

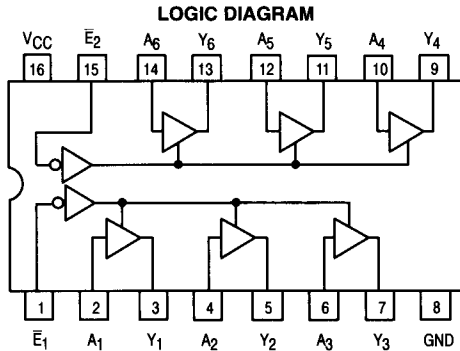


Hex Buffer, 4-Bit and 2-Bit, 3-State

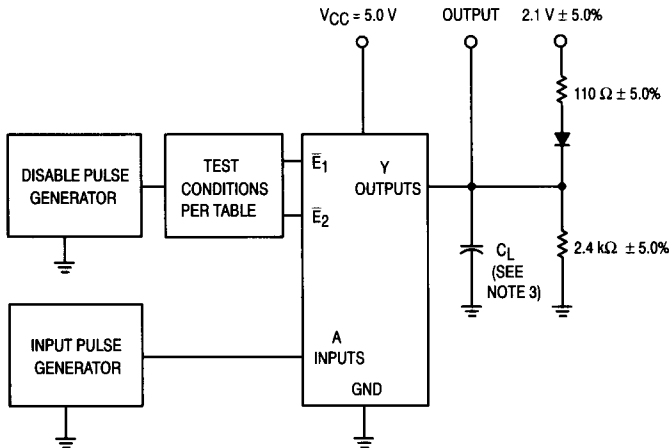
ELECTRICALLY TESTED PER:
MIL-M-38510/32203

This device is a high-speed hex buffer with 3-state outputs. It is organized as a single 6-bit or 2-bit/4-bit, with inverting or non-inverting data (D) paths. The outputs are designed to drive 15 TTL Unit Loads or 60 Low Power Schottky loads when the Enable (E) is LOW.

When the Output Enable (E) is HIGH, the outputs are forced to a high impedance "off" state. If the outputs of the 3-state devices are tied together, all but one device must be in the high impedance state to avoid high currents that would exceed the maximum ratings. Designers should ensure that Output Enable signals to 3-state devices whose outputs are tied together are designed so there is no overlap.



AC TEST CIRCUIT



REFERENCE NOTES ON PAGE 5-372

Military 54LS367A



AVAILABLE AS:

- 1) JAN: JM38510/32203BXA
- 2) SMD: N/A
- 3) 883: 54LS367A/BXAJC

X = CASE OUTLINE AS FOLLOWS:
PACKAGE: CERDIP: E
CERFLAT: F
LCC: 2

THE LETTER "M" APPEARS
BEFORE THE / ON LCC.

PIN ASSIGNMENTS

| FUNCT. | DIL 620-09 | FLATS 650-05 | LCC 756A-02 | BURN-IN (COND. A) |
|-----------------|---------------|-----------------|----------------|----------------------|
| E ₁ | 1 | 1 | 2 | GND |
| A ₁ | 2 | 2 | 3 | V _{CC} |
| Y ₁ | 3 | 3 | 4 | V _{CC} |
| A ₂ | 4 | 4 | 5 | V _{CC} |
| Y ₂ | 5 | 5 | 7 | V _{CC} |
| A ₃ | 6 | 6 | 8 | V _{CC} |
| Y ₃ | 7 | 7 | 9 | V _{CC} |
| GND | 8 | 8 | 10 | GND |
| Y ₄ | 9 | 9 | 12 | V _{CC} |
| A ₄ | 10 | 10 | 13 | V _{CC} |
| Y ₅ | 11 | 11 | 14 | V _{CC} |
| A ₅ | 12 | 12 | 15 | V _{CC} |
| Y ₆ | 13 | 13 | 17 | V _{CC} |
| A ₆ | 14 | 14 | 18 | V _{CC} |
| E ₂ | 15 | 15 | 19 | GND |
| V _{CC} | 16 | 16 | 20 | V _{CC} |

