

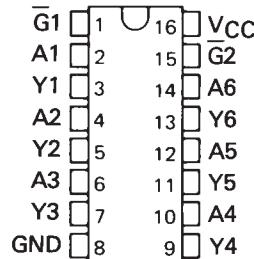
**SN54365A THRU SN54368A, SN54LS365A THRU SN54LS368A
SN74365A THRU SN74368A, SN74LS365A THRU SN74LS368A
HEX BUS DRIVERS WITH 3-STATE OUTPUTS**

DECEMBER 1983—REVISED MARCH 1988

- 3-State Outputs Drive Bus Lines or Buffer Memory Address Registers
 - Choice of True or Inverting Outputs
 - Package Options Include Plastic "Small Outline" Packages, Ceramic Chip Carriers and Flat Packages, and Plastic and Ceramic DIPs
 - Dependable Texas Instruments Quality and Reliability
- '365A, '367A, 'LS365A, 'LS367A True Outputs '366A, '368A, 'LS366A, 'LS368A Inverting Outputs

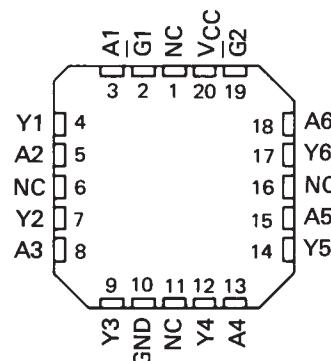
SN54365A, 366A, SN54LS365A, 366A . . . J PACKAGE
SN74365A, 366A . . . N PACKAGE
SN74LS365A, SN74LS366A . . . D OR N PACKAGE

(TOP VIEW)



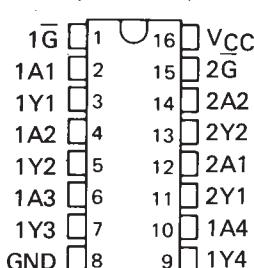
SN54LS365A, SN54LS366A . . . FK PACKAGE

(TOP VIEW)

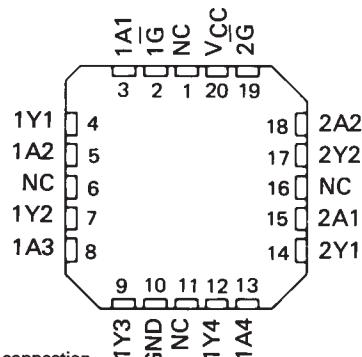


SN54367A, 368A, SN54LS367A, 368A . . . J PACKAGE
SN74367A, 368A . . . N PACKAGE
SN74LS367A, SN74LS368A . . . D OR N PACKAGE

(TOP VIEW)



SN54LS367A, SN54LS368A . . . FK PACKAGE
(TOP VIEW)



NC – No internal connection

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.

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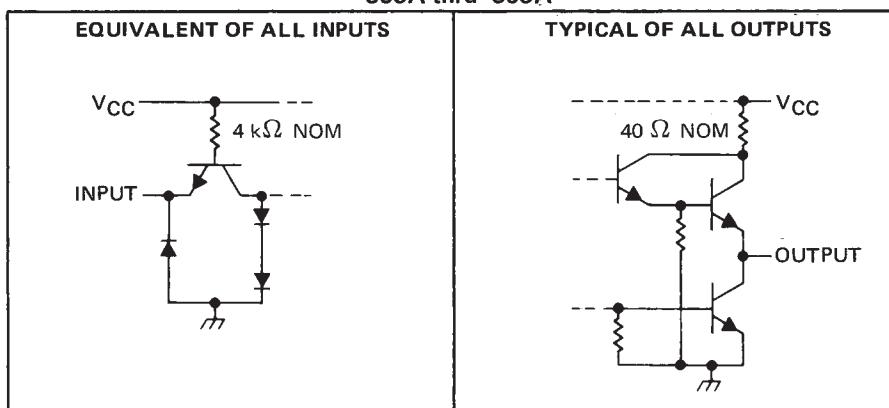
2

TTL Devices

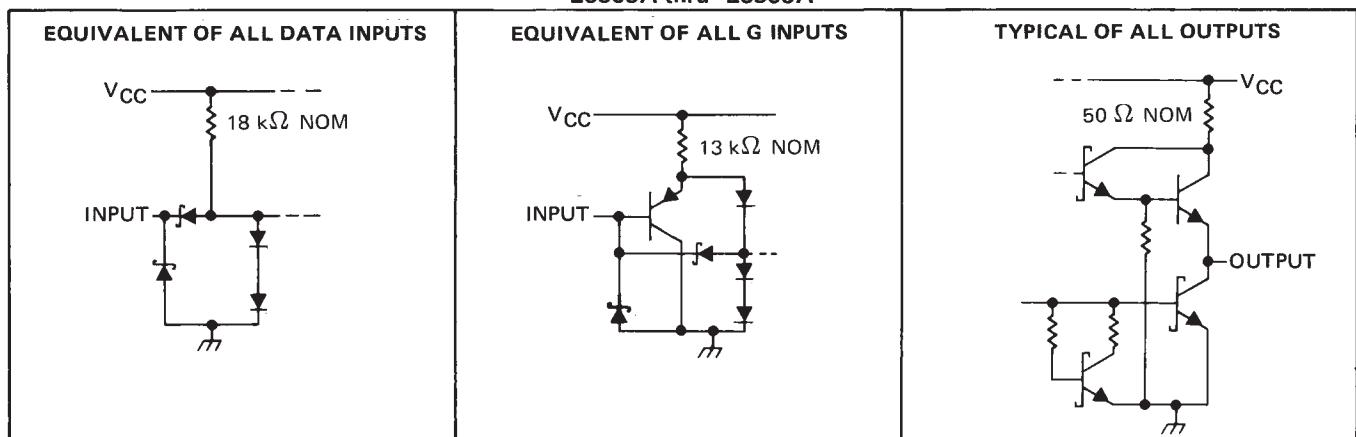
**SN54365A THRU SN54368A, SN54LS365A THRU SN54LS368A
SN74365A THRU SN74368A, SN74LS365A THRU SN74LS368A
HEX BUS DRIVERS WITH 3-STATE OUTPUTS**

schematics of inputs and outputs

'365A thru '368A



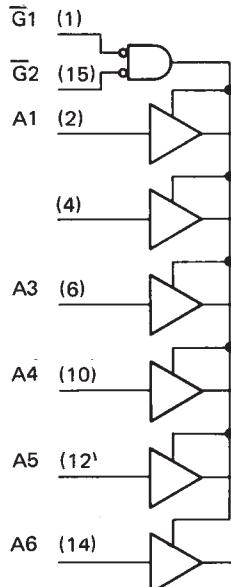
'LS365A thru 'LS368A



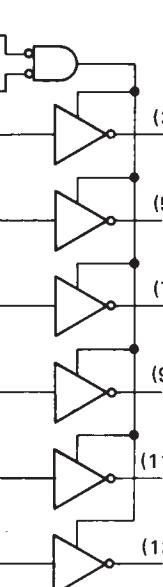
2
TTL Devices

logic diagrams (positive logic)

