

**SN54ALS1244A, SN74ALS1244A
OCTAL BUFFERS AND DRIVERS
WITH 3-STATE OUTPUTS**

D3581, JULY 1990

T-52-07

- Low-Power Version of SN74ALS244A-1 and SN54ALS244A
- 3-State Outputs Drive Bus Lines or Buffer Memory Address Registers
- P-N-P Inputs Reduce DC Loading
- Package Options Include Plastic "Small Outline" Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs

description

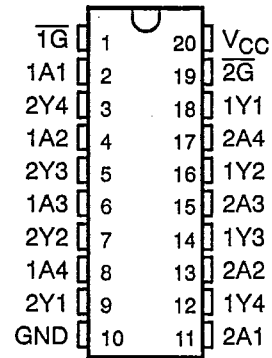
These octal buffers and line drivers are designed specifically to improve both the performance and density of 3-state memory drivers, clock drivers, and bus-oriented receivers and transmitters.

Taken together with the 'ALS1240, these devices provide the choice of inverting and noninverting outputs. The -1 version of the SN74ALS1244A is identical to the standard version except the recommended maximum I_{OL} is increased to 24 mA.

The SN54ALS1244A is characterized over the full military temperature range of -55°C to 125°C . The SN74ALS1244A is characterized for operation from 0°C to 70°C .

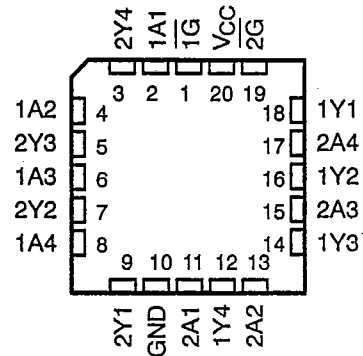
SN54ALS1244A . . . J PACKAGE
SN74ALS1244A . . . DW OR N PACKAGE

(TOP VIEW)



SN54ALS1244A . . . FK PACKAGE

(TOP VIEW)

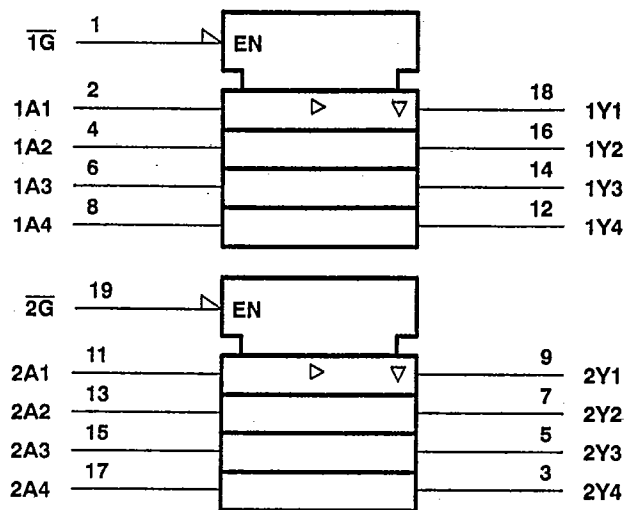


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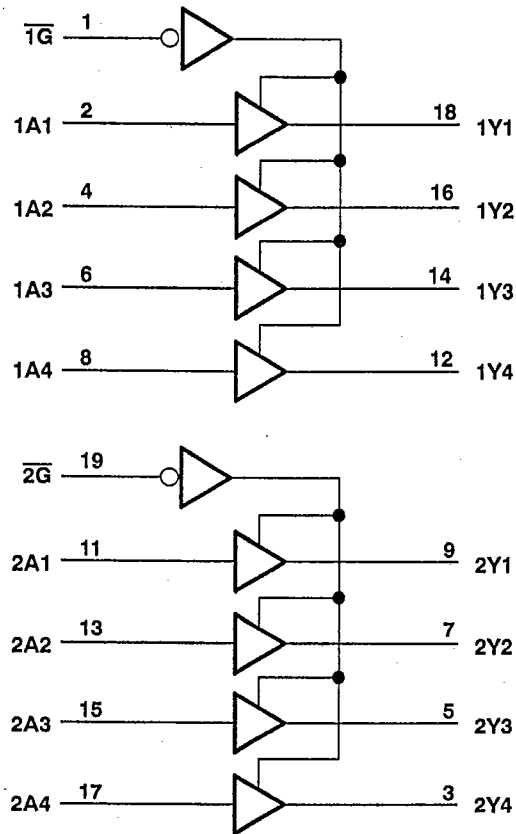
SN54ALS1244A, SN74ALS1244A OCTAL BUFFERS AND DRIVERS WITH 3-STATE OUTPUTS

