



THE DATASHEET OF TL431QDBVR



SN54ALS257A, SN54ALS258A, SN74ALS257A, SN74ALS258A, SN74AS257, SN74AS258 QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS WITH 3-STATE OUTPUTS

SDAS124C – APRIL 1982 – REVISED AUGUST 1996

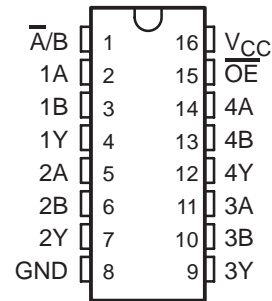
- 3-State Outputs Interface Directly With System Bus
- Provide Bus Interface From Multiple Sources in High-Performance Systems
- Package Options Include Plastic Small-Outline (D) Packages, Ceramic Chip Carriers (FK), and Standard Plastic (N) and Ceramic (J) 300-mil DIPs

description

These data selectors/multiplexers are designed to multiplex signals from 4-bit data sources to 4-output data lines in bus-organized systems. The 3-state outputs do not load the data lines when the output-enable (\overline{OE}) input is at a high logic level.

The SN54ALS257A and SN54ALS258A are characterized for operation over the full military temperature range of -55°C to 125°C . The SN74ALS257A, SN74ALS258A, SN74AS257, and SN74AS258 are characterized for operation from 0°C to 70°C .

SN54ALS257A, SN54ALS258A . . . J PACKAGE
SN74ALS257A, SN74ALS258A, SN74AS257,
SN74AS258 . . . D OR N PACKAGE
(TOP VIEW)



SN54ALS257A, SN54ALS258A . . . FK PACKAGE
(TOP VIEW)



NC – No internal connection

FUNCTION TABLE

| INPUTS | | | OUTPUT Y | | |
|-----------------|------------------|------|----------|---|---|
| \overline{OE} | $\overline{A/B}$ | DATA | | SN54ALS257A SN74ALS257A SN74AS257 | SN54ALS258A SN74ALS258A SN74AS258 |
| | | A | B | | |
| H | X | X | X | Z | Z |
| L | L | L | X | L | H |
| L | L | H | X | H | L |
| L | H | X | L | L | H |
| L | H | X | H | H | L |



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

 **TEXAS
INSTRUMENTS**

POST OFFICE BOX 655303 • DALLAS, TEXAS 75265
POST OFFICE BOX 1443 • HOUSTON, TEXAS 77251-1443

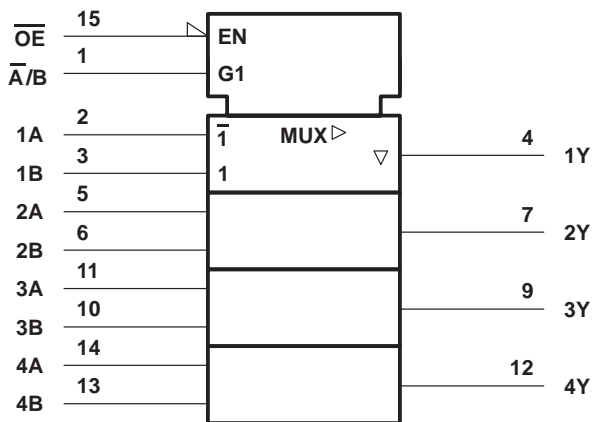
Copyright © 1996, Texas Instruments Incorporated

SN54ALS257A, SN54ALS258A, SN74ALS257A, SN74ALS258A, SN74AS257, SN74AS258 QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS WITH 3-STATE OUTPUTS

