

DM54ALS623A/DM74ALS623A
Octal TRI-STATE® Bus Transceiver

General Description

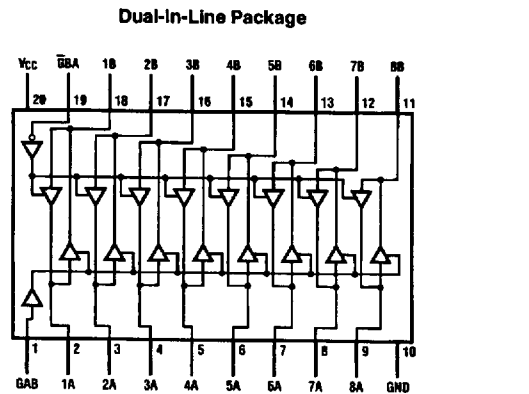
This advanced low power Schottky device contains 8 pairs of TRI-STATE logic elements configured as an octal bus transceiver. It is designed for use in memory, microprocessor systems and in asynchronous bidirectional data buses. Data transmission from the A bus to the B bus or from the B bus to the A bus is selectively controlled by ($\bar{G}BA$ and GAB) the enable inputs. These inputs are also used to disable the devices so that the buses are effectively isolated.

The dual-enable configuration gives the ALS623A the capability to store data by simultaneous enabling of $\bar{G}BA$ and GAB . Each output reinforces its input in this transceiver configuration. Thus, when both control inputs are enabled and all other data sources to the two sets of bus lines are at high impedance, both sets of bus lines will remain at their last logic states.

Features

- Advanced oxide-isolated, ion-implanted Schottky TTL process
- TRI-STATE outputs on A and B buses
- Local bus-latch capability
- Switching response specified into 500Ω/50 pF
- Switching specifications guaranteed over full temperature and V_{CC} range
- Low output impedance to drive terminated transmission lines to 133Ω

Connection Diagram



Top View
Order Number **DM54ALS623AJ, DM74ALS623AJ or DM74ALS623AN**
See NS Package Number **J20A or N20A**

Function Table

| Enable Inputs | | Operation ALS623A |
|---------------|-------|--|
| $\bar{G}BA$ | GAB | |
| L | L | \bar{B} Data to A Bus |
| H | H | \bar{A} Data to B Bus |
| H | L | Hi-Z |
| L | H | \bar{B} Data to A Bus \bar{A} Data to B Bus |

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Absolute Maximum Ratings

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

| | |
|---------------------------------------|-----------------|
| Supply Voltage, V_{CC} | 7V |
| Input Voltage | 7V |
| Operating Free Air Temperature Range | |
| DM54ALS | -55°C to +125°C |
| DM74ALS | 0°C to 70°C |
| Storage Temperature Range | -65°C to +150°C |
| Lead Temperature (Soldering, 10 sec.) | +300° |

Note: 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" table are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

Recommended Operating Conditions

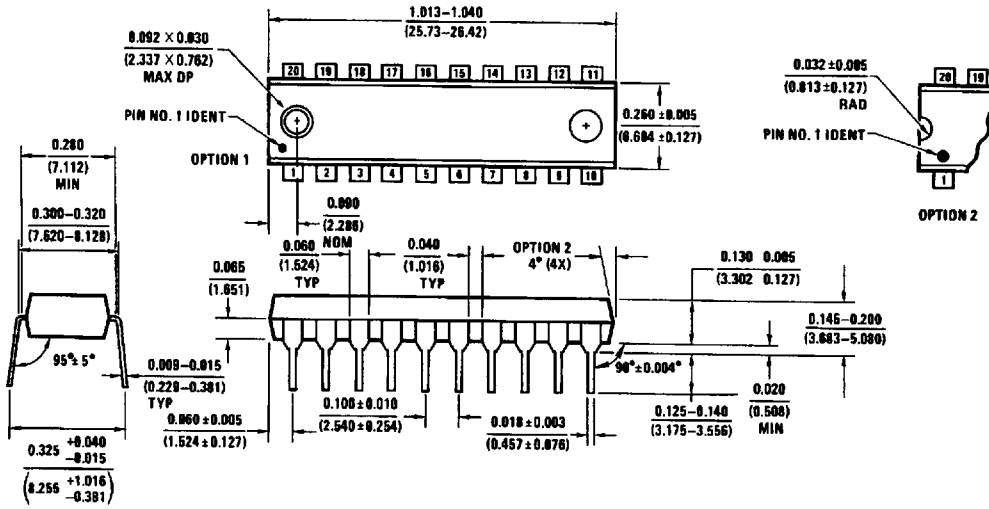
| Symbol | Parameter | DM54ALS623A | | | DM74ALS623A | | | Units |
|----------|----------------------------------|-------------|-----|-----|-------------|-----|-----|-------|
| | | Min | Typ | Max | Min | Typ | Max | |
| V_{CC} | Supply Voltage | 4.5 | 5 | 5.5 | 4.5 | 5 | 5.5 | V |
| V_{IH} | High Level Input Voltage | 2 | | | 2 | | | V |
| V_{IL} | Low Level Input Voltage | | | 0.8 | | | 0.8 | V |
| I_{OH} | High Level Output Current | | | -12 | | | -15 | mA |
| I_{OL} | Low Level Output Current | | | 12 | | | 24 | mA |
| | DM74ALS623A-1 Option Only | | | | | | 48 | mA |
| T_A | Operating Free Air Temperature | -55 | | 125 | 0 | | 70 | °C |