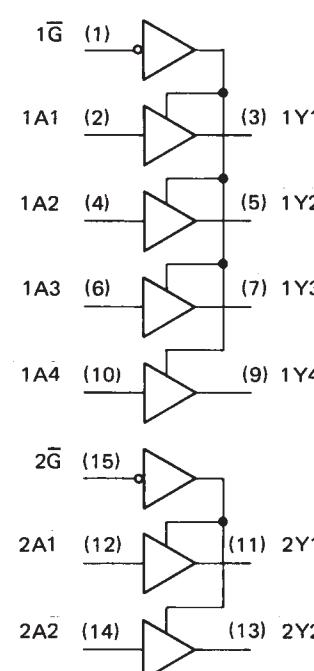
'365A, 'LS365A



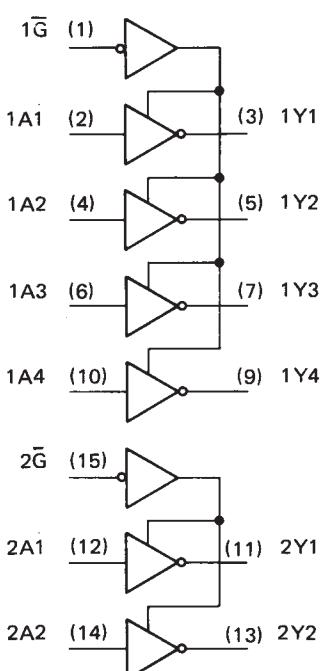
'366A, 'LS366A



'367A, 'LS367A



'368A, 'LS368A



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

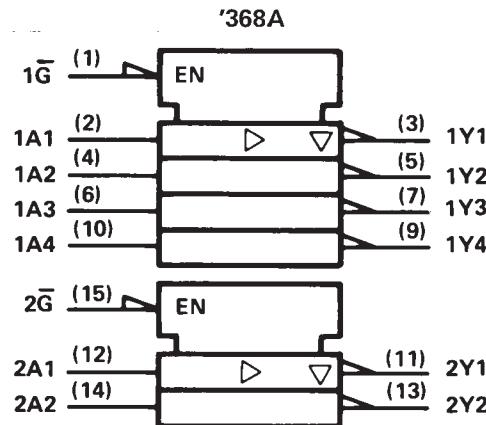
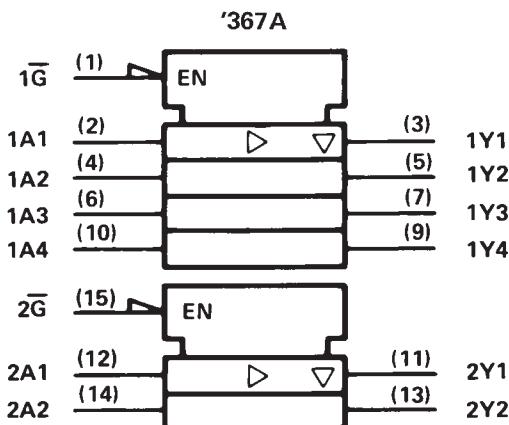
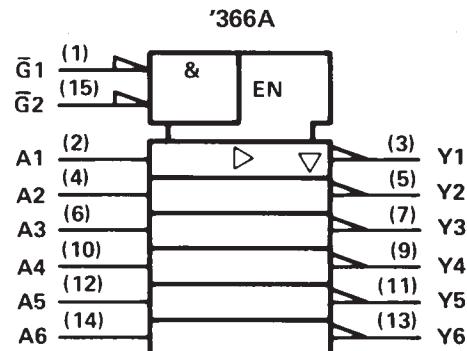
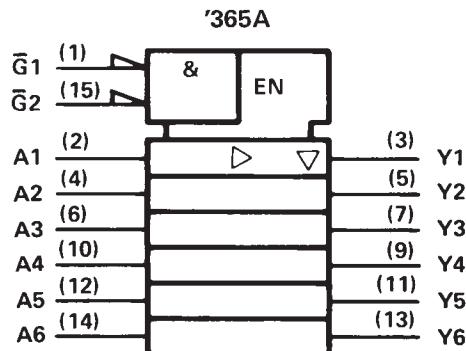
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**SN54365A THRU SN54368A, SN54LS365A THRU SN54LS368A
SN74365A THRU SN74368A, SN74LS365A THRU SN74LS368A**
HEX BUS DRIVERS WITH 3-STATE OUTPUTS

logic symbols[†]



[†]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.

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

| | |
|--|----------------|
| Supply voltage, V_{CC} (see Note 1) | 7 V |
| Input voltage: '365A, '366A, '367A, '368A | 5.5 V |
| 'LS365A, 'LS366A, 'LS367A, 'LS368A | 7 V |
| Voltage applied to a disabled 3-state output | 5.5 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: Voltage values are with respect to network ground terminal.

SN54365A, SN54367A SN74365A, SN74367A HEX BUS DRIVERS WITH 3-STATE OUTPUTS

recommended operating conditions

| | | SN54365A SN54367A | | | SN74365A SN74367A | | | UNIT |
|-----------------|--------------------------------|----------------------|-----|-----|----------------------|-----|------|------|
| | | MIN | NOM | MAX | MIN | NOM | MAX | |
| V _{CC} | Supply voltage | 4.5 | 5 | 5.5 | 4.75 | 5 | 5.25 | V |
| V _{IH} | High-level input voltage | 2 | | | 2 | | | V |
| V _{IL} | Low-level input voltage | | | 0.8 | | | 0.8 | V |
| I _{OH} | High-level output current | | | -2 | | | -5.2 | mA |
| I _{OL} | Low-level output current | | | 32 | | | 32 | 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† | SN54365A SN54367A | | | SN74365A SN74367A | | | UNIT |
|-------------------|---|----------------------|------|------|----------------------|------|------|------|
| | | MIN | TYP‡ | MAX | MIN | TYP‡ | MAX | |
| V _{IK} | V _{CC} = MIN, I _I = -12 mA | | | -1.5 | | | -1.5 | V |
| V _{OH} | V _{CC} = MIN, V _{IH} = 2 V, V _{IL} = 0.8 V, I _{OH} = MAX | 2.4 | 3.3 | | 2.4 | 3.1 | | V |
| V _{OL} | V _{CC} = MIN, V _{IH} = 2 V, V _{IL} = 0.8 V, I _{OL} = 32 mA | | | 0.4 | | | 0.4 | V |
| I _{OZ} | V _{CC} = MAX, V _{IH} = 2 V, V _{IL} = 0.8 V, V _O = 2.4 V | | | 40 | | | 40 | µA |
| | V _{CC} = MAX, V _{IH} = 2 V, V _{IL} = 0.8 V, V _O = 0.4 V | | | -40 | | | -40 | |
| I _I | V _{CC} = MAX, V _I = 5.5 V | | | 1 | | | 1 | mA |
| I _{IIH} | V _{CC} = MAX, V _I = 2.4 V | | | 40 | | | 40 | µA |
| I _{IIL} | V _{CC} = MAX, V _I = 0.5 V, Either \bar{G} input at 2 V | | | -40 | | | -40 | µA |
| | V _{CC} = MAX, V _I = 0.4 V, Both \bar{G} inputs at 0.4 V | | | -1.6 | | | -1.6 | mA |
| I _{OS} § | V _{CC} = MAX | | | -40 | -130 | -40 | -130 | mA |
| I _{CC} | V _{CC} = MAX, Data inputs = 0 V, Output controls = 4.5 V | 65 | 85 | | 65 | 85 | | 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 note 2)

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|------------------|-----------------|----------------|--|-----|-----|-----|------|
| t _{PLH} | Any | Y | R _L = 400 Ω, C _L = 50 pF | | | 16 | ns |
| t _{PHL} | | | | | | 22 | ns |
| t _{PZH} | | | | | | 35 | ns |
| t _{PZL} | | | R _L = 400 Ω, C _L = 5 pF | | | 37 | ns |
| t _{PHZ} | | | | | | 11 | ns |
| t _{PLZ} | | | | | | 27 | ns |

NOTE 2: Load circuits and voltage waveforms are shown in Section 1.



**SN54366A, SN54368A
SN74366A, SN74368A
HEX BUS DRIVERS WITH 3-STATE OUTPUTS**

recommended operating conditions

| | | SN54366A SN54368A | | | SN74366A SN74368A | | | UNIT |
|----------|--------------------------------|----------------------|-----|-----|----------------------|-----|--------------------|-------------|
| | | MIN | NOM | MAX | MIN | NOM | MAX | |
| V_{CC} | Supply voltage | 4.5 | 5 | 5.5 | 4.75 | 5 | 5.25 | V |
| V_{IH} | High-level input voltage | 2 | | | 2 | | | V |
| V_{IL} | Low-level input voltage | | | 0.8 | | | 0.8 | V |
| I_{OH} | High-level output current | | | -2 | | | -5.2 | mA |
| I_{OL} | Low-level output current | | | 32 | | | 32 | mA |
| T_A | Operating free-air temperature | -55 | 125 | 0 | 0 | 70 | $^{\circ}\text{C}$ | |

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

| PARAMETER | TEST CONDITIONS† | SN54366A SN54368A | | | SN74366A SN74368A | | | UNIT |
|------------------|---|----------------------|------|------|----------------------|------|------|---------------|
| | | MIN | TYP‡ | MAX | MIN | TYP‡ | MAX | |
| V_{IK} | $V_{CC} = \text{MIN}$, $I_I = -12 \text{ mA}$ | | | -1.5 | | | -1.5 | V |
| V_{OH} | $V_{CC} = \text{MIN}$, $V_{IH} = 2 \text{ V}$, $V_{IL} = 0.8 \text{ V}$, $I_{OH} = \text{MAX}$ | 2.4 | 3.3 | | 2.4 | 3.1 | | V |
| V_{OL} | $V_{CC} = \text{MIN}$, $V_{IH} = 2 \text{ V}$, $V_{IL} = 0.8 \text{ V}$, $I_{OL} = 32 \text{ mA}$ | | | 0.4 | | | 0.4 | V |
| I_{OZ} | $V_{CC} = \text{MAX}$, $V_{IH} = 2 \text{ V}$, $V_{IL} = 0.8 \text{ V}$, $V_O = 2.4 \text{ V}$ | | | 40 | | | 40 | μA |
| | $V_{CC} = \text{MAX}$, $V_{IH} = 2 \text{ V}$, $V_{IL} = 0.8 \text{ V}$, $V_O = 0.4 \text{ V}$ | | | -40 | | | -40 | |
| I_I | $V_{CC} = \text{MAX}$, $V_I = 5.5 \text{ V}$ | | | 1 | | | 1 | mA |
| I_{IH} | $V_{CC} = \text{MAX}$, $V_I = 2.4 \text{ V}$ | | | 40 | | | 40 | μA |
| I_{IL} | $V_{CC} = \text{MAX}$, $V_I = 0.5 \text{ V}$, Either \bar{G} input at 2 V | | | -40 | | | -40 | μA |
| | $V_{CC} = \text{MAX}$, $V_I = 0.4 \text{ V}$, Both \bar{G} inputs at 0.4 V | | | -1.6 | | | -1.6 | mA |
| $I_{GS\$}$ | $V_{CC} = \text{MAX}$ | | | -1.6 | | | -1.6 | |
| I_{CC} | $V_{CC} = \text{MAX}$, Data inputs = 0 V, Output controls = 4.5 V, | | 59 | 77 | | 59 | 77 | 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.

switching characteristics, $V_{CC} = 5 \text{ V}$, $T_A = 25^{\circ}\text{C}$ (see note 2)

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|------------------|-------------------------|------------------------|--|------------|------------|------------|-------------|
| t_{PLH} | Any | Y | $R_L = 400 \Omega$, $C_L = 50 \text{ pF}$ | | | 17 | ns |
| t_{PHL} | | | | | | 16 | ns |
| t_{PZH} | | | | | | 35 | ns |
| t_{PZL} | | | $R_L = 400 \Omega$, $C_L = 5 \text{ pF}$ | | | 37 | ns |
| t_{PHZ} | | | | | | 11 | ns |
| t_{PLZ} | | | | | | 27 | ns |

NOTE 2: Load circuits and voltage waveforms are shown in Section 1.

