | | 15 | 24 | mA |
| I _{CCL} | V _{CC} = 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_{CC} = 5 V, T_A = 25°C.

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

switching characteristics, V_{CC} = 5 V, T_A = 25°C (see figure 1)

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|------------------|--------------|-------------|--|-----|-----|-----|------|
| t _{PLH} | Any | Y | R _L = 400 Ω, C _L = 15 pF | | 15 | 22 | ns |
| t _{PHL} | | | | | 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 V | 1.4 | 1.6 | 1.9 | 1.4 | 1.6 | 1.9 | V |
| V _{T-} | V _{CC} = 5 V | 0.5 | 0.8 | 1 | 0.5 | 0.8 | 1 | V |
| V _{hys} (V _{T+} - V _{T-}) | V _{CC} = 5 V | 0.4 | 0.8 | | 0.4 | 0.8 | | V |
| V _{IK} | V _{CC} = MIN, I _I = -18 mA | | | -1.5 | | | -1.5 | V |
| V _{OH} | V _{CC} = MIN, V _I = 0.5 V, I _{OH} = -0.4 mA | 2.5 | 3.4 | | 2.7 | 3.4 | | V |
| V _{OL} | V _{CC} = MIN, V _I = 1.9 V | I _{OL} = 4 mA | | 0.25 | 0.4 | 0.25 | | 0.4 |
| | | I _{OL} = 8 mA | | | | 0.35 | 0.5 | |
| I _{T+} | V _{CC} = 5 V, V _I = V _{T+} | -0.14 | | | -0.14 | | | mA |
| I _{T-} | V _{CC} = 5 V, V _I = V _{T-} | -0.18 | | | -0.18 | | | mA |
| I _I | V _{CC} = MAX, V _I = 7 V | 0.1 | | | 0.1 | | | mA |
| I _{IH} | V _{CC} = MAX, V _I = 2.7 V | 20 | | | 20 | | | μA |
| I _{IL} | V _{CC} = MAX, V _I = 0.4 V | -0.4 | | | -0.4 | | | mA |
| I _{OS} § | V _{CC} = MAX | -20 | | -100 | -20 | | -100 | mA |
| I _{CCH} | V _{CC} = MAX | 5.9 | | 11 | 5.9 | | 11 | mA |
| I _{CCL} | V _{CC} = 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 V, T_A = 25°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 V, T_A = 25°C (see figure 1)

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|------------------|-----------------|----------------|---|-----|-----|-----|------|
| t _{PLH} | Any | Y | R _L = 2 kΩ, C _L = 15 pF | | 15 | 22 | ns |
| t _{PHL} | | | | | 15 | 22 | ns |



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} ($V_{T+} - V_{T-}$) | $V_{CC} = 5\text{ V}$ | 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)

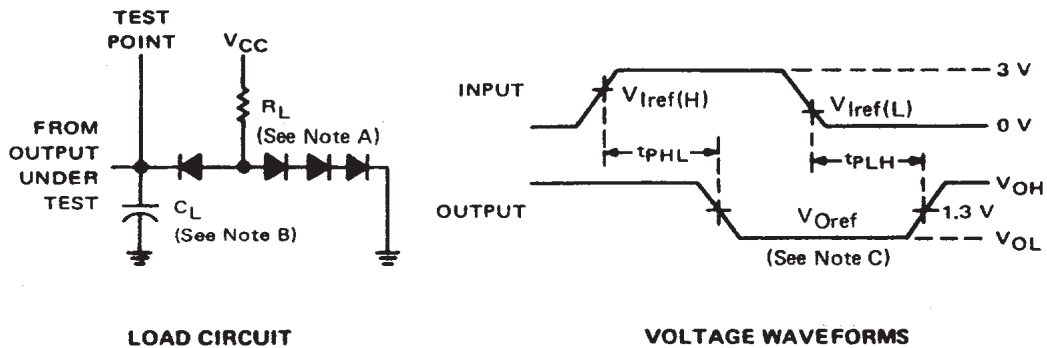
| PARAMETER | FROM (INPUT) | TO (OUTPUT) | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|-----------|-----------------|----------------|--|-----|-----|------|------|
| t_{PLH} | A or B | Y | $R_L = 280\ \Omega$, $C_L = 15\text{ pF}$ | | 7 | 10.5 | ns |
| t_{PHL} | | | | | 8.5 | 13 | ns |