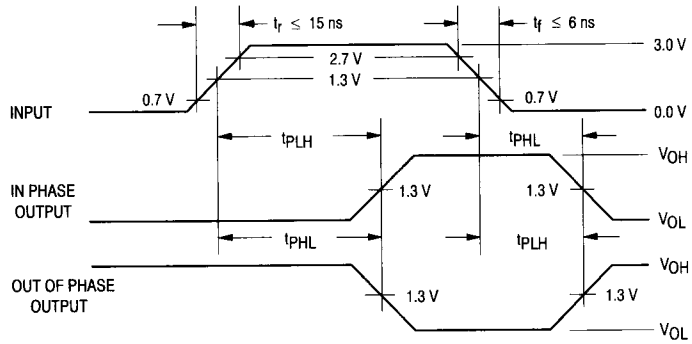
BURN-IN CONDITIONS:
V_{CC} = 5.0 V MIN/6.0 V MAX

TRUTH TABLE

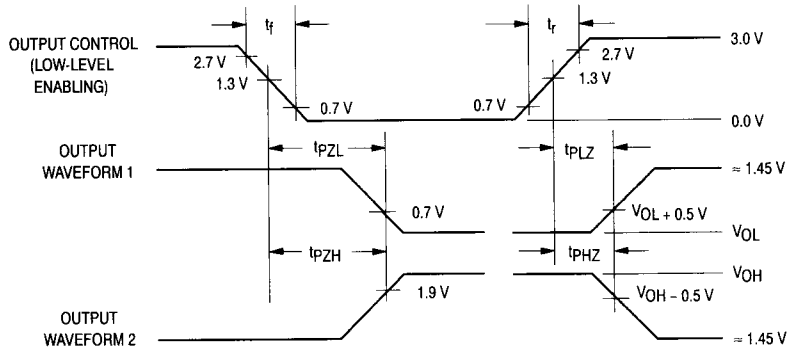
| Inputs | | Output |
|--------|---|--------|
| E | D | |
| L | L | L |
| L | H | H |
| H | X | (Z) |

5

VOLTAGE WAVEFORMS PROPAGATION DELAY TIMES



VOLTAGE WAVEFORMS ENABLE AND DISABLE TIMES, THREE-STATE OUTPUTS



NOTES:

1. Pulse generator has the following characteristics:
 $t_f \leq 15$ ns, $t_r \leq 6.0$ ns.
2. Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).
3. $C_L = 50$ pF $\pm 10\%$, including scope probe, wiring and stray capacitance.
4. Voltage measurements are to be made with respect to network ground terminal.

54LS367A

| Symbol | Parameter | Limits | | | | | | Unit | Test Condition (Unless Otherwise Specified) |
|---------------------------------|------------------------------|------------|------|-------------|------|-------------|------|------|--|
| | | + 25°C | | + 125°C | | - 55°C | | | |
| | | Subgroup 1 | | Subgroup 2 | | Subgroup 3 | | | |
| Static Parameters: | | Min | Max | Min | Max | Min | Max | | |
| V _{OH} | Logical "1" Output Voltage | 2.4 | | 2.4 | | 2.4 | | V | V _{CC} = 4.5 V, I _{OH} = -1.0 mA, V _{IH} = 2.0 V, \bar{E}_n = 0.7 V, other inputs are open. |
| V _{OL} | Logical "0" Output Voltage | | 0.4 | | 0.4 | | 0.4 | V | V _{CC} = 4.5 V, I _{OL} = 12 mA, V _{IL} = 0.7 V, \bar{E}_n = 0.7 V, other inputs are open. |
| V _{IC} | Input Clamping Voltage | | -1.5 | | | | | V | V _{CC} = 4.5 V, I _{IN} = -18 mA, other inputs are open. |
| I _{IH} | Logical "1" Input Current | | 20 | | 20 | | 20 | μA | V _{CC} = 5.5 V, V _{IH} = 2.7 V, other inputs are open. |
| I _{IHH} | Logical "1" Input Current | | 100 | | 100 | | 100 | μA | V _{CC} = 5.5 V, V _{IHH} = 5.5 V, other inputs are open. |
| I _{IL} | Logical "0" Input Current | -160 | -400 | -160 | -400 | -160 | -400 | μA | V _{CC} = 5.5 V, V _{IN} = 0.4 V, \bar{E}_n = 0.4 V or open, other inputs are open. |
| I _{IL} (\bar{E}_n) | Logical "0" Input Current | -160 | -400 | -160 | -400 | -160 | -400 | μA | V _{CC} = 5.5 V, V _{IN} = 0.4 V (\bar{E}_n), other inputs are open. |
| I _{OS} | Output Short Circuit Current | -30 | -130 | -30 | -130 | -30 | -130 | mA | V _{CC} = 5.5 V, V _{IN} = 5.5 V, V _{OUT} = GND, \bar{E}_n = 0.7 V or open, other inputs are open. |
| I _{OZH} | Output Off Current High | | 20 | | 20 | | 20 | μA | V _{CC} = 5.5 V, V _{IH} = 2.0 V, \bar{E}_n = 2.0 V or open, V _{IL} = 0.7 V, V _{OUT} = 2.4 V, other inputs are open. |
| I _{OZL} | Output Off Current Low | | -20 | | -20 | | -20 | μA | V _{CC} = 5.5 V, V _{IL} = 0.7 V, \bar{E}_n = 2.0 V or open, V _{IH} = 2.0 V, V _{OUT} = 0.4 V, other inputs are open. |
| I _{CC} | Power Supply Current | | 24 | | 24 | | 24 | mA | V _{CC} = 5.5 V, V _{IN} = GND, \bar{E}_n = 4.5 V. |
| V _{IH} | Logical "1" Input Voltage | 2.0 | | 2.0 | | 2.0 | | V | V _{CC} = 4.5 V. |
| V _{IL} | Logical "0" Input Voltage | | 0.7 | | 0.7 | | 0.7 | V | V _{CC} = 4.5 V. |
| | Functional Tests | Subgroup 7 | | Subgroup 8A | | Subgroup 8B | | | per Truth Table with V _{CC} = 5.0 V, V _{INL} = 0.4 V, and V _{INH} = 2.4 V. |

