

100323

100323 Low Power Hex Bus Driver



Literature Number: SNOS127A

Low Power Hex Bus Driver

General Description

The 100323 is a monolithic device containing six bus drivers capable of driving terminated lines with terminations as low as 25Ω. To reduce crosstalk, each output has its own respective ground connection. Transition times were designed to be longer than on other F100K devices. The driver itself performs the positive logic AND of a data input (D₁–D₆) and the OR of two select inputs (E and either DE₁, DE₂, or DE₃).

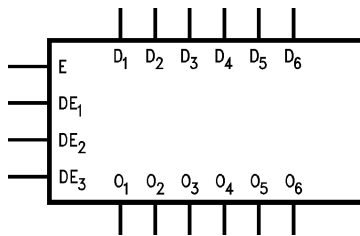
Enabling of data is possible in multiples of two, i.e., 2, 4 or all 6 paths. All inputs have 50 kΩ pull-down resistors.

The output voltage LOW level is designed to be more negative than normal ECL outputs (cut off state). This allows an emitter-follower output transistor to turn off when the termination supply is –2.0V and thus present a high impedance to the data bus.

Features

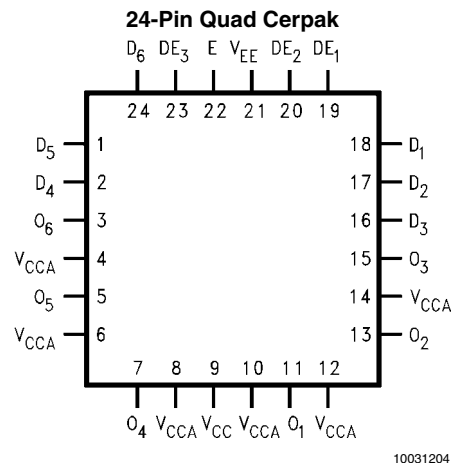
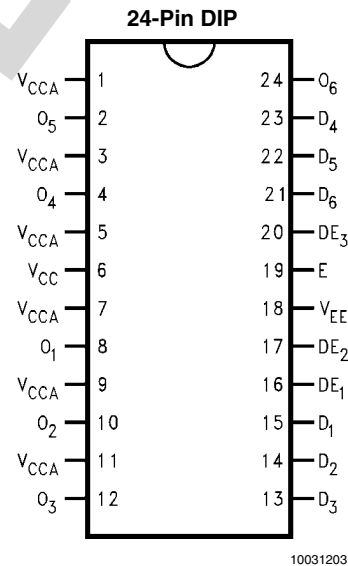
- 50% power reduction of the 100123
- 2000V ESD protection
- –4.2V to –5.7V operating range
- Drives 25Ω load

Logic Symbol

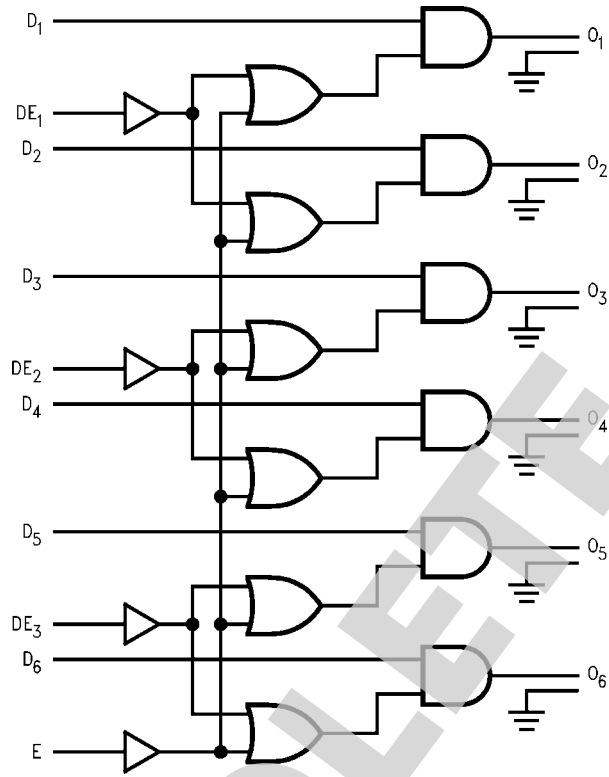


| Pin Names | Description |
|----------------------------------|---------------------|
| D ₁ –D ₆ | Data Inputs |
| DE ₁ –DE ₃ | Dual Enable Inputs |
| E | Common Enable Input |
| O ₁ –O ₆ | Data Outputs |

