

DM74ALS1240A Octal 3-STATE Bus Driver

General Description

These octal 3-STATE bus drivers are designed to provide the designer with flexibility in implementing a bus interface with memory, microprocessor, or communication systems, and are low power dissipation versions of the DM74ALS240A and DM74ALS241A. The output 3-STATE gating control is organized into two separate groups of four buffers. The DM74ALS1240A control inputs symmetrically enable the respective outputs when set logic LOW. The 3-STATE circuitry contains a feature that maintains the buffer outputs in 3-STATE (high impedance state) during power supply ramp-up or ramp-down. This eliminates bus glitching problems that arise during power-up and power-down.

Features

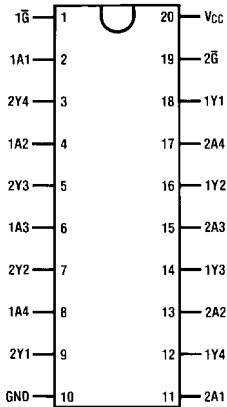
- Advanced oxide-isolated, ion-implanted Schottky TTL process
- Switching response specified into 500Ω and 50 pF load
- Switching response specifications guaranteed over full temperature and V_{CC} supply range
- PNP input design reduces input loading
- Low power dissipation version
- Low level drive current: 74ALS = 16 mA

Ordering Code:

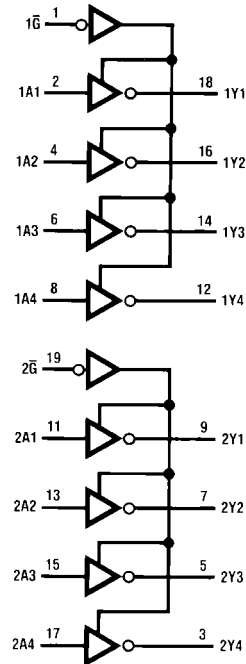
| Order Number | Package Number | Package Description |
|----------------|----------------|---|
| DM74ALS1240AWM | M20B | 20-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300 Wide |

Devices also available in Tape and Reel. Specify by appending the suffix letter "X" to the ordering code.

Connection Diagram



Logic Diagram



Function Table

| Input | | Output |
|-------|---|--------|
| G | A | Y |
| L | L | H |
| L | H | L |
| H | X | Z |

H = HIGH Level Logic State
L = LOW Level Logic State
X = Don't Care (Either LOW or HIGH Level Logic State)
Z = High Impedance (OFF) State

Absolute Maximum Ratings(Note 1)

| | |
|--------------------------------------|-----------------|
| Supply Voltage | 7V |
| Input Voltage | 7V |
| Voltage Applied to Disabled Output | 5.5V |
| Operating Free Air Temperature Range | 0°C to +70°C |
| Storage Temperature Range | -65°C to +150°C |
| Typical θ_{JA} | |
| N Package | 60.5°C/W |
| M Package | 78.0°C/W |

Note 1: The "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the Electrical Characteristics tables are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

Recommended Operating Conditions

| Symbol | Parameter | Min | Typ | Max | Units |
|----------|--------------------------------|-----|-----|-----|-------|
| 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 | | | 16 | mA |
| T_A | Operating Free Air Temperature | 0 | | 70 | °C |