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TTL Devices

**TEXAS
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**SN54LS365A, SN54LS367A
SN74LS365A, SN74LS367A
HEX BUS DRIVERS WITH 3-STATE OUTPUTS**

recommended operating conditions

| | | SN54LS365A SN54LS367A | | | SN74LS365A SN74LS367A | | | UNIT |
|-----------------|--------------------------------|--------------------------|-----|-----|--------------------------|-----|------|-------------|
| | | MIN | NOM | MAX | MIN | NOM | MAX | |
| V _{CC} | Supply voltage | 4.5 | 5 | 5.5 | 4.75 | 5 | 5.25 | V |
| V _{IH} | High-level input voltage | 2 | | | 2 | | | V |
| V _{IL} | Low-level input voltage | | | 0.7 | | | 0.8 | V |
| I _{OH} | High-level output current | | | -1 | | | -2.6 | mA |
| I _{OL} | Low-level output current | | | 12 | | | 24 | mA |
| T _A | Operating free-air temperature | -55 | | 125 | 0 | | 70 | °C |

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

2 TTL Devices

| PARAMETER | TEST CONDITIONS† | SN54LS365A SN54LS367A | | | SN74LS365A SN74LS367A | | | UNIT |
|-------------------|---|---|------|------|--------------------------|------|------|-------------|
| | | MIN | TYP‡ | MAX | MIN | TYP‡ | MAX | |
| V _{IK} | V _{CC} = MIN, I _I = -18 mA | | | -1.5 | | | -1.5 | V |
| V _{OH} | V _{CC} = MIN, V _{IH} = 2 V, V _{IL} = MAX, I _{OH} = MAX | 2.4 | 3.3 | | 2.4 | 3.1 | | V |
| V _{OL} | V _{CC} = MIN, V _{IH} = 2 V, V _{IL} = MAX, I _{OL} = 12 mA | | 0.25 | 0.4 | 0.25 | 0.4 | | V |
| | V _{CC} = MIN, V _{IH} = 2 V, V _{IL} = 0.8 V, I _{OL} = 24 mA | | | | 0.35 | 0.5 | | |
| I _{OZ} | V _{CC} = MAX, V _{IH} = 2 V, V _{IL} = MAX, V _O = 2.4 V | | | 20 | | | 20 | μA |
| | V _{CC} = MAX, V _{IH} = 2 V, V _{IL} = MAX, V _O = 0.4 V | | | -20 | | | -20 | |
| I _I | V _{CC} = MAX, V _I = 7 V | | 0.1 | | 0.1 | | 0.1 | mA |
| I _{IH} | V _{CC} = MAX, V _I = 2.7 V | | 20 | | 20 | | 20 | μA |
| I _{IL} | A Inputs V _{CC} = MAX, V _I = 0.5 V, Either \bar{G} input at 2 V | | | -20 | | | -20 | μA |
| | | V _{CC} = MAX, V _I = 0.4 V, Both \bar{G} inputs at 0.4 V | | -0.4 | | | -0.4 | mA |
| \bar{G} Inputs | V _{CC} = MAX, V _I = 0.4 V | | | -0.2 | | | -0.2 | |
| I _{OS} § | V _{CC} = MAX | -40 | | -225 | -40 | | -225 | mA |
| I _{CC} | V _{CC} = MAX, Data inputs = 0 V, Output controls = 4.5 V, | 14 | 24 | | 14 | 24 | | 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 the duration of the short circuit should not exceed one second.



**SN54LS365A, SN54LS367A
SN74LS365A, SN74LS367A
HEX BUS DRIVERS WITH 3-STATE OUTPUTS**

switching characteristics, $V_{CC} = 5 \text{ V}$, $T_A = 25^\circ\text{C}$ (see note 2)

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|-----------|-----------------|----------------|---|-----|-----|-----|------|
| t_{PLH} | Any | Y | $R_L = 667 \Omega$, $C_L = 45 \text{ pF}$ | 10 | 16 | ns | |
| t_{PHL} | | | | 9 | 22 | ns | |
| t_{PZH} | | | | 19 | 35 | ns | |
| t_{PZL} | | Y | $R_L = 667 \Omega$, $C_L = 5 \text{ pF}$ | 24 | 40 | ns | |
| t_{PHZ} | | | | 30 | ns | | |
| t_{PLZ} | | | | 35 | ns | | |

NOTE 2: Load circuits and voltage waveforms are shown in Section 1.

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TTL Devices

SN54LS366A, SN54LS368A SN74LS366A, SN74LS368A HEX BUS DRIVERS WITH 3-STATE OUTPUTS

recommended operating conditions

| | SN54LS366A SN54LS368A | SN74LS366A SN74LS368A | | | UNIT | |
|---|--------------------------|--------------------------|-----|-----|------|---------|
| | | MIN | NOM | MAX | | |
| V _{CC} Supply voltage | | 4.5 | 5 | 5.5 | 4.75 | 5 5.25 |
| V _{IH} High-level input voltage | | 2 | | | 2 | V |
| V _{IL} Low-level input voltage | | | 0.7 | | 0.8 | V |
| I _{OH} High-level output current | | | | -1 | | -2.6 mA |
| I _{OL} Low-level output current | | | | 12 | | 24 mA |
| T _A Operating free-air temperature | | -55 | | 125 | 0 | 70 °C |

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

2 TTL Devices

| PARAMETER | TEST CONDITIONS† | SN54LS366A SN54LS368A | | | SN74LS366A SN74LS368A | | | UNIT |
|-------------------|---|--------------------------|------|------|--------------------------|------|------|------|
| | | MIN | TYP‡ | MAX | MIN | TYP‡ | MAX | |
| V _{IK} | V _{CC} = MIN, I _I = -18 mA | | | -1.5 | | | -1.5 | V |
| V _{OH} | V _{CC} = MIN, V _{IH} = 2 V, V _{IL} = MAX, I _{OH} = MAX | 2.4 | 3.3 | | 2.4 | 3.1 | | V |
| V _{OL} | V _{CC} = MIN, V _{IH} = 2 V, V _{IL} = MAX, I _{OL} = 12 mA | | 0.25 | 0.4 | 0.25 | 0.4 | | V |
| | V _{CC} = MIN, V _{IH} = 2 V, V _{IL} = 0.8 V, I _{OL} = 24 mA | | | | 0.35 | 0.5 | | |
| I _{OZ} | V _{CC} = MAX, V _{IH} = 2 V, V _{IL} = MAX, V _O = 2.4 V | | | 20 | | | 20 | μA |
| | V _{CC} = MAX, V _{IH} = 2 V, V _{IL} = MAX, V _O = 0.4 V | | | -20 | | | -20 | |
| 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} | A Inputs V _{CC} = MAX, V _I = 0.5 V, Either G input at 2 V | | | -20 | | | -20 | μA |
| | V _{CC} = MAX, V _I = 0.4 V, Both G inputs at 0.4 V | | -0.4 | | -0.4 | | -0.4 | mA |
| — | G Inputs V _{CC} = MAX, V _I = 0.4 V | | | -0.2 | | | -0.2 | |
| I _{OS\$} | V _{CC} = MAX | -40 | | -225 | -40 | | -225 | mA |
| I _{CC} | V _{CC} = MAX, Data inputs = 0 V, Output controls = 4.5 V, | 12 | 21 | | 12 | 21 | | 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 the duration of the short circuit should not exceed one second.

**SN54LS366A, SN54LS368A
SN74LS366A, SN74LS368A
HEX BUS DRIVERS WITH 3-STATE OUTPUTS**

switching characteristics, $V_{CC} = 5\text{ V}$, $T_A = 25^\circ\text{C}$ (see note 2)

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|-----------|-----------------|----------------|--|-----|-----|-----|------|
| t_{PLH} | Any | Y | $R_L = 667\ \Omega$, $C_L = 45\text{ pF}$ | 7 | 15 | ns | |
| t_{PHL} | | | | 12 | 18 | ns | |
| t_{PZH} | | | | 18 | 35 | ns | |
| t_{PZL} | | Y | $R_L = 667\ \Omega$, $C_L = 5\text{ pF}$ | 28 | 45 | ns | |
| t_{PHZ} | | | | | 32 | ns | |
| t_{PLZ} | | | | | 35 | ns | |

NOTE 2: Load circuits and voltage waveforms are shown in Section 1.