**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

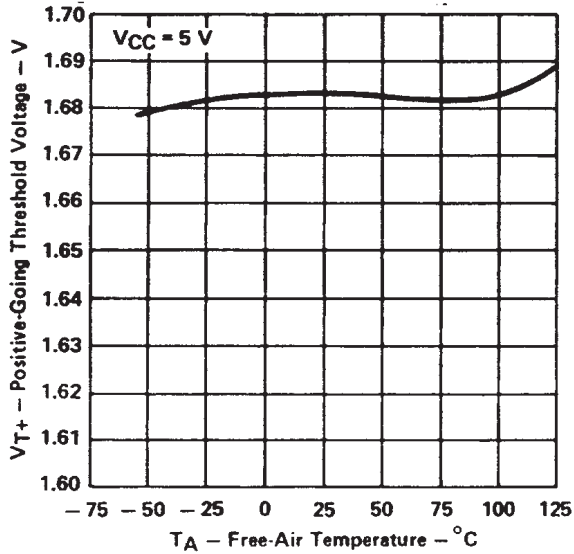
SN54132, SN74132

QUADRUPLE 2-INPUT POSITIVE-NAND SCHMITT TRIGGERS

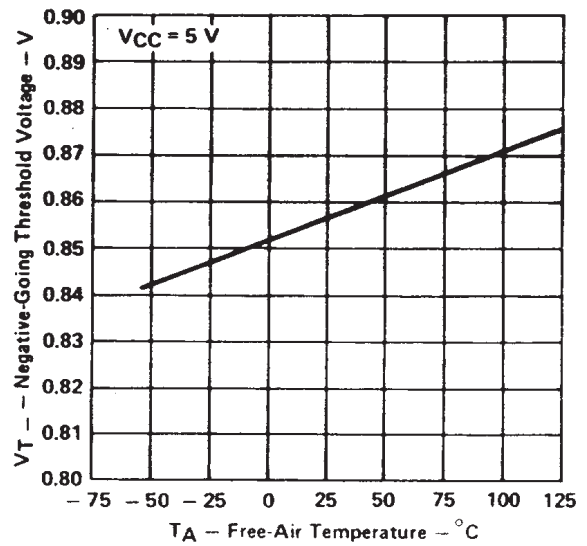
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TYPICAL CHARACTERISTICS OF '132 CIRCUITS