logic symbol†



† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

logic diagram (positive logic)



SN54ALS1244A, SN74ALS1244A
OCTAL BUFFERS AND DRIVERS
WITH 3-STATE OUTPUTS
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 |
| Operating free-air temperature range: SN54ALS1244A | -55°C to 125°C |
| SN74ALS1244A | 0°C to 70°C |
| Storage temperature range | -55°C to 150°C |

recommended operating conditions

| | | SN54ALS1244A | | | SN74ALS1244A | | | 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 | | | -12 | | | -15 | mA |
| I_{OL} | Low-level output current | | | 8 | | | 16 24† | mA |
| T_A | Operating free-air temperature | -55 | | 125 | 0 | | 70 | °C |

† The 24-mA limit applies only for the SN74ALS1244A-1 and only if V_{CC} is maintained between 4.75 V and 5.25 V.

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

| PARAMETER | TEST CONDITIONS | SN54ALS1244A | | | SN74ALS1244A | | | 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, $I_{OH} = -3$ mA | 2.4 | 3.2 | | 2.4 | 3.2 | | |
| | $V_{CC} = 4.5$ V, $I_{OH} = -12$ mA | 2 | | | | | | |
| | $V_{CC} = 4.5$ V, $I_{OH} = -15$ mA | | | | 2 | | | |
| V_{OL} | $V_{CC} = 4.5$ V, $I_{OL} = 8$ mA | | 0.25 | 0.4 | | 0.25 | 0.4 | V |
| | $V_{CC} = 4.5$ V, $I_{OL} = 16$ mA ($I_{OL} = 24$ mA for -1 version) | | | | | 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 | -30 | | -112 | -30 | | -112 | mA |
| I_{CC} | $V_{CC} = 5.5$ V | Outputs high | 6 | 15 | 6 | 11 | mA | |
| | | Outputs low | 10 | 20 | 10 | 17 | | |
| | | Outputs disabled | 11 | 25 | 11 | 20 | | |

‡ All typical values are at $V_{CC} = 5$ 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 current I_{OS} .

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OCTAL BUFFERS AND DRIVERS

WITH 3-STATE OUTPUTS

switching characteristics (see Note 1)

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | $V_{CC} = 4.5 \text{ V to } 5.5 \text{ V},$ $C_L = 50 \text{ pF},$ $R_1 = 500 \Omega,$ $R_2 = 500 \Omega,$ $T_A = \text{MIN to MAX}^\dagger$ | | | | UNIT |
|-----------|-----------------|----------------|--|-----|--------------|-----|------|
| | | | SN54ALS1244A | | SN74ALS1244B | | |
| | | | MIN | MAX | MIN | MAX | |
| t_{PLH} | A | Y | 3 | 21 | 3 | 14 | ns |
| t_{PHL} | | | 3 | 16 | 3 | 14 | |
| t_{PZH} | \bar{G} | Y | 6 | 28 | 6 | 22 | ns |
| t_{PZL} | | | 6 | 26 | 6 | 22 | |
| t_{PHZ} | \bar{G} | Y | 2 | 15 | 2 | 13 | ns |
| t_{PLZ} | | | 3 | 25 | 3 | 16 | |

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

NOTE 1: Load circuit and voltage waveforms are shown in Section 1 of the *ALS/AS Logic Data Book, 1986*.