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TTL Devices



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PACKAGING INFORMATION

| Orderable part number | Status (1) | Material type (2) | Package Pins | Package qty Carrier | RoHS (3) | Lead finish/ Ball material (4) | MSL rating/ Peak reflow (5) | Op temp (°C) | Part marking (6) |
|-----------------------|---------------|----------------------|----------------|-----------------------|-------------|--------------------------------------|-----------------------------------|--------------|----------------------|
| JM38510/32201B2A | Active | Production | LCCC (FK) 20 | 55 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | JM38510/ 32201B2A |
| JM38510/32201B2A.A | Active | Production | LCCC (FK) 20 | 55 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | JM38510/ 32201B2A |
| JM38510/32201BEA | Active | Production | CDIP (J) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | JM38510/ 32201BEA |
| JM38510/32201BEA.A | Active | Production | CDIP (J) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | JM38510/ 32201BEA |
| JM38510/32203B2A | Active | Production | LCCC (FK) 20 | 55 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | JM38510/ 32203B2A |
| JM38510/32203B2A.A | Active | Production | LCCC (FK) 20 | 55 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | JM38510/ 32203B2A |
| JM38510/32203BEA | Active | Production | CDIP (J) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | JM38510/ 32203BEA |
| JM38510/32203BEA.A | Active | Production | CDIP (J) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | JM38510/ 32203BEA |
| JM38510/32203BFA | Active | Production | CFP (W) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | JM38510/ 32203BFA |
| JM38510/32203BFA.A | Active | Production | CFP (W) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | JM38510/ 32203BFA |
| M38510/32201B2A | Active | Production | LCCC (FK) 20 | 55 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | JM38510/ 32201B2A |
| M38510/32201BEA | Active | Production | CDIP (J) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | JM38510/ 32201BEA |
| M38510/32203B2A | Active | Production | LCCC (FK) 20 | 55 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | JM38510/ 32203B2A |
| M38510/32203BEA | Active | Production | CDIP (J) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | JM38510/ 32203BEA |
| M38510/32203BFA | Active | Production | CFP (W) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | JM38510/ 32203BFA |
| SN54LS365AJ | Active | Production | CDIP (J) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | SN54LS365AJ |
| SN54LS365AJ.A | Active | Production | CDIP (J) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | SN54LS365AJ |
| SN54LS366AJ | Active | Production | CDIP (J) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | SN54LS366AJ |

| Orderable part number | Status (1) | Material type (2) | Package Pins | Package qty Carrier | RoHS (3) | Lead finish/ Ball material (4) | MSL rating/ Peak reflow (5) | Op temp (°C) | Part marking (6) |
|-------------------------------|---------------|----------------------|----------------|-----------------------|-------------|--------------------------------------|-----------------------------------|--------------|---------------------|
| SN54LS366AJ.A | Active | Production | CDIP (J) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | SN54LS366AJ |
| SN54LS367AJ | Active | Production | CDIP (J) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | SN54LS367AJ |
| SN54LS367AJ.A | Active | Production | CDIP (J) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | SN54LS367AJ |
| SN54LS368AJ | Active | Production | CDIP (J) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | SN54LS368AJ |
| SN54LS368AJ.A | Active | Production | CDIP (J) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | SN54LS368AJ |
| SN74LS365AD | Obsolete | Production | SOIC (D) 16 | - | - | Call TI | Call TI | 0 to 70 | LS365A |
| SN74LS365ADR | Active | Production | SOIC (D) 16 | 2500 LARGE T&R | Yes | NIPDAU | Level-1-260C-UNLIM | 0 to 70 | LS365A |
| SN74LS365ADR.A | Active | Production | SOIC (D) 16 | 2500 LARGE T&R | Yes | NIPDAU | Level-1-260C-UNLIM | 0 to 70 | LS365A |
| SN74LS365AN | Active | Production | PDIP (N) 16 | 25 TUBE | Yes | NIPDAU | N/A for Pkg Type | 0 to 70 | SN74LS365AN |
| SN74LS365AN.A | Active | Production | PDIP (N) 16 | 25 TUBE | Yes | NIPDAU | N/A for Pkg Type | 0 to 70 | SN74LS365AN |
| SN74LS365ANSR | Active | Production | SOP (NS) 16 | 2000 LARGE T&R | Yes | NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 74LS365A |
| SN74LS365ANSR.A | Active | Production | SOP (NS) 16 | 2000 LARGE T&R | Yes | NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 74LS365A |
| SN74LS367AD | Obsolete | Production | SOIC (D) 16 | - | - | Call TI | Call TI | 0 to 70 | LS367A |
| SN74LS367ADR | Active | Production | SOIC (D) 16 | 2500 LARGE T&R | Yes | NIPDAU | Level-1-260C-UNLIM | 0 to 70 | LS367A |
| SN74LS367ADR.A | Active | Production | SOIC (D) 16 | 2500 LARGE T&R | Yes | NIPDAU | Level-1-260C-UNLIM | 0 to 70 | LS367A |
| SN74LS367AN | Active | Production | PDIP (N) 16 | 25 TUBE | Yes | NIPDAU | N/A for Pkg Type | 0 to 70 | SN74LS367AN |
| SN74LS367AN.A | Active | Production | PDIP (N) 16 | 25 TUBE | Yes | NIPDAU | N/A for Pkg Type | 0 to 70 | SN74LS367AN |
| SN74LS367ANE4 | Active | Production | PDIP (N) 16 | 25 TUBE | Yes | NIPDAU | N/A for Pkg Type | 0 to 70 | SN74LS367AN |
| SN74LS367ANSR | Active | Production | SOP (NS) 16 | 2000 LARGE T&R | Yes | NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 74LS367A |
| SN74LS367ANSR.A | Active | Production | SOP (NS) 16 | 2000 LARGE T&R | Yes | NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 74LS367A |
| SN74LS368AD | Active | Production | SOIC (D) 16 | 40 TUBE | Yes | NIPDAU | Level-1-260C-UNLIM | 0 to 70 | LS368A |
| SN74LS368AD.A | Active | Production | SOIC (D) 16 | 40 TUBE | Yes | NIPDAU | Level-1-260C-UNLIM | 0 to 70 | LS368A |
| SN74LS368AN | Active | Production | PDIP (N) 16 | 25 TUBE | Yes | NIPDAU | N/A for Pkg Type | 0 to 70 | SN74LS368AN |
| SN74LS368AN.A | Active | Production | PDIP (N) 16 | 25 TUBE | Yes | NIPDAU | N/A for Pkg Type | 0 to 70 | SN74LS368AN |
| SN74LS368ANSR | Active | Production | SOP (NS) 16 | 2000 LARGE T&R | Yes | NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 74LS368A |
| SN74LS368ANSR.A | Active | Production | SOP (NS) 16 | 2000 LARGE T&R | Yes | NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 74LS368A |
| SNJ54LS365AFK | Active | Production | LCCC (FK) 20 | 55 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | SNJ54LS365AFK |
| SNJ54LS365AFK.A | Active | Production | LCCC (FK) 20 | 55 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | SNJ54LS365AFK |
| SNJ54LS365AJ | Active | Production | CDIP (J) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | SNJ54LS365AJ |

| Orderable part number | Status (1) | Material type (2) | Package Pins | Package qty Carrier | RoHS (3) | Lead finish/ Ball material (4) | MSL rating/ Peak reflow (5) | Op temp (°C) | Part marking (6) |
|-------------------------------|---------------|----------------------|----------------|-----------------------|-------------|--------------------------------------|-----------------------------------|--------------|---------------------|
| SNJ54LS365AJ.A | Active | Production | CDIP (J) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | SNJ54LS365AJ |
| SNJ54LS366AFK | Active | Production | LCCC (FK) 20 | 55 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | SNJ54LS 366AFK |
| SNJ54LS366AFK.A | Active | Production | LCCC (FK) 20 | 55 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | SNJ54LS 366AFK |
| SNJ54LS366AJ | Active | Production | CDIP (J) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | SNJ54LS366AJ |
| SNJ54LS366AJ.A | Active | Production | CDIP (J) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | SNJ54LS366AJ |
| SNJ54LS367AJ | Active | Production | CDIP (J) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | SNJ54LS367AJ |
| SNJ54LS367AJ.A | Active | Production | CDIP (J) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | SNJ54LS367AJ |
| SNJ54LS368AJ | Active | Production | CDIP (J) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | SNJ54LS368AJ |
| SNJ54LS368AJ.A | Active | Production | CDIP (J) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | SNJ54LS368AJ |
| SNJ54LS368AW | Active | Production | CFP (W) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | SNJ54LS368AW |
| SNJ54LS368AW.A | Active | Production | CFP (W) 16 | 25 TUBE | No | SNPB | N/A for Pkg Type | -55 to 125 | SNJ54LS368AW |

⁽¹⁾ **Status:** For more details on status, see our [product life cycle](#).

⁽²⁾ **Material type:** When designated, preproduction parts are prototypes/experimental devices, and are not yet approved or released for full production. Testing and final process, including without limitation quality assurance, reliability performance testing, and/or process qualification, may not yet be complete, and this item is subject to further changes or possible discontinuation. If available for ordering, purchases will be subject to an additional waiver at checkout, and are intended for early internal evaluation purposes only. These items are sold without warranties of any kind.

⁽³⁾ **RoHS values:** Yes, No, RoHS Exempt. See the [TI RoHS Statement](#) for additional information and value definition.

⁽⁴⁾ **Lead finish/Ball material:** Parts may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

⁽⁵⁾ **MSL rating/Peak reflow:** The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will be used to mount the part to the printed circuit board.

⁽⁶⁾ **Part marking:** There may be an additional marking, which relates to the logo, the lot trace code information, or the environmental category of the part.

Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "~" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

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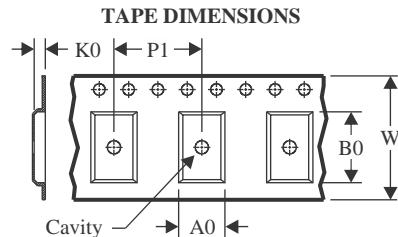
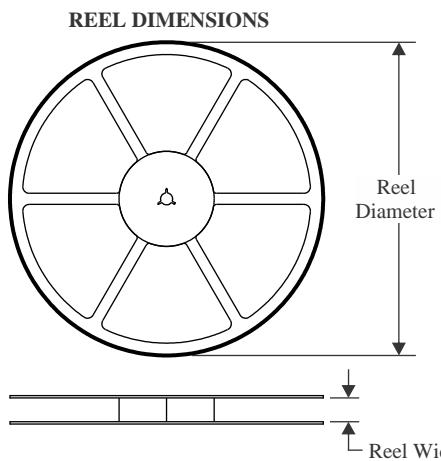
OTHER QUALIFIED VERSIONS OF SN54LS365A, SN54LS367A, SN54LS368A, SN74LS365A, SN74LS367A, SN74LS368A :

- Catalog : [SN74LS365A](#), [SN74LS367A](#), [SN74LS368A](#)
- Military : [SN54LS365A](#), [SN54LS367A](#), [SN54LS368A](#)

NOTE: Qualified Version Definitions:

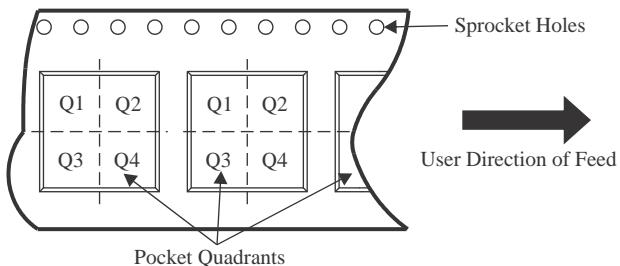
- Catalog - TI's standard catalog product
- Military - QML certified for Military and Defense Applications

TAPE AND REEL INFORMATION



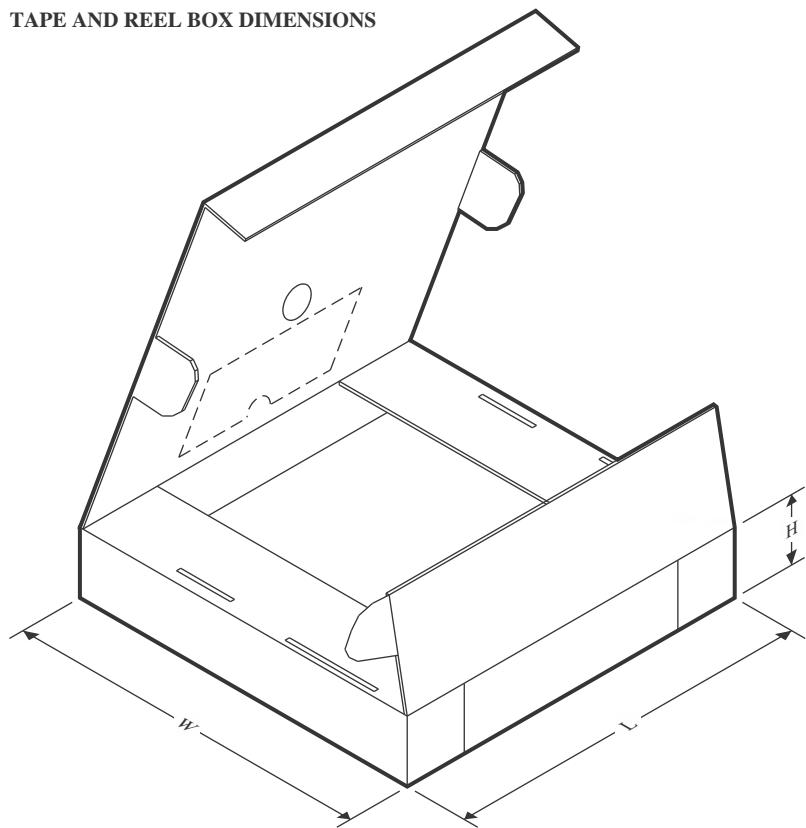
| | |
|----|---|
| A0 | Dimension designed to accommodate the component width |
| B0 | Dimension designed to accommodate the component length |
| K0 | Dimension designed to accommodate the component thickness |
| W | Overall width of the carrier tape |
| P1 | Pitch between successive cavity centers |

QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*All dimensions are nominal

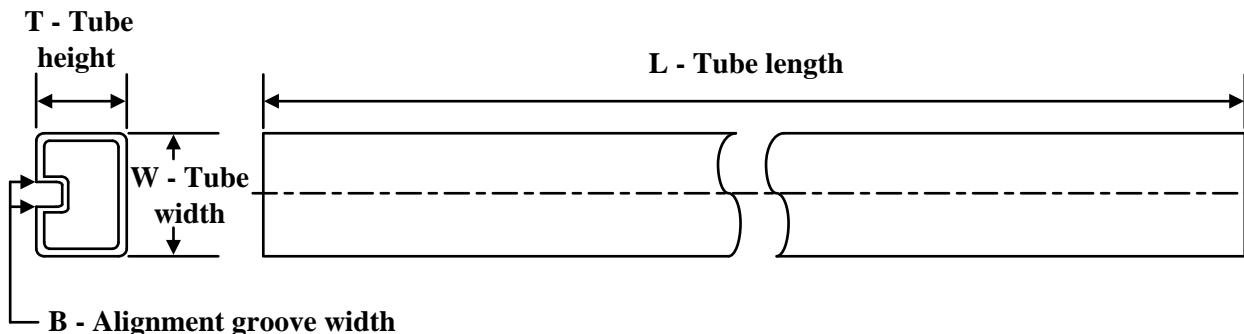
| Device | Package Type | Package Drawing | Pins | SPQ | Reel Diameter (mm) | Reel Width W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P1 (mm) | W (mm) | Pin1 Quadrant |
|---------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| SN74LS365ADR | SOIC | D | 16 | 2500 | 330.0 | 16.4 | 6.5 | 10.3 | 2.1 | 8.0 | 16.0 | Q1 |
| SN74LS365ANSR | SOP | NS | 16 | 2000 | 330.0 | 16.4 | 8.1 | 10.4 | 2.5 | 12.0 | 16.0 | Q1 |
| SN74LS367ADR | SOIC | D | 16 | 2500 | 330.0 | 16.4 | 6.5 | 10.3 | 2.1 | 8.0 | 16.0 | Q1 |
| SN74LS367ANSR | SOP | NS | 16 | 2000 | 330.0 | 16.4 | 8.1 | 10.4 | 2.5 | 12.0 | 16.0 | Q1 |
| SN74LS368ANSR | SOP | NS | 16 | 2000 | 330.0 | 16.4 | 8.1 | 10.4 | 2.5 | 12.0 | 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) |
|---------------|--------------|-----------------|------|------|-------------|------------|-------------|
| SN74LS365ADR | SOIC | D | 16 | 2500 | 353.0 | 353.0 | 32.0 |
| SN74LS365ANSR | SOP | NS | 16 | 2000 | 353.0 | 353.0 | 32.0 |
| SN74LS367ADR | SOIC | D | 16 | 2500 | 340.5 | 336.1 | 32.0 |
| SN74LS367ANSR | SOP | NS | 16 | 2000 | 353.0 | 353.0 | 32.0 |
| SN74LS368ANSR | SOP | NS | 16 | 2000 | 353.0 | 353.0 | 32.0 |

TUBE



*All dimensions are nominal

| Device | Package Name | Package Type | Pins | SPQ | L (mm) | W (mm) | T (μ m) | B (mm) |
|--------------------|--------------|--------------|------|-----|--------|--------|--------------|--------|
| JM38510/32201B2A | FK | LCCC | 20 | 55 | 506.98 | 12.06 | 2030 | NA |
| JM38510/32201B2A.A | FK | LCCC | 20 | 55 | 506.98 | 12.06 | 2030 | NA |
| JM38510/32203B2A | FK | LCCC | 20 | 55 | 506.98 | 12.06 | 2030 | NA |
| JM38510/32203B2A.A | FK | LCCC | 20 | 55 | 506.98 | 12.06 | 2030 | NA |
| JM38510/32203BFA | W | CFP | 16 | 25 | 506.98 | 26.16 | 6220 | NA |
| JM38510/32203BFA.A | W | CFP | 16 | 25 | 506.98 | 26.16 | 6220 | NA |
| M38510/32201B2A | FK | LCCC | 20 | 55 | 506.98 | 12.06 | 2030 | NA |
| M38510/32203B2A | FK | LCCC | 20 | 55 | 506.98 | 12.06 | 2030 | NA |
| M38510/32203BFA | W | CFP | 16 | 25 | 506.98 | 26.16 | 6220 | NA |
| SN74LS365AN | N | PDIP | 16 | 25 | 506 | 13.97 | 11230 | 4.32 |
| SN74LS365AN | N | PDIP | 16 | 25 | 506 | 13.97 | 11230 | 4.32 |
| SN74LS365AN.A | N | PDIP | 16 | 25 | 506 | 13.97 | 11230 | 4.32 |
| SN74LS365AN.A | N | PDIP | 16 | 25 | 506 | 13.97 | 11230 | 4.32 |
| SN74LS367AN | N | PDIP | 16 | 25 | 506 | 13.97 | 11230 | 4.32 |
| SN74LS367AN | N | PDIP | 16 | 25 | 506 | 13.97 | 11230 | 4.32 |
| SN74LS367AN.A | N | PDIP | 16 | 25 | 506 | 13.97 | 11230 | 4.32 |
| SN74LS367AN.A | N | PDIP | 16 | 25 | 506 | 13.97 | 11230 | 4.32 |
| SN74LS367ANE4 | N | PDIP | 16 | 25 | 506 | 13.97 | 11230 | 4.32 |
| SN74LS367ANE4 | N | PDIP | 16 | 25 | 506 | 13.97 | 11230 | 4.32 |
| SN74LS368AD | D | SOIC | 16 | 40 | 507 | 8 | 3940 | 4.32 |
| SN74LS368AD.A | D | SOIC | 16 | 40 | 507 | 8 | 3940 | 4.32 |
| SN74LS368AN | N | PDIP | 16 | 25 | 506 | 13.97 | 11230 | 4.32 |
| SN74LS368AN | N | PDIP | 16 | 25 | 506 | 13.97 | 11230 | 4.32 |
| SN74LS368AN.A | N | PDIP | 16 | 25 | 506 | 13.97 | 11230 | 4.32 |
| SN74LS368AN.A | N | PDIP | 16 | 25 | 506 | 13.97 | 11230 | 4.32 |
| SNJ54LS365AFK | FK | LCCC | 20 | 55 | 506.98 | 12.06 | 2030 | NA |
| SNJ54LS365AFK.A | FK | LCCC | 20 | 55 | 506.98 | 12.06 | 2030 | NA |
| SNJ54LS366AFK | FK | LCCC | 20 | 55 | 506.98 | 12.06 | 2030 | NA |
| SNJ54LS366AFK.A | FK | LCCC | 20 | 55 | 506.98 | 12.06 | 2030 | NA |