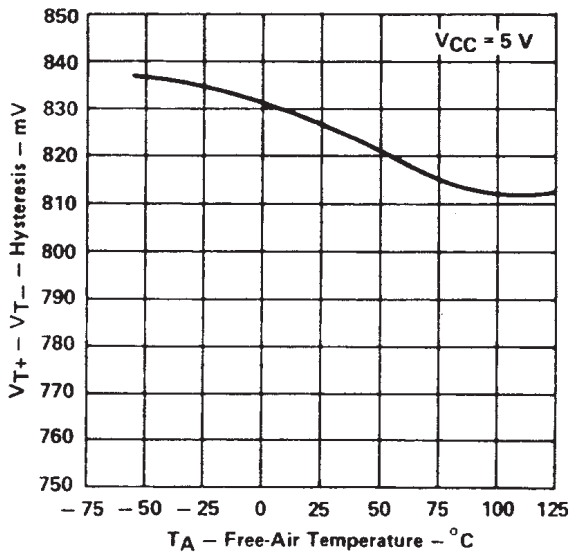
POSITIVE-GOING THRESHOLD VOLTAGE
vs
FREE-AIR TEMPERATURE



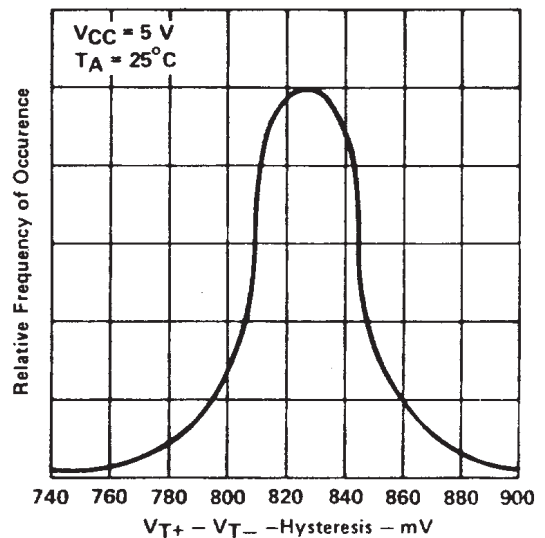
NEGATIVE-GOING THRESHOLD VOLTAGE
vs
FREE-AIR TEMPERATURE



HYSTERESIS
vs
FREE-AIR TEMPERATURE



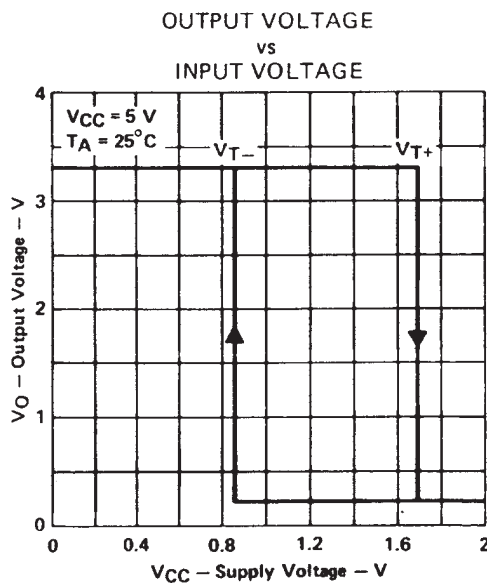
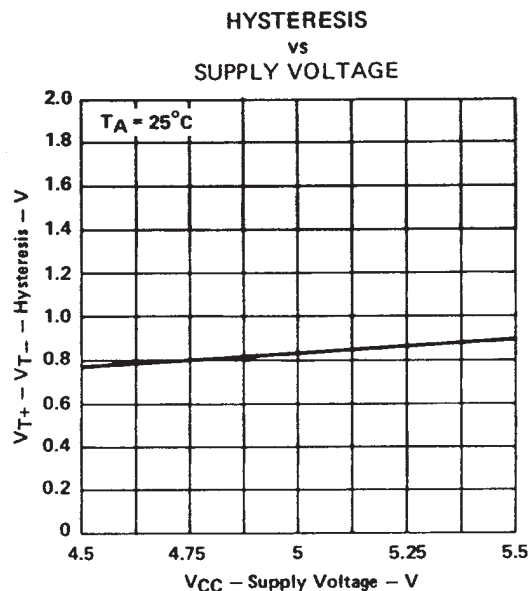
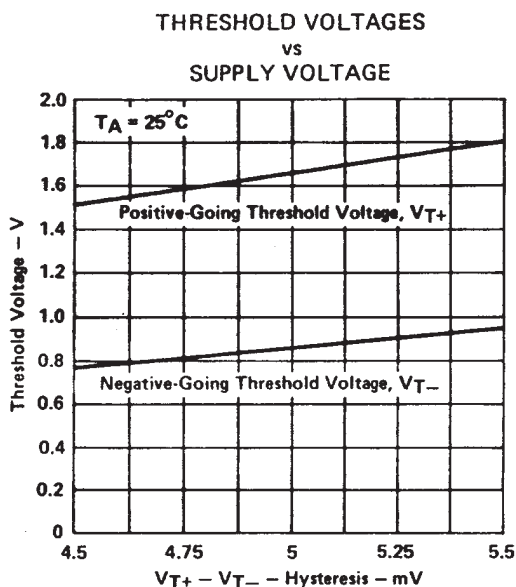
DISTRIBUTION OF UNITS
FOR HYSTERESIS



SN54132, SN74132 QUADRUPLE 2-INPUT POSITIVE-NAND SCHMITT TRIGGERS

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TYPICAL CHARACTERISTICS OF '132 CIRCUITS