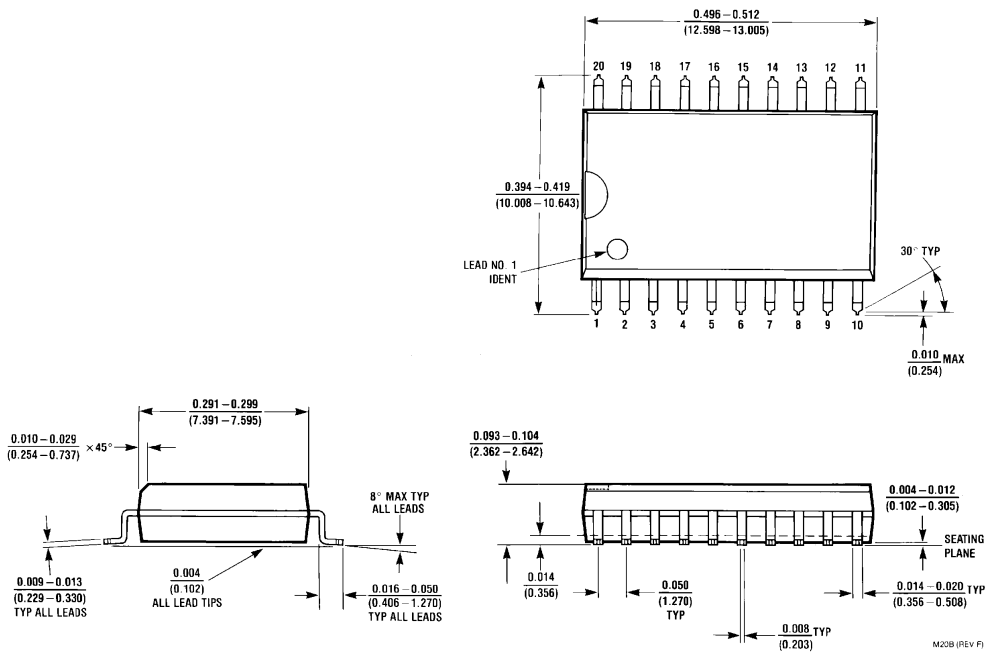
Electrical Characteristics

over recommended operating free air temperature range (unless otherwise specified)

| Symbol | Parameter | Conditions | Min | Typ | Max | Units |
|-----------|--|--------------------------------------|---------------------------|--------------|------|---------------|
| V_{IK} | Input Clamp Voltage | $V_{CC} = 4.5V, I_I = -18\text{ mA}$ | | | -1.2 | V |
| V_{OH} | HIGH Level Output Voltage | $V_{CC} = 4.5V\text{ to }5.5V$ | $I_{OH} = -0.4\text{ mA}$ | $V_{CC} - 2$ | | V |
| | | $V_{CC} = 4.5V$ | $I_{OH} = -3\text{ mA}$ | 2.4 | | V |
| | | | $I_{OH} = \text{Max}$ | 2 | | V |
| V_{OL} | LOW Level Output Voltage | $V_{CC} = 4.5V$ | $I_{OL} = 12\text{ mA}$ | 0.25 | 0.4 | V |
| | | | $I_{OL} = 24\text{ mA}$ | 0.35 | 0.5 | V |
| I_I | Input Current at Maximum Input Voltage | $V_{CC} = 5.5V, V_I = 7V$ | | | 0.1 | mA |
| I_{IH} | HIGH Level Input Current | $V_{CC} = 5.5V, V_I = 2.7V$ | | | 20 | μA |
| I_{IL} | LOW Level Input Current | $V_{CC} = 5.5V, V_{IL} = 0.4V$ | | | -0.1 | mA |
| I_O | Output Drive Current | $V_{CC} = 5.5V, V_O = 2.25V$ | -30 | | -112 | mA |
| I_{OZH} | HIGH Level 3-STATE Output Current | $V_{CC} = 5.5V, V_O = 2.7V$ | | | 20 | μA |
| I_{OZL} | LOW Level 3-STATE Output Current | $V_{CC} = 5.5V, V_O = 0.4V$ | | | -20 | μA |
| I_{CC} | Supply Current | $V_{CC} = 5.5V$ | Outputs HIGH | 5 | 8 | mA |
| | | | Outputs LOW | 8 | 14 | mA |
| | | Outputs 3-STATE | 8 | 13 | mA | |

| Switching Characteristics | | | | | | |
|---|--|-----------------|----------------|---|-----|-------|
| over recommended operating free air temperature range | | | | | | |
| Symbol | Parameter | From (Input) | To (Output) | V _{CC} = 4.5V to 5.5V, C _L = 50 pF, R1 = 500Ω, R2 = 500Ω, T _A = Min to Max | | Units |
| | | | | Min | Max | |
| t _{PLH} | Propagation Delay Time LOW-to-HIGH Level Output | A | Y | 2 | 13 | ns |
| t _{PHL} | Propagation Delay Time HIGH-to-LOW Level Output | | | 2 | 13 | ns |
| t _{PZH} | Output Enable Time to HIGH Level Output | \bar{G} | Y | 4 | 20 | ns |
| t _{PZL} | Output Enable Time to LOW Level Output | | | 6 | 22 | ns |
| t _{PHZ} | Output Disable Time from HIGH Level Output | \bar{G} | Y | 2 | 10 | ns |
| t _{PLZ} | Output Disable Time from LOW Level Output | | | 3 | 13 | ns |

Physical Dimensions inches (millimeters) unless otherwise noted



**20-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300 Wide
Package Number M20B**

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