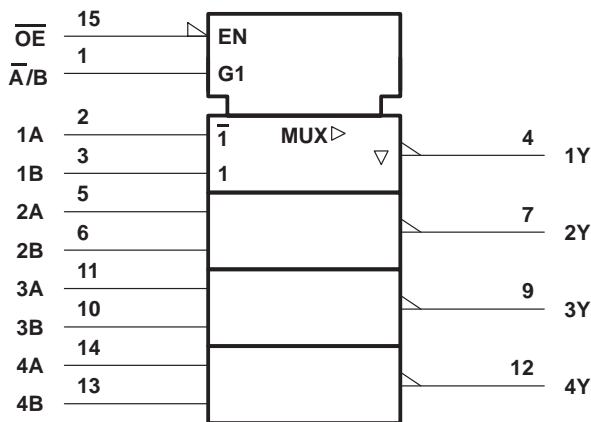
SDAS124C – APRIL 1982 – REVISED AUGUST 1996

logic symbols†

SN54ALS257A, SN74ALS257A,
SN74AS257



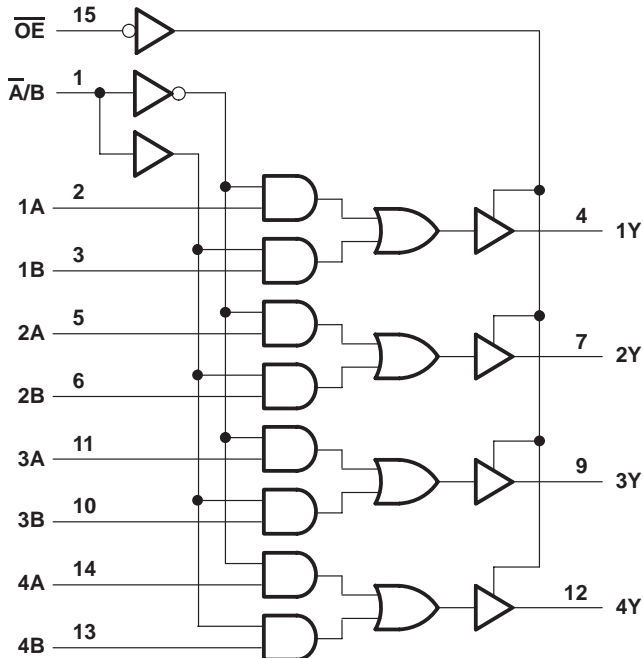
SN54ALS258A, SN74ALS258A,
SN74AS258



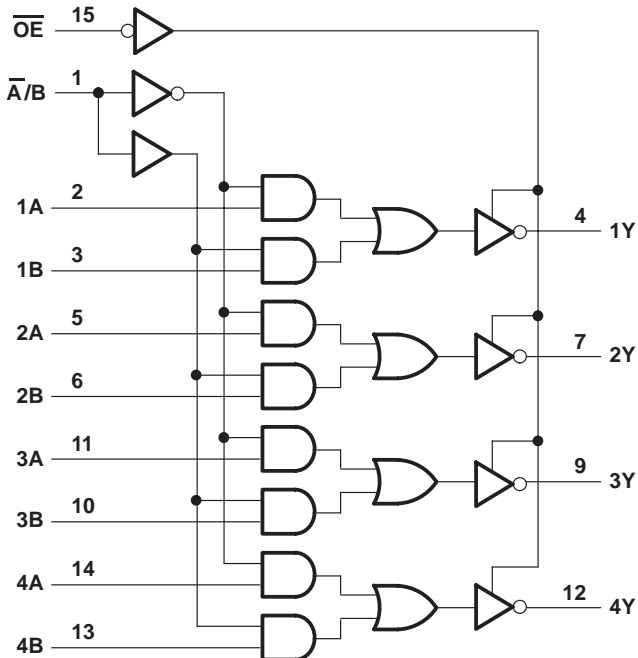
† These symbols are in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.
Pin numbers shown are for the D, J, and N packages.

logic diagrams (positive logic)

SN54ALS257A, SN74ALS257A,
SN74AS257



SN54ALS258A, SN74ALS258A,
SN74AS258



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



POST OFFICE BOX 655303 • DALLAS, TEXAS 75265
POST OFFICE BOX 1443 • HOUSTON, TEXAS 77251-1443

SN54ALS257A, SN54ALS258A, SN74ALS257A, SN74ALS258A, SN74AS257, SN74AS258 QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS WITH 3-STATE OUTPUTS