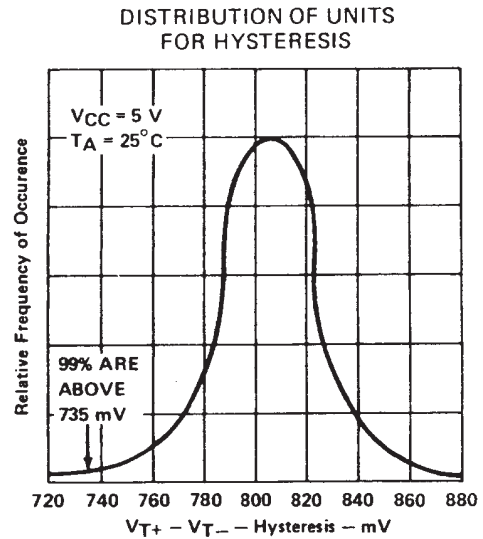
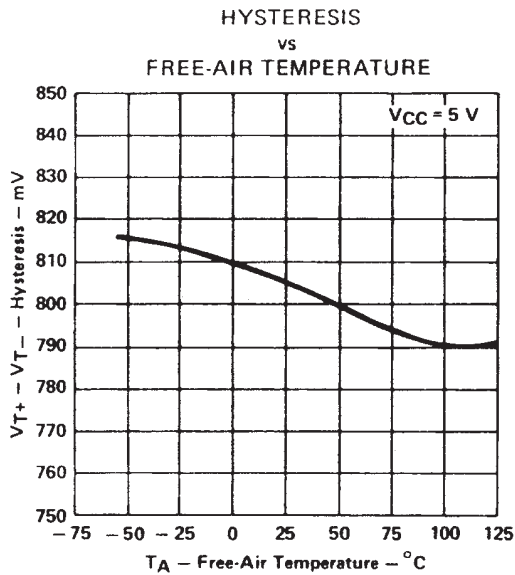
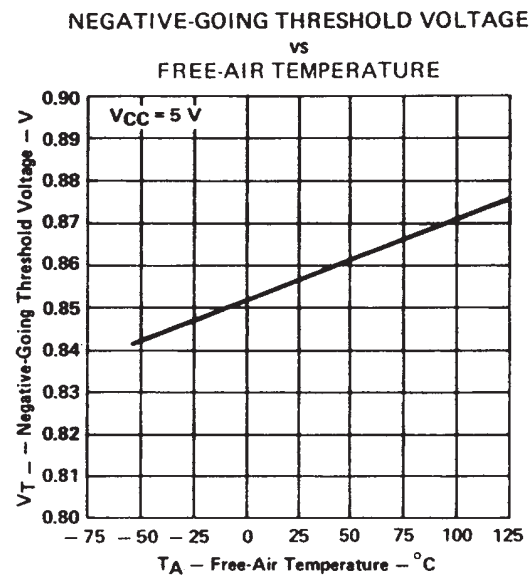
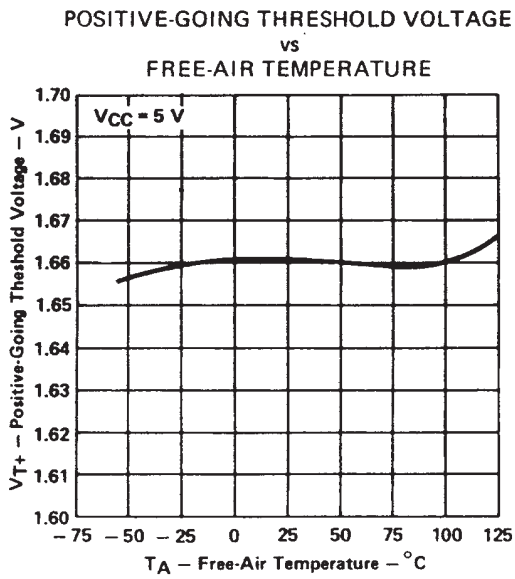
† Data for temperatures below 0°C and 70°C and supply below 4.75 V and above 5.25 V are applicable for SN54132 only.

SN54LS132, SN74LS132

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TYPICAL CHARACTERISTICS OF 'LS132 CIRCUITS