54LS367A

| Symbol | Parameter | Limits | | | | | | Unit | Test Condition (Unless Otherwise Specified) |
|--------------------------------------|--|------------|----------|-------------|----------|-------------|----------|------|---|
| | | + 25°C | | + 125°C | | - 55°C | | | |
| | | Subgroup 9 | | Subgroup 10 | | Subgroup 11 | | | |
| | | Min | Max | Min | Max | Min | Max | | |
| t _{PHL} t _{PHL} | Propagation Delay /Data-Output Output High-Low | 2.0 — | 22 22 | 2.0 — | 29 28 | 2.0 — | 29 28 | ns | V _{CC} = 5.0 V, C _L = 50 pF, R _L = 110 Ω ± 5.0%. V _{CC} = 5.0 V, C _L = 45 pF, R _L = 667 Ω. |
| t _{PLH} t _{PLH} | Propagation Delay /Data-Output Output Low-High | 2.0 — | 16 16 | 2.0 — | 21 20 | 2.0 — | 21 20 | ns | V _{CC} = 5.0 V, C _L = 50 pF, R _L = 110 Ω ± 5.0%. V _{CC} = 5.0 V, C _L = 45 pF, R _L = 667 Ω. |
| t _{PZH} t _{PZH} | Propagation Delay /Data-Output Output High-Low | 2.0 — | 35 35 | 2.0 — | 45 44 | 2.0 — | 45 44 | ns | V _{CC} = 5.0 V, C _L = 50 pF, R _L = 110 Ω ± 5.0%. V _{CC} = 5.0 V, C _L = 45 pF, R _L = 667 Ω. |
| t _{PZL} t _{PZL} | Propagation Delay /Data-Output Output Low-High | 2.0 — | 40 40 | 2.0 — | 52 50 | 2.0 — | 52 50 | ns | V _{CC} = 5.0 V, C _L = 50 pF, R _L = 110 Ω ± 5.0%. V _{CC} = 5.0 V, C _L = 45 pF, R _L = 667 Ω. |
| t _{PHZ} t _{PHZ} | Propagation Delay /Data-Output Output High-Low | 2.0 — | 30 30 | 2.0 — | 39 38 | 2.0 — | 39 38 | ns | V _{CC} = 5.0 V, C _L = 50 pF, R _L = 110 Ω ± 5.0%. V _{CC} = 5.0 V, C _L = 5.0 pF, R _L = 667 Ω. |
| t _{PLZ} t _{PLZ} | Propagation Delay /Data-Output Output Low-High | 2.0 — | 35 35 | 2.0 — | 45 44 | 2.0 — | 45 44 | ns | V _{CC} = 5.0 V, C _L = 50 pF, R _L = 110 Ω ± 5.0%. V _{CC} = 5.0 V, C _L = 5.0 pF, R _L = 667 Ω. |

NOTE:

1. The limits specified for C_L = 45 pF and C_L = 5.0 pF are guaranteed but not tested.