SDAS124C – APRIL 1982 – REVISED AUGUST 1996

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

| | |
|--|-----------------|
| Supply voltage, V_{CC} | 7 V |
| Input voltage, V_I | 7 V |
| Voltage applied to a disabled 3-state output | 5.5 V |
| Maximum power dissipation at $T_A = 55^\circ\text{C}$ (in still air) (see Note 1): | D package |
| | N package |
| Operating free-air temperature range, T_A : SN54ALS257A, SN54ALS258A | –55°C to 125°C |
| SN74ALS257A, SN74ALS258A | 0°C to 70°C |
| Storage temperature range, T_{stg} | –65°C to 150°C |

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

NOTE 1: The maximum package power dissipation is calculated using a junction temperature of 150°C and a board trace length of 750 mils, except for the N package, which has a trace length of zero.

recommended operating conditions

| | SN54ALS257A SN54ALS258A | | | SN74ALS257A SN74ALS258A | | | UNIT |
|--------------------------------------|----------------------------|-----|-----|----------------------------|-----|------|------|
| | MIN | NOM | MAX | MIN | NOM | MAX | |
| V_{CC} Supply voltage | 4.5 | 5 | 5.5 | 4.5 | 5 | 5.5 | 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 |



SN54ALS257A, SN54ALS258A, SN74ALS257A, SN74ALS258A, SN74AS257, SN74AS258 QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS WITH 3-STATE OUTPUTS

SDAS124C – APRIL 1982 – REVISED AUGUST 1996

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

| PARAMETER | TEST CONDITIONS | | SN54ALS257A SN54ALS258A | | | SN74ALS257A SN74ALS258A | | | UNIT |
|------------------|---|---------------------------|----------------------------|------|------|----------------------------|------|-----|------|
| | | | MIN | TYP† | MAX | MIN | TYP† | MAX | |
| V _{IK} | V _{CC} = 4.5 V, I _I = -18 mA | | -1.5 | | | -1.5 | | | V |
| V _{OH} | V _{CC} = 4.5 V to 5.5 V, I _{OH} = -0.4 mA | | V _{CC} -2 | | | V _{CC} -2 | | | V |
| | V _{CC} = 4.5 V | I _{OH} = -1 mA | 2.4 | 3.3 | | | | | |
| | | I _{OH} = -2.6 mA | | | | 2.4 | 3.2 | | |
| V _{OH} | V _{CC} = 4.5 V | I _{OL} = 12 mA | 0.25 | 0.4 | 0.25 | 0.4 | | | V |
| | | I _{OL} = 24 mA | | | 0.35 | 0.5 | | | |
| I _{OZH} | V _{CC} = 5.5 V, V _O = 2.7 V | | 20 | | 20 | | | μA | |
| I _{OZL} | V _{CC} = 5.5 V, V _O = 0.4 V | | -20 | | -20 | | | μA | |
| I _I | V _{CC} = 5.5 V, V _I = 7 V | | 0.1 | | 0.1 | | | mA | |
| I _{IH} | V _{CC} = 5.5 V, V _I = 2.7 V | | 20 | | 20 | | | μA | |
| I _{IL} | V _{CC} = 5.5 V, V _I = 0.4 V | | -0.1 | | -0.1 | | | mA | |
| I _{O‡} | V _{CC} = 5.5 V, V _O = 2.25 V | | -20 | -112 | -30 | -112 | | mA | |
| I _{CC} | SN54ALS257A, SN74ALS257A | V _{CC} = 5.5 V | Outputs high | | 3 | 8 | 3 | 6 | mA |
| | | | Outputs low | | 8 | 12 | 8 | 12 | |
| | | | Outputs disabled | | 9 | 14 | 9 | 14 | |
| | SN54ALS258A, SN74ALS258A | V _{CC} = 5.5 V | Outputs high | | 2.5 | 5 | 2.5 | 4 | |
| | | | Outputs low | | 7 | 11 | 7 | 11 | |
| | | | Outputs disabled | | 8 | 13 | 8 | 13 | |

† All typical values are at V_{CC} = 5 V, T_A = 25°C.