Electrical Characteristics

over recommended operating free air temperature range. All typical values are measured at $V_{CC} = 5V$, $T_A = 25^\circ C$.

| Symbol | Parameter | Conditions | DM54ALS623A | | | DM74ALS623A | | | Units | | |
|----------|------------------------------------|--|--|-----|------|--------------|-----|------|---------|---------|----|
| | | | Min | Typ | Max | Min | Typ | Max | | | |
| V_{IK} | Input Clamp Voltage | $V_{CC} = 4.5V$, $I_I = -18\text{ mA}$ | | | -1.5 | | | -1.5 | V | | |
| V_{OH} | High Level Output Voltage | $V_{CC} = 4.5V$, $I_{OH} = -3\text{ mA}$ | 2.4 | 3.2 | | 2.4 | 3.2 | | V | | |
| | | $V_{CC} = 4.5V$, $I_{OH} = \text{Max}$ | 2 | | | 2 | | | V | | |
| | | $I_{OH} = -0.4\text{ mA}$, $V_{OL} = 4.5V\text{ to }5.5V$ | $V_{CC} - 2$ | | | $V_{CC} - 2$ | | | V | | |
| V_{OL} | Low Level Output Voltage | $V_{CC} = 4.5V$ | $I_{OL} = 12\text{ mA}$ | | 0.25 | 0.4 | | 0.25 | 0.4 | V | |
| | | | $I_{OL} = 24\text{ mA}$ | | | | | 0.35 | 0.5 | V | |
| | | | For 74ALS-1 Option Only $I_{OL} = 48\text{ mA}$ | | | | | 0.35 | 0.5 | V | |
| I_I | Input Current at Max Input Voltage | $V_{CC} = 5.5V$, $V_{IN} = 7V$ ($V_{IN} = 5.5V$ for A or B Ports) | | | 0.1 | | | 0.1 | mA | | |
| I_{IH} | High Level Input Current | $V_{CC} = 5.5V$, $V_{IN} = 2.7V$ | A or B Ports | | 20 | | | 20 | μA | | |
| | | | Control Inputs | | | 20 | | | 20 | μA | |
| I_{IL} | Low Level Input Current | $V_{CC} = 5.5V$, $V_{IN} = 0.4V$ | A or B Ports | | -0.1 | | | -0.1 | mA | | |
| | | | Control Inputs | | | -0.1 | | | -0.1 | mA | |
| I_O | Output Drive Current | $V_{CC} = 5.5V$, $V_{OUT} = 2.25V$ | -30 | | -112 | -30 | | -112 | mA | | |
| I_{CC} | Supply Current | $V_{CC} = 5.5V$ | Output High | | 32 | 48 | | 32 | 43 | mA | |
| | | | Output Low | | | 39 | 55 | | 39 | 50 | mA |
| | | | TRI-STATE | | | 42 | 60 | | 42 | 55 | mA |

Physical Dimensions inches (millimeters) (Continued)



Molded Dual-In-Line Package (N)
Order Number DM74ALS623AN
NS Package Number N20A

N20A (REV G)

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National Semiconductor Corporation
 1111 West Bardin Road
 Arlington, TX 76017
 Tel: 1(800) 272-9959
 Fax: 1(800) 737-7018

National Semiconductor Europe
 Fax: (+49) 0-180-530 85 86
 Email: cnjwge@tevm2.nsc.com
 Deutsch Tel: (+49) 0-180-530 85 85
 English Tel: (+49) 0-180-532 78 92
 Français Tel: (+49) 0-180-532 93 58
 Italiano Tel: (+49) 0-180-534 16 80

National Semiconductor Hong Kong Ltd.
 13th Floor, Straight Block,
 Ocean Centre, 5 Canton Rd.
 Tsimshatsui, Kowloon
 Hong Kong
 Tel: (852) 2737-1600
 Fax: (852) 2736-9960

National Semiconductor Japan Ltd.
 Tel: 81-043-299-2309
 Fax: 81-043-299-2408

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