| Device | Package Name | Package Type | Pins | SPQ | L (mm) | W (mm) | T (μm) | B (mm) |
|----------------|--------------|--------------|------|-----|--------|--------|--------|--------|
| SNJ54LS368AW | W | CFP | 16 | 25 | 506.98 | 26.16 | 6220 | NA |
| SNJ54LS368AW.A | W | CFP | 16 | 25 | 506.98 | 26.16 | 6220 | NA |

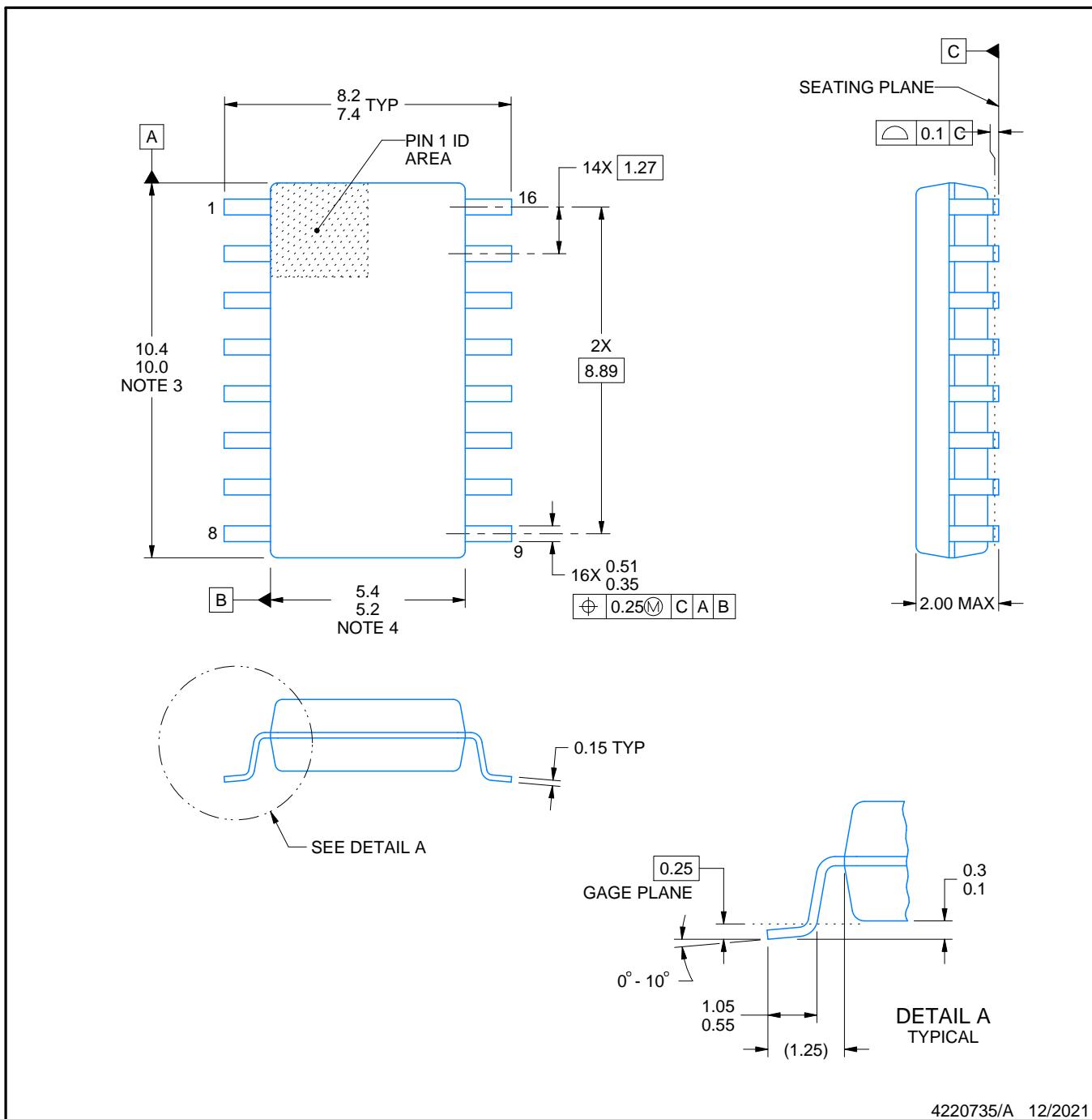
NS0016A



PACKAGE OUTLINE

SOP - 2.00 mm max height

SOP



NOTES:

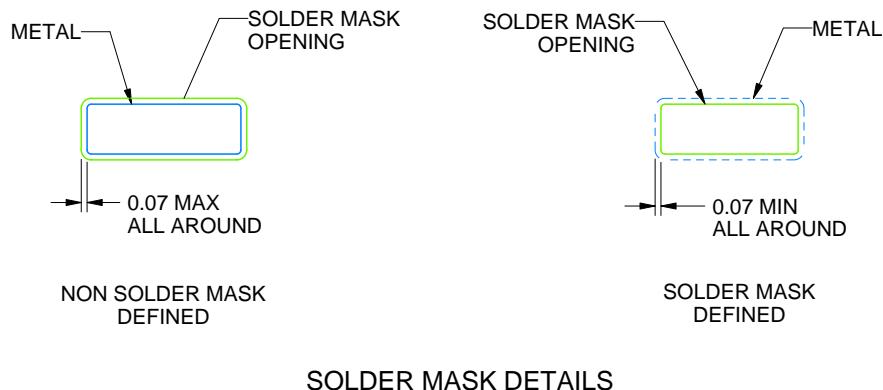
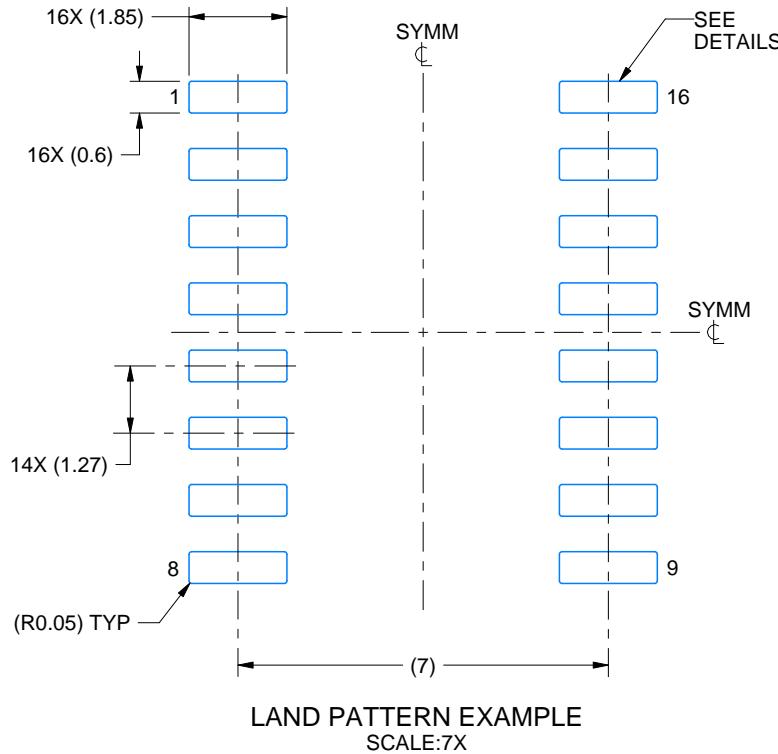
1. All linear dimensions are in millimeters. Dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.15 mm, per side.
4. This dimension does not include interlead flash. Interlead flash shall not exceed 0.25 mm, per side.