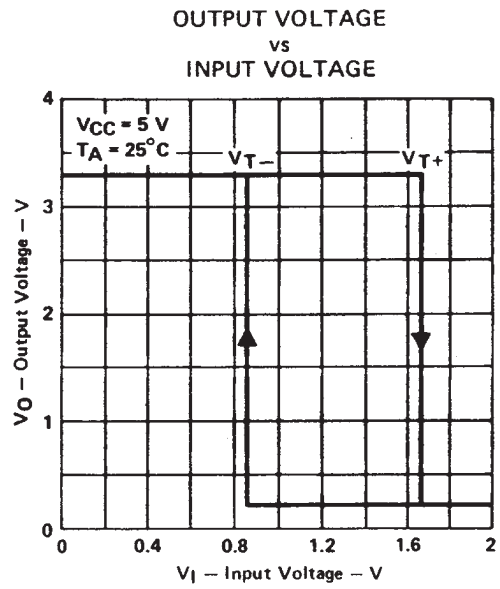
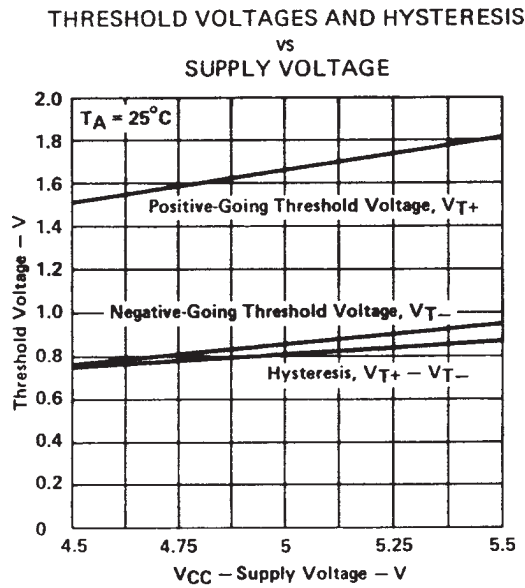


Data for temperatures below 0°C and above 70°C and supply voltages below 4.75 V and above 5.25 V are applicable for SN54LS132 only.