Connection Diagrams



Logic Diagram



10031201

Truth Table

| E | DE_n | D_n | D_{n+1} | O_n | O_{n+1} |
|---|--------|-------|-----------|--------|-----------|
| L | L | X | X | Cutoff | Cutoff |
| X | H | L | L | Cutoff | Cutoff |
| X | H | L | H | Cutoff | H |
| X | H | H | L | H | Cutoff |
| X | H | H | H | H | H |
| H | X | L | L | Cutoff | Cutoff |
| H | X | L | H | Cutoff | H |
| H | X | H | L | H | Cutoff |
| H | X | H | H | H | H |

H = High
 Cutoff = Lower-than-LOW state
 L = Low
 X = Don't Care

Absolute Maximum Ratings *(Note 1)*

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

| | |
|---|--------------------------|
| Storage Temperature | -65°C to +150°C |
| Maximum Junction Temperature | |
| Ceramic | +175°C |
| V _{EE} Pin Potential to Ground Pin | -7.0V to +0.5V |
| Input Voltage (DC) | V _{EE} to +0.5V |

| | |
|---------------------------------|--------|
| Output Current (DC Output High) | -50 mA |
| ESD | ≥2000V |

Recommended Operating Conditions

| | |
|-----------------------------------|-----------------|
| Case Temperature | |
| Military | -55°C to +125°C |
| Supply Voltage (V _{EE}) | -5.7V to -4.2V |

Note 1: Absolute maximum ratings are values beyond which the device may be damaged or have its useful life impaired. Functional operation under these conditions is not implied.

Note 2: ESD testing conforms to MIL-STD-883, Method 3015.

Military Version

DC Electrical Characteristics

V_{EE} = -4.2V to -5.7V, V_{CC} = V_{CCA} = GND, T_C = -55°C to +125°C

| Symbol | Parameter | Min | Max | Units | T _C | Conditions | Notes | |
|------------------|----------------------|-------|-------|-------|-----------------|---|---------------------------|----------------------------------|
| V _{OH} | Output HIGH Voltage | -1025 | -870 | mV | 0°C to +125°C | V _{IN} = V _{IH} (max) or V _{IL} (min) | Loading with 25Ω to -2.0V | (Note 3, Note 4, Note 5) |
| | | -1085 | -870 | mV | -55°C | | | |
| V _{OHC} | Output HIGH Voltage | -1035 | | mV | 0°C to +125°C | V _{IN} = V _{IH} (min) or V _{IL} (max) | Loading with 25Ω to -2.0V | (Note 3, Note 4, Note 5) |
| | | -1085 | | mV | -55°C | | | |
| V _{OLC} | Output LOW Voltage | | -1610 | mV | 0°C to +125°C | | | |
| | | | -1555 | MV | -55°C | | | |
| V _{OLZ} | Cut-Off LOW Voltage | | -1950 | mV | 0°C to +125°C | V _{IN} = V _{IH} (min) or V _{IL} (max) | Loading with 25Ω to -2.0V | (Note 3, Note 4, Note 5) |
| | | | -1850 | | -55°C | | | |
| V _{IH} | Input HIGH Voltage | -1165 | -870 | mV | -55°C to +125°C | Guaranteed HIGH Signal for All Inputs | | (Note 3, Note 4, Note 5, Note 6) |
| V _{IL} | Input LOW Voltage | -1830 | -1475 | mV | -55°C to +125°C | Guaranteed LOW Signal for All Inputs | | (Note 3, Note 4, Note 5, Note 6) |
| I _{IL} | Input LOW Current | 0.50 | | μA | -55°C to +125°C | V _{EE} = 4.2V, V _{IN} = V _{IL} (min) | | (Note 3, Note 4, Note 5) |
| I _{IH} | Input HIGH Current | | 240 | μA | 0°C to +125°C | V _{EE} = -5.7V, V _{IN} = V _{IH} (max) | | (Note 3, Note 4, Note 5) |
| | | | 340 | μA | -55°C | | | |
| I _{EE} | Power Supply Current | -155 | -53 | mA | -55°C to +125°C | Inputs Open V _{EE} = -4.2V to -5.7V | | (Note 3, Note 4, Note 5) |

Note 3: F100K 300 Series cold temperature testing is performed by temperature soaking (to guarantee junction temperature equals -55°C), then testing immediately without allowing for the junction temperature to stabilize due to heat dissipation after power-up. This provides "cold start" specs which can be considered a worst case condition at cold temperatures.

Note 4: Screen tested 100% on each device at -55°C, +25°C, and +125°C, Subgroups 1, 2, 3, 7, and 8.

Note