‡ The output conditions have been chosen to produce a current that closely approximates one half of the true short-circuit output current, I_{OS}.

switching characteristics (see Figure 1)

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | V _{CC} = 4.5 V to 5.5 V, C _L = 50 pF, R ₁ = 500 Ω, R ₂ = 500 Ω, T _A = MIN to MAX§ | | | | UNIT |
|------------------|-----------------|----------------|--|-----|-------------|-----|------|
| | | | SN54ALS257A | | SN74ALS257A | | |
| | | | MIN | MAX | MIN | MAX | |
| t _{PLH} | A or B | Any Y | 2 | 12 | 2 | 10 | ns |
| t _{PHL} | | | 2 | 14 | 2 | 12 | |
| t _{PLH} | A̅/B | Any Y | 4 | 21 | 6 | 18 | ns |
| t _{PHL} | | | 6 | 25 | 6 | 22 | |
| t _{PZH} | OE̅ | Any Y | 3 | 20 | 4 | 16 | ns |
| t _{PZL} | | | 4 | 22 | 5 | 18 | |
| t _{PHZ} | OE̅ | Any Y | 2 | 12 | 2 | 10 | ns |
| t _{PLZ} | | | 2 | 35 | 4 | 15 | |

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



SN54ALS257A, SN54ALS258A, SN74ALS257A, SN74ALS258A, SN74AS257, SN74AS258 QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS WITH 3-STATE OUTPUTS

SDAS124C – APRIL 1982 – REVISED AUGUST 1996

switching characteristics (see Figure 1)

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | V _{CC} = 4.5 V to 5.5 V, C _L = 50 pF, R ₁ = 500 Ω, R ₂ = 500 Ω, T _A = MIN to MAX† | | | | UNIT |
|------------------|-----------------|----------------|--|-----|-------------|-----|------|
| | | | SN54ALS258A | | SN74ALS258A | | |
| | | | MIN | MAX | MIN | MAX | |
| t _{PLH} | A or B | Any Y | 1 | 12 | 2 | 8 | ns |
| t _{PHL} | | | 2 | 9 | 2 | 7 | |
| t _{PLH} | \bar{A}/B | Any Y | 4 | 28 | 5 | 25 | ns |
| t _{PHL} | | | 5 | 25 | 6 | 20 | |
| t _{PZH} | \overline{OE} | Any Y | 3 | 20 | 4 | 18 | ns |
| t _{PZL} | | | 5 | 21 | 5 | 18 | |
| t _{PHZ} | \overline{OE} | Any Y | 2 | 12 | 2 | 10 | ns |
| t _{PLZ} | | | 3 | 37 | 4 | 18 | |

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

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

| | |
|---|----------------|
| Supply voltage, V _{CC} | 7 V |
| Input voltage, V _I | 7 V |
| Voltage applied to a disabled 3-state output | 5.5 V |
| Maximum power dissipation at T _A = 55°C (in still air) (see Note 1): | |
| D package | 1.3 W |
| N package | 1.1 W |
| Operating free-air temperature range, T _A : SN74AS257, SN74AS258 | 0°C to 70°C |
| Storage temperature range, T _{stg} | -65°C to 150°C |

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

NOTE 1: The maximum package power dissipation is calculated using a junction temperature of 150°C and a board trace length of 750 mils, except for the N package, which has a trace length of zero.

recommended operating conditions

| | | SN74AS257 SN74AS258 | | | UNIT |
|-----------------|--------------------------------|------------------------|-----|-----|------|
| | | MIN | NOM | MAX | |
| V _{CC} | Supply voltage | 4.5 | 5 | 5.5 | V |
| V _{IH} | High-level input voltage | 2 | | | V |
| V _{IL} | Low-level input voltage | | | 0.8 | V |
| I _{OH} | High-level output current | | | -15 | mA |
| I _{OL} | Low-level output current | | | 48 | mA |
| T _A | Operating free-air temperature | 0 | | 70 | °C |