EXAMPLE BOARD LAYOUT

NS0016A

SOP - 2.00 mm max height

SOP



4220735/A 12/2021

NOTES: (continued)

5. Publication IPC-7351 may have alternate designs.

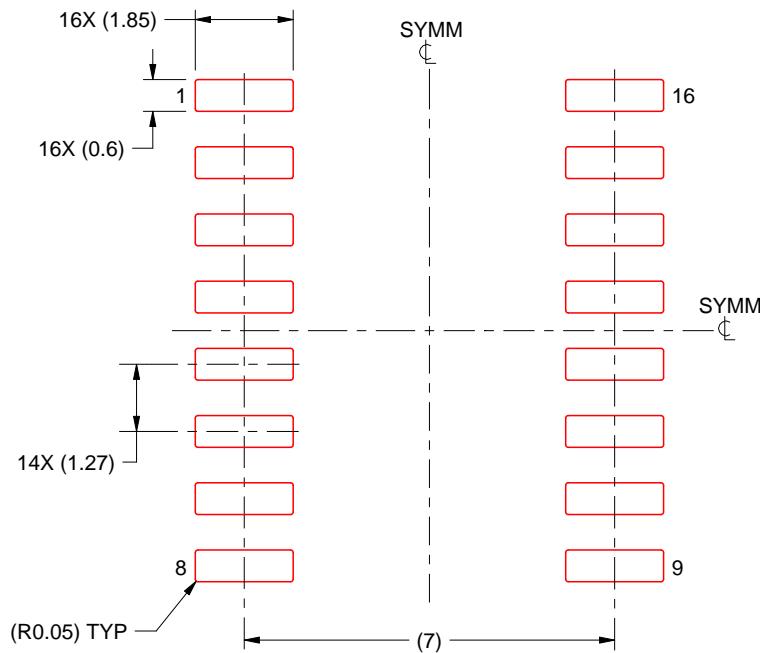
6. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

EXAMPLE STENCIL DESIGN

NS0016A

SOP - 2.00 mm max height

SOP



SOLDER PASTE EXAMPLE
BASED ON 0.125 mm THICK STENCIL
SCALE:7X

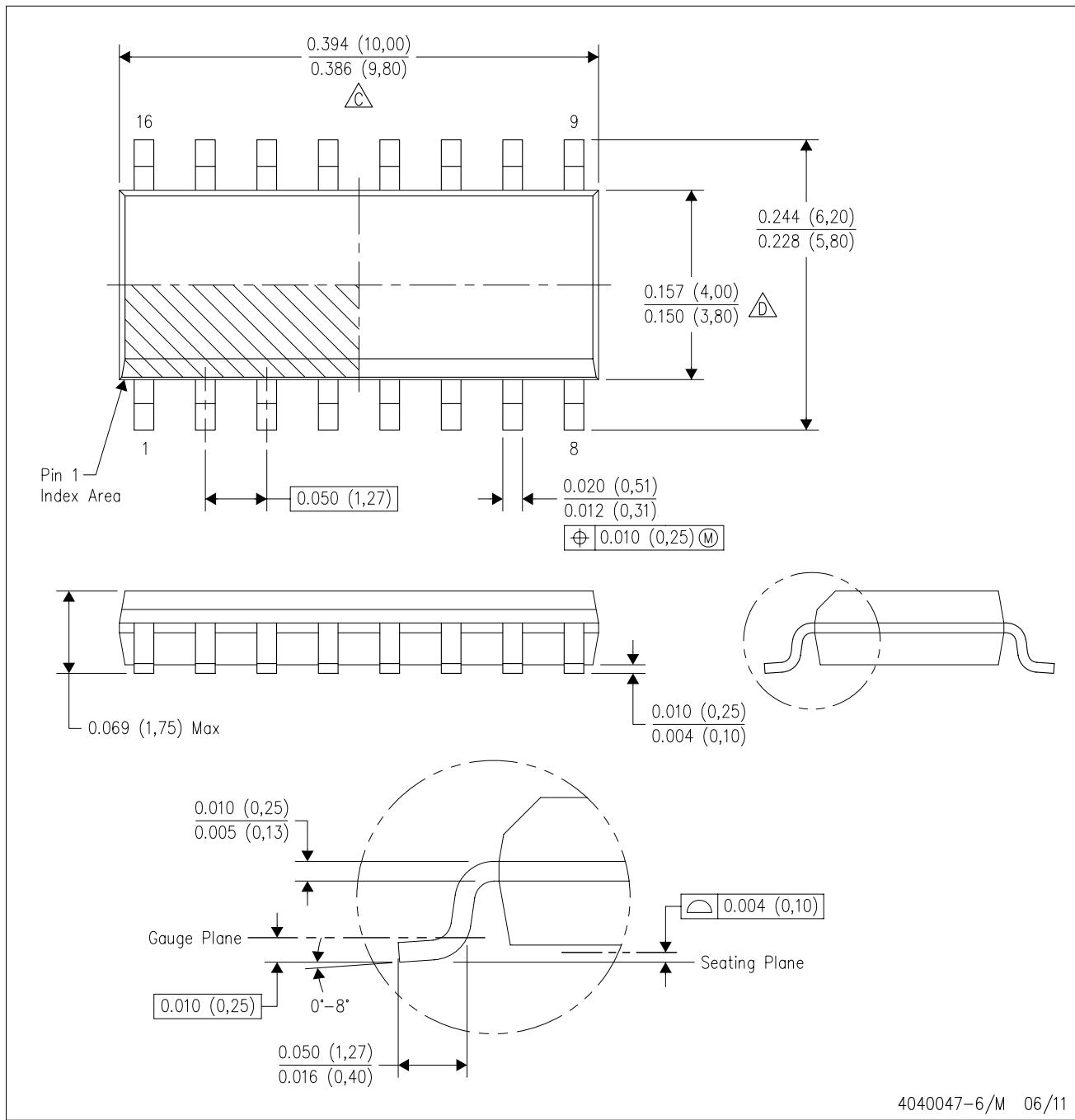
4220735/A 12/2021

NOTES: (continued)

7. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.
8. Board assembly site may have different recommendations for stencil design.

D (R-PDSO-G16)

PLASTIC SMALL OUTLINE



NOTES: A. All linear dimensions are in inches (millimeters).

B. This drawing is subject to change without notice.

C. Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.006 (0,15) each side.

D. Body width does not include interlead flash. Interlead flash shall not exceed 0.017 (0,43) each side.

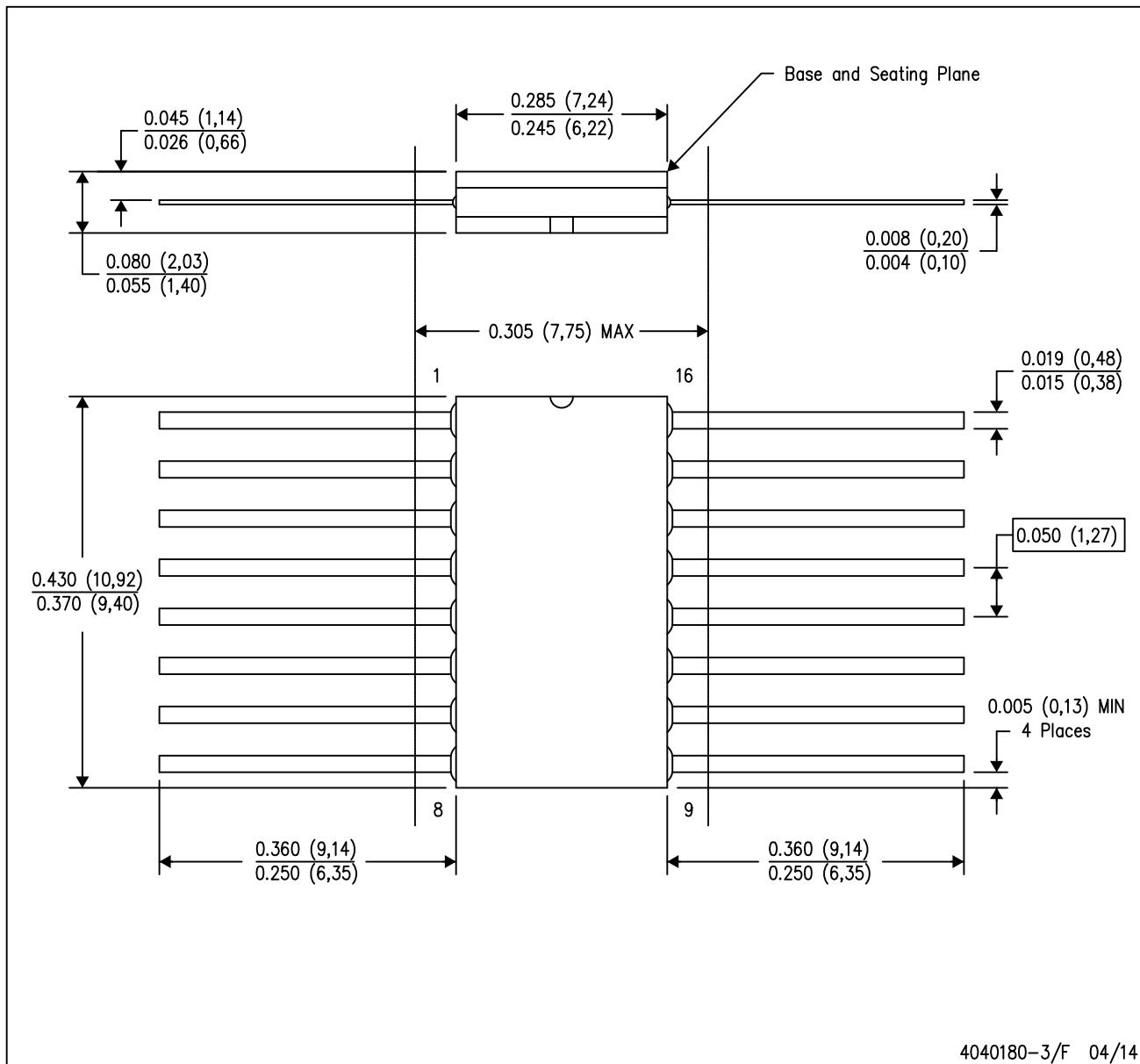
E. Reference JEDEC MS-012 variation AC.