SN54LS132, SN74LS132 QUADRUPLE 2-INPUT POSITIVE-NAND SCHMITT TRIGGERS

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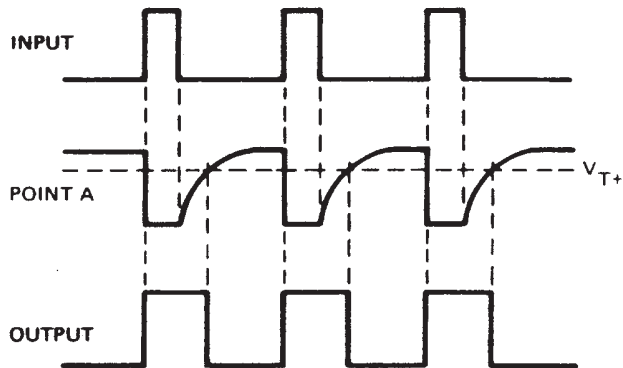
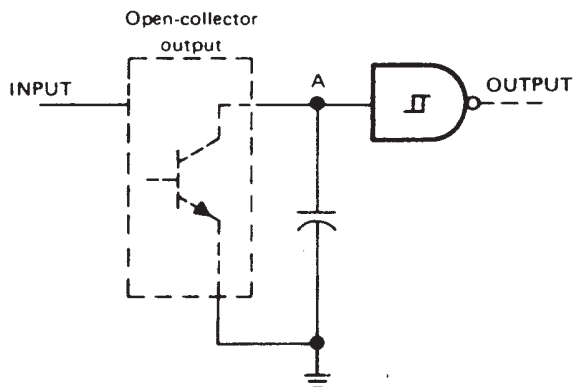
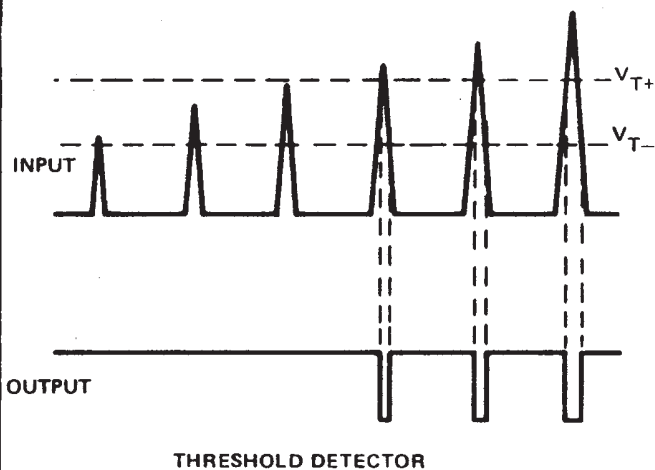
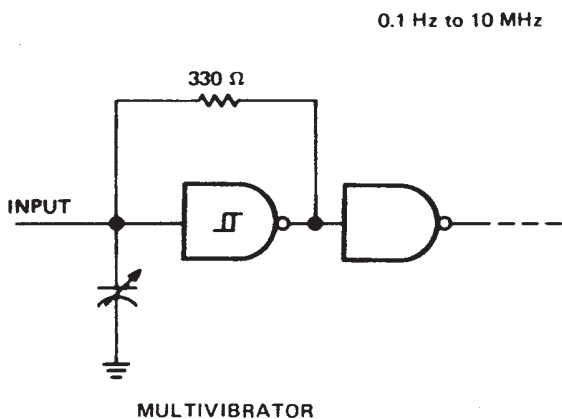
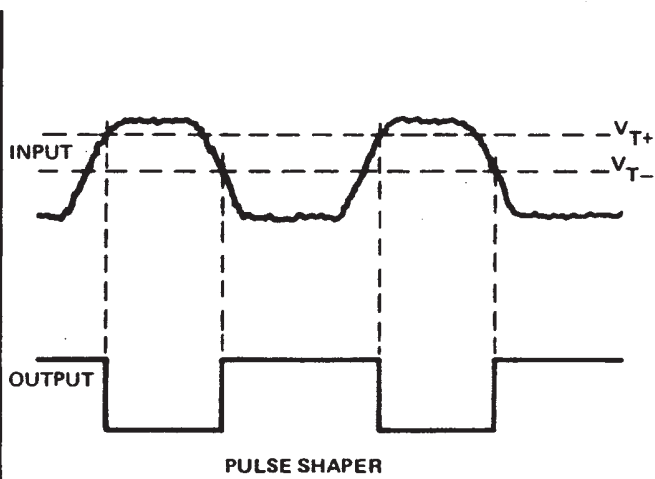
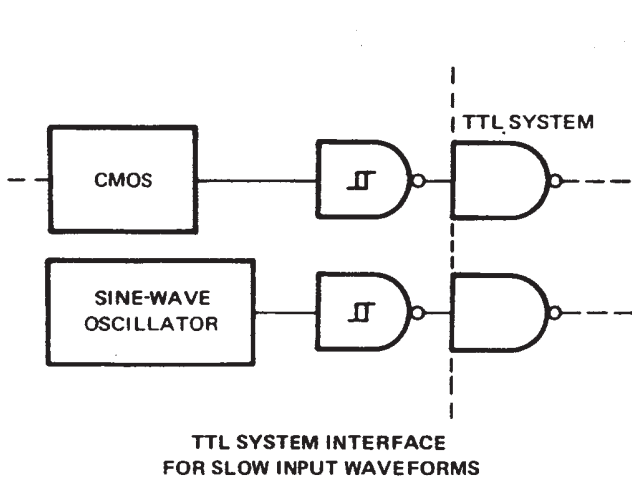
TYPICAL CHARACTERISTICS OF 'LS132 CIRCUITS



† Data for temperatures below 0°C and above 70°C and supply voltages below 4.75 V and above 5.25 V are applicable for SN54LS132 only.

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SN74132, SN74LS132, SN74S132
QUADRUPLE 2-INPUT POSITIVE-NAND SCHMITT TRIGGERS
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TYPICAL APPLICATION DATA



PULSE STRETCHER

PACKAGING INFORMATION

| Orderable Device | Status ⁽¹⁾ | Package Type | Package Drawing | Pins | Package Qty | Eco Plan ⁽²⁾ | Lead/Ball Finish | MSL Peak Temp ⁽³⁾ |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| 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 ⁽¹⁾ | Package Type | Package Drawing | Pins | Package Qty | Eco Plan ⁽²⁾ | Lead/Ball Finish | MSL Peak Temp ⁽³⁾ |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| 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 ⁽¹⁾ | Package Type | Package Drawing | Pins | Package Qty | Eco Plan ⁽²⁾ | Lead/Ball Finish | MSL Peak Temp ⁽³⁾ |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| 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 |

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

ACTIVE: Product device recommended for new designs.

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

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

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

OBSOLETE: TI has discontinued the production of the device.

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

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

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

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

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

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

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TAPE AND REEL INFORMATION



QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*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



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



4040083/F 03/03

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

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

NS (R-PDSO-G**)

PLASTIC SMALL-OUTLINE PACKAGE

14-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.