SN54ALS257A, SN54ALS258A, SN74ALS257A, SN74ALS258A, SN74AS257, SN74AS258 QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS WITH 3-STATE OUTPUTS

SDAS124C – APRIL 1982 – REVISED AUGUST 1996

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

| PARAMETER | TEST CONDITIONS | SN74AS257 SN74AS258 | | UNIT | | |
|-----------------|---|---|------------------|---------------|------|-----|
| | | MIN | TYP† | | MAX | |
| V_{IK} | $V_{CC} = 4.5\text{ V}$, $I_I = -18\text{ mA}$ | -1.2 | | V | | |
| V_{OH} | $V_{CC} = 4.5\text{ V to } 5.5\text{ V}$, $I_{OH} = -2\text{ mA}$ | $V_{CC}-2$ | | V | | |
| | $V_{CC} = 4.5\text{ V}$, $I_{OH} = -15\text{ mA}$ | 2.4 | 3.2 | | | |
| V_{OL} | $V_{CC} = 4.5\text{ V}$, $I_{OL} = 48\text{ mA}$ | 0.35 | 0.5 | V | | |
| I_{OZH} | $V_{CC} = 5.5\text{ V}$, $V_O = 2.7\text{ V}$ | 50 | | μA | | |
| I_{OZL} | $V_{CC} = 5.5\text{ V}$, $V_O = 0.4\text{ V}$ | -50 | | μA | | |
| I_I | A, B, or \overline{OE} | $V_{CC} = 5.5\text{ V}$, $V_I = 7\text{ V}$ | | mA | | |
| | $\overline{A/B}$ | | | | 0.1 | 0.2 |
| I_{IH} | A, B, or \overline{OE} | $V_{CC} = 5.5\text{ V}$, $V_I = 2.7\text{ V}$ | | μA | | |
| | $\overline{A/B}$ | | | | 20 | 40 |
| I_{IL} | A, B, or \overline{OE} | $V_{CC} = 5.5\text{ V}$, $V_I = 0.4\text{ V}$ | | mA | | |
| | $\overline{A/B}$ | | | | -0.5 | -1 |
| $I_{O\ddagger}$ | $V_{CC} = 5.5\text{ V}$, $V_O = 2.25\text{ V}$ | -30 | -112 | mA | | |
| I_{CC} | SN74AS257 | $V_{CC} = 5.5\text{ V}$ | Outputs high | 12.1 | 19.7 | mA |
| | | | Outputs low | 19 | 30.6 | |
| | | | Outputs disabled | 19.7 | 31.9 | |
| | SN74AS258 | $V_{CC} = 5.5\text{ V}$ | Outputs high | 8.4 | 13.5 | |
| | | | Outputs low | 15.2 | 24.6 | |
| | | | Outputs disabled | 15.5 | 25.2 | |

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

‡ The output conditions have been chosen to produce a current that closely approximates one half of the true short-circuit output current, I_{OS} .



SN54ALS257A, SN54ALS258A, SN74ALS257A, SN74ALS258A, SN74AS257, SN74AS258 QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS WITH 3-STATE OUTPUTS

SDAS124C – APRIL 1982 – REVISED AUGUST 1996

switching characteristics (see Figure 1)

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | V _{CC} = 4.5 V to 5.5 V, C _L = 50 pF, R ₁ = 500 Ω, R ₂ = 500 Ω, T _A = MIN to MAX† | | UNIT |
|------------------|-----------------|----------------|--|-----|------|
| | | | SN74AS257 | | |
| | | | MIN | MAX | |
| t _{PLH} | A or B | Any Y | 1 | 5.5 | ns |
| t _{PHL} | | | 1 | 6 | |
| t _{PLH} | \bar{A}/B | Any Y | 2 | 11 | ns |
| t _{PHL} | | | 2 | 10 | |
| t _{PZH} | \overline{OE} | Any Y | 2 | 7.5 | ns |
| t _{PZL} | | | 2 | 9.5 | |
| t _{PHZ} | \overline{OE} | Any Y | 1.5 | 6.5 | ns |
| t _{PLZ} | | | 2 | 7 | |

switching characteristics (see Figure 1)