4040047-6/M 06/11

MECHANICAL DATA

W (R-GDFP-F16)

CERAMIC DUAL FLATPACK



4040180-3/F 04/14

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 GDFP2-F16

GENERIC PACKAGE VIEW

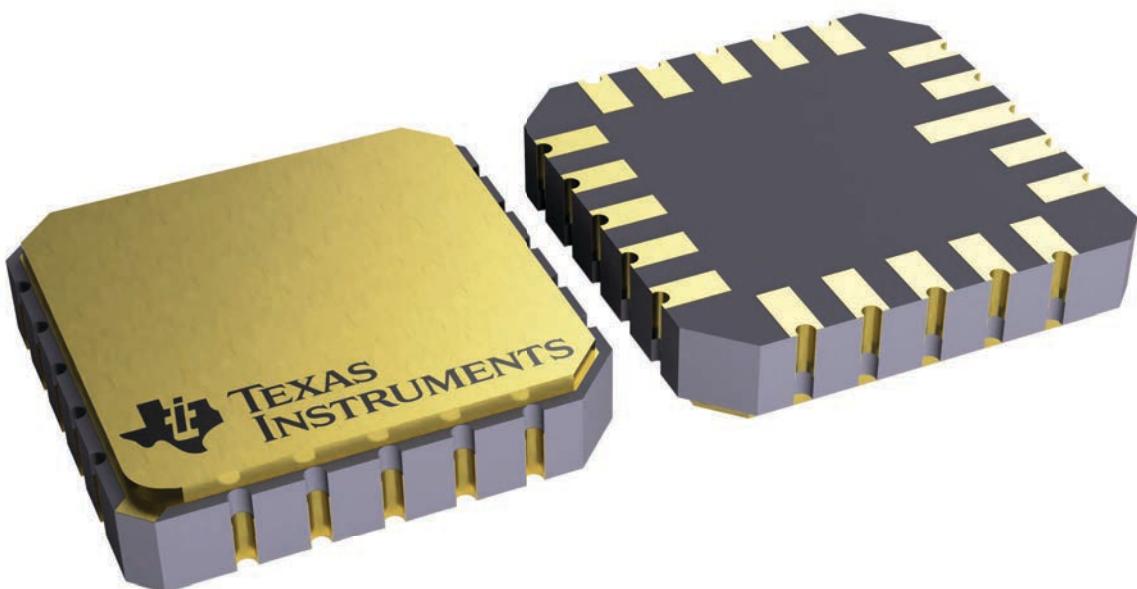
FK 20

LCCC - 2.03 mm max height

8.89 x 8.89, 1.27 mm pitch

LEADLESS CERAMIC CHIP CARRIER

This image is a representation of the package family, actual package may vary.
Refer to the product data sheet for package details.

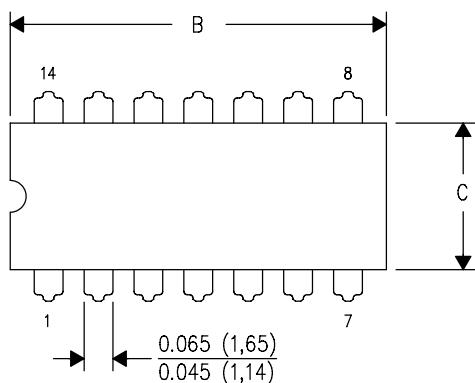


4229370VA\

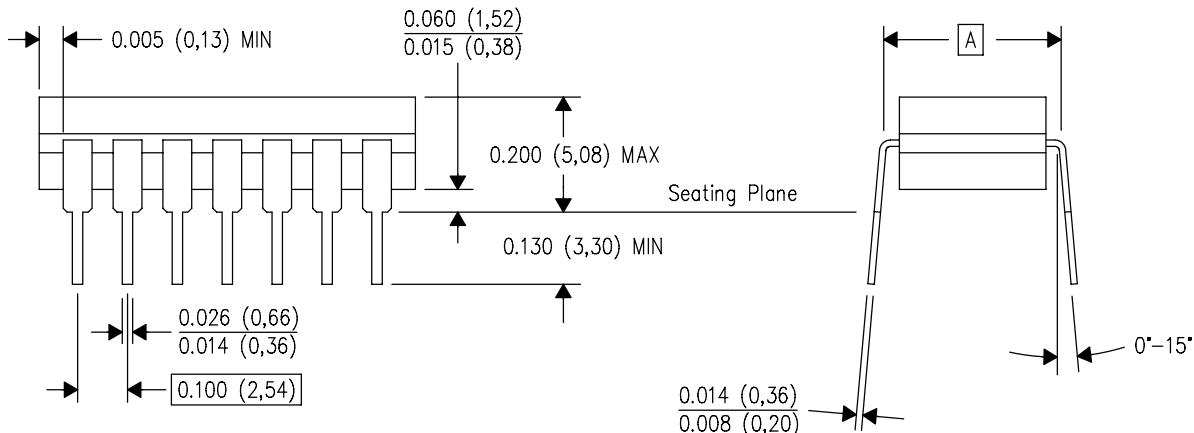
J (R-GDIP-T**)

14 LEADS SHOWN

CERAMIC DUAL IN-LINE PACKAGE



| PINS **\nDIM | 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) |



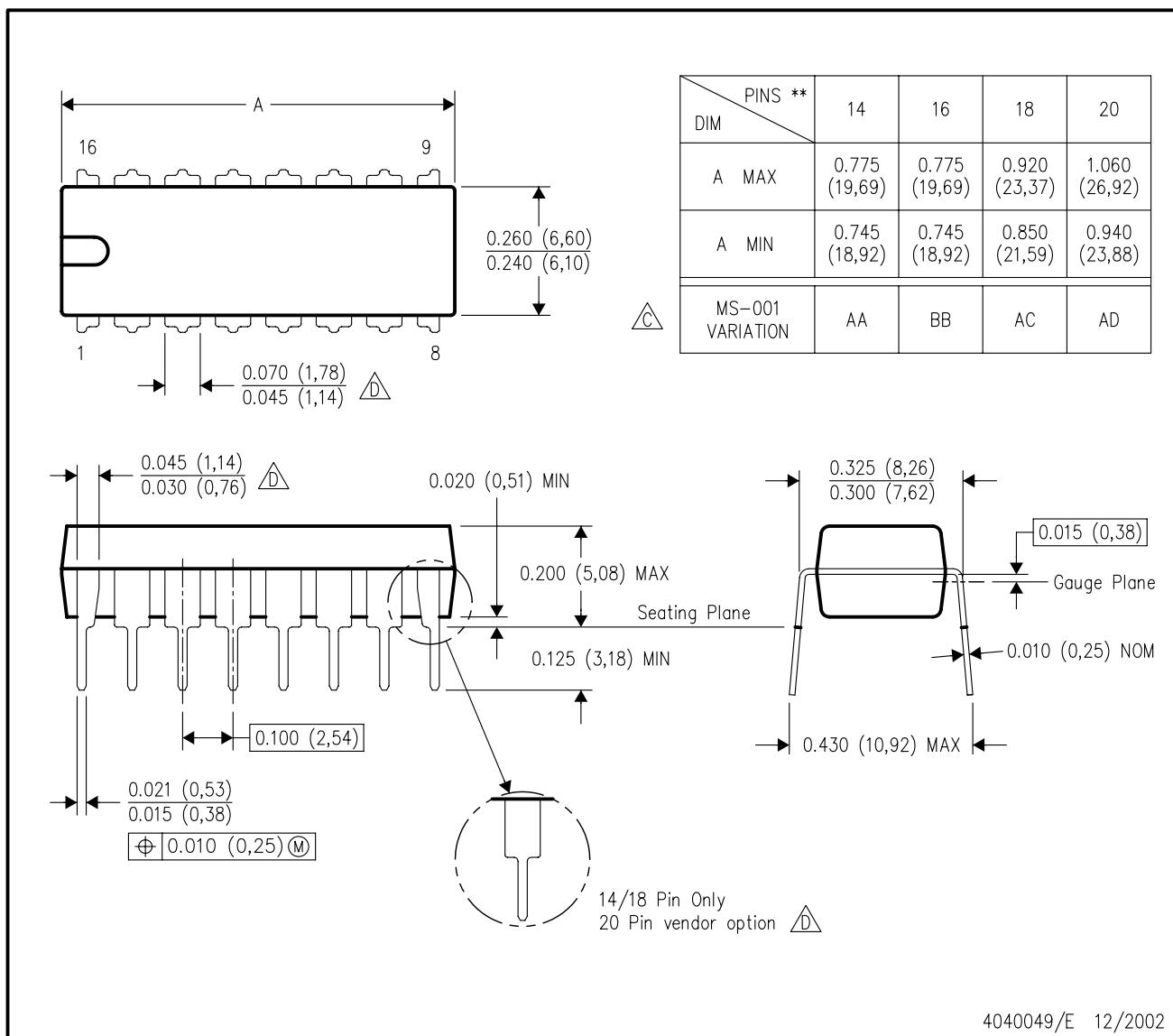
4040083/F 03/03

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

N (R-PDIP-T**)

16 PINS SHOWN

PLASTIC DUAL-IN-LINE PACKAGE



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Last updated 10/2025