W (R-GDFP-F14)

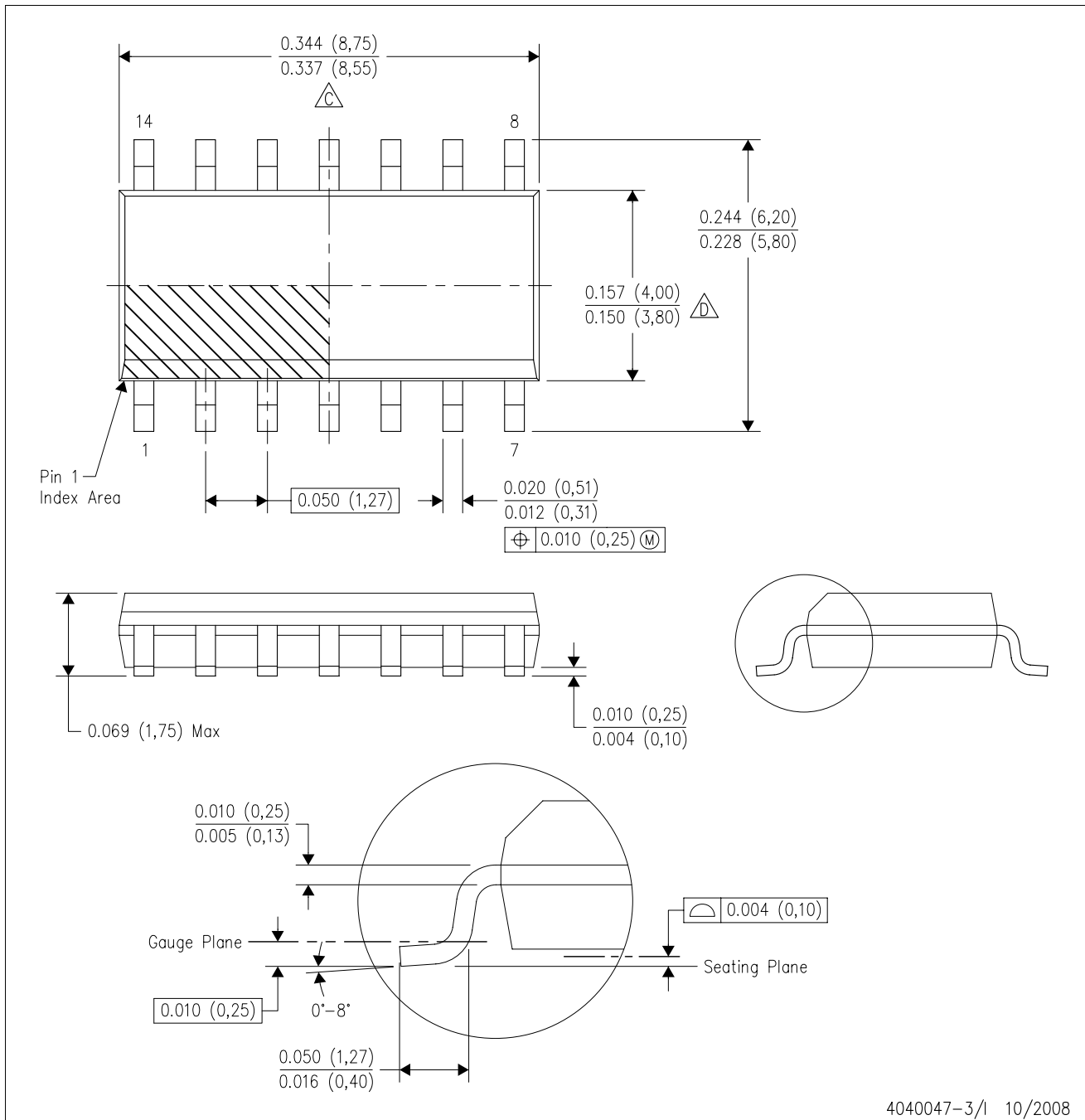
CERAMIC DUAL FLATPACK



- 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 ceramic lid using glass frit.
 - D. Index point is provided on cap for terminal identification only.
 - E. 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**)

PLASTIC DUAL-IN-LINE PACKAGE

16 PINS SHOWN



4040049/E 12/2002

- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - (C) Falls within JEDEC MS-001, except 18 and 20 pin minimum body length (Dim A).
 - (D) The 20 pin end lead shoulder width is a vendor option, either half or full width.

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