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | V _{CC} = 4.5 V to 5.5 V, C _L = 50 pF, R ₁ = 500 Ω, R ₂ = 500 Ω, T _A = MIN to MAX† | | UNIT |
|------------------|-----------------|----------------|--|-----|------|
| | | | SN74AS258 | | |
| | | | MIN | MAX | |
| t _{PLH} | A or B | Any Y | 1 | 5 | ns |
| t _{PHL} | | | 1 | 4 | |
| t _{PLH} | \bar{A}/B | Any Y | 2 | 9.5 | ns |
| t _{PHL} | | | 2 | 10 | |
| t _{PZH} | \overline{OE} | Any Y | 2 | 8 | ns |
| t _{PZL} | | | 2 | 10 | |
| t _{PHZ} | \overline{OE} | Any Y | 1.5 | 6 | ns |
| t _{PLZ} | | | 2 | 6.5 | |

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



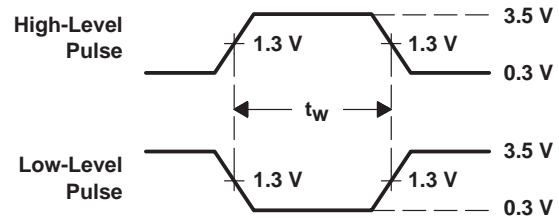
SN54ALS257A, SN54ALS258A, SN74ALS257A, SN74ALS258A, SN74AS257, SN74AS258 QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS WITH 3-STATE OUTPUTS

SDAS124C – APRIL 1982 – REVISED AUGUST 1996

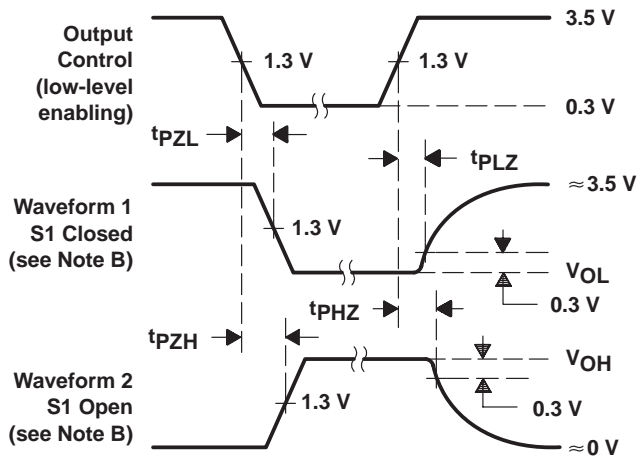
PARAMETER MEASUREMENT INFORMATION SERIES 54ALS/74ALS AND 54AS/74AS DEVICES



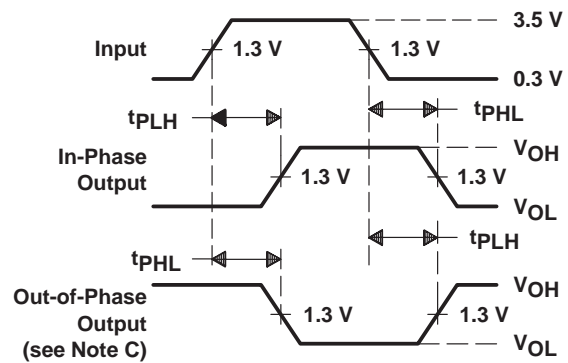
LOAD CIRCUIT
FOR 3-STATE OUTPUTS



VOLTAGE WAVEFORMS
PULSE DURATIONS



VOLTAGE WAVEFORMS
ENABLE AND DISABLE TIMES, 3-STATE OUTPUTS



VOLTAGE WAVEFORMS
PROPAGATION DELAY TIMES

- NOTES: A. C_L includes probe and jig capacitance.
 B. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.
 C. When measuring propagation delay items of 3-state outputs, switch S1 is open.
 D. All input pulses have the following characteristics: $PRR \leq 1$ MHz, $t_r = t_f = 2$ ns, duty cycle = 50%.
 E. The outputs are measured one at a time with one transition per measurement.

Figure 1. Load Circuits and Voltage Waveforms



PACKAGING INFORMATION

| Orderable Device | Status (1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan (2) | Lead finish/ Ball material (6) | MSL Peak Temp (3) | Op Temp (°C) | Device Marking (4/5) | Samples |
|------------------|---------------|--------------|-----------------|------|-------------|------------------|--------------------------------------|----------------------|--------------|---------------------------------|-------------------------|
| 5962-8862601EA | ACTIVE | CDIP | J | 16 | 25 | Non-RoHS & Green | SNPB | N / A for Pkg Type | -55 to 125 | 5962-8862601EA SNJ54ALS258AJ | Samples |
| 85097012A | ACTIVE | LCCC | FK | 20 | 55 | Non-RoHS & Green | SNPB | N / A for Pkg Type | -55 to 125 | 85097012A SNJ54ALS 257AFK | Samples |
| 8509701EA | ACTIVE | CDIP | J | 16 | 25 | Non-RoHS & Green | SNPB | N / A for Pkg Type | -55 to 125 | 8509701EA SNJ54ALS257AJ | Samples |
| SN74ALS257ADR | ACTIVE | SOIC | D | 16 | 2500 | RoHS & Green | NIPDAU | Level-1-260C-UNLIM | 0 to 70 | ALS257A | Samples |
| SN74ALS257AN | ACTIVE | PDIP | N | 16 | 25 | RoHS & Green | NIPDAU | N / A for Pkg Type | 0 to 70 | SN74ALS257AN | Samples |
| SN74ALS257ANSR | ACTIVE | SO | NS | 16 | 2000 | RoHS & Green | NIPDAU | Level-1-260C-UNLIM | 0 to 70 | ALS257A | Samples |
| SN74ALS258AN | ACTIVE | PDIP | N | 16 | 25 | RoHS & Green | NIPDAU | N / A for Pkg Type | 0 to 70 | SN74ALS258AN | Samples |
| SN74AS257D | ACTIVE | SOIC | D | 16 | 40 | RoHS & Green | NIPDAU | Level-1-260C-UNLIM | 0 to 70 | AS257 | Samples |
| SN74AS257N | ACTIVE | PDIP | N | 16 | 25 | RoHS & Green | NIPDAU | N / A for Pkg Type | 0 to 70 | SN74AS257N | Samples |
| SN74AS257NSR | ACTIVE | SO | NS | 16 | 2000 | RoHS & Green | NIPDAU | Level-1-260C-UNLIM | 0 to 70 | 74AS257 | Samples |
| SN74AS258N | ACTIVE | PDIP | N | 16 | 25 | RoHS & Green | NIPDAU | N / A for Pkg Type | 0 to 70 | SN74AS258N | Samples |
| SNJ54ALS257AFK | ACTIVE | LCCC | FK | 20 | 55 | Non-RoHS & Green | SNPB | N / A for Pkg Type | -55 to 125 | 85097012A SNJ54ALS 257AFK | Samples |
| SNJ54ALS257AJ | ACTIVE | CDIP | J | 16 | 25 | Non-RoHS & Green | SNPB | N / A for Pkg Type | -55 to 125 | 8509701EA SNJ54ALS257AJ | Samples |
| SNJ54ALS258AJ | ACTIVE | CDIP | J | 16 | 25 | Non-RoHS & Green | SNPB | N / A for Pkg Type | -55 to 125 | 5962-8862601EA SNJ54ALS258AJ | Samples |

(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) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".

RoHS Exempt: TI defines "RoHS Exempt" to mean products that contain lead but are compliant with EU RoHS pursuant to a specific EU RoHS exemption.

Green: TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of ≤ 1000 ppm threshold. Antimony trioxide based flame retardants must also meet the ≤ 1000 ppm threshold requirement.

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

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead finish/Ball material - Orderable Devices 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.

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

In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

OTHER QUALIFIED VERSIONS OF SN54ALS257A, SN54ALS258A, SN74ALS257A, SN74ALS258A :

● Catalog : [SN74ALS257A](#), [SN74ALS258A](#)

● Military : [SN54ALS257A](#), [SN54ALS258A](#)

NOTE: Qualified Version Definitions:

● Catalog - TI's standard catalog product

● Military - QML certified for Military and Defense Applications

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 |
|----------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| SN74ALS257ADR | SOIC | D | 16 | 2500 | 330.0 | 16.4 | 6.5 | 10.3 | 2.1 | 8.0 | 16.0 | Q1 |
| SN74ALS257ANSR | SO | NS | 16 | 2000 | 330.0 | 16.4 | 8.2 | 10.5 | 2.5 | 12.0 | 16.0 | Q1 |
| SN74AS257NSR | SO | NS | 16 | 2000 | 330.0 | 16.4 | 8.2 | 10.5 | 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) |
|----------------|--------------|-----------------|------|------|-------------|------------|-------------|
| SN74ALS257ADR | SOIC | D | 16 | 2500 | 340.5 | 336.1 | 32.0 |
| SN74ALS257ANSR | SO | NS | 16 | 2000 | 356.0 | 356.0 | 35.0 |
| SN74AS257NSR | SO | NS | 16 | 2000 | 356.0 | 356.0 | 35.0 |

TUBE


*All dimensions are nominal

| Device | Package Name | Package Type | Pins | SPQ | L (mm) | W (mm) | T (μm) | B (mm) |
|----------------|--------------|--------------|------|-----|--------|--------|--------|--------|
| 85097012A | FK | LCCC | 20 | 55 | 506.98 | 12.06 | 2030 | NA |
| SN74ALS257AN | N | PDIP | 16 | 25 | 506 | 13.97 | 11230 | 4.32 |
| SN74ALS257AN | N | PDIP | 16 | 25 | 506 | 13.97 | 11230 | 4.32 |
| SN74ALS258AN | N | PDIP | 16 | 25 | 506 | 13.97 | 11230 | 4.32 |
| SN74ALS258AN | N | PDIP | 16 | 25 | 506 | 13.97 | 11230 | 4.32 |
| SN74AS257D | D | SOIC | 16 | 40 | 507 | 8 | 3940 | 4.32 |
| SN74AS257N | N | PDIP | 16 | 25 | 506 | 13.97 | 11230 | 4.32 |
| SN74AS257N | N | PDIP | 16 | 25 | 506 | 13.97 | 11230 | 4.32 |
| SN74AS258N | N | PDIP | 16 | 25 | 506 | 13.97 | 11230 | 4.32 |
| SN74AS258N | N | PDIP | 16 | 25 | 506 | 13.97 | 11230 | 4.32 |
| SNJ54ALS257AFK | FK | LCCC | 20 | 55 | 506.98 | 12.06 | 2030 | NA |

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.

D (R-PDSO-G16)

PLASTIC SMALL OUTLINE



- NOTES:
- All linear dimensions are in millimeters.
 - This drawing is subject to change without notice.
 - Publication IPC-7351 is recommended for alternate designs.
 - Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525 for other stencil recommendations.
 - Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

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.

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



| 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.

N (R-PDIP-T**)

PLASTIC DUAL-IN-LINE PACKAGE

16 PINS SHOWN



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



PACKAGE OUTLINE

NS0016A

SOP - 2.00 mm max height

SOP



4220735/A 12/2021

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.

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATA SHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, regulatory or other requirements.

These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI's products are provided subject to [TI's Terms of Sale](#) or other applicable terms available either on [ti.com](https://www.ti.com) or provided in conjunction with such TI products. TI's provision of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products.

TI objects to and rejects any additional or different terms you may have proposed.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2024, Texas Instruments Incorporated

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

 [View TL431QDBVR on WIN SOURCE](#)

 [Texas Instruments](#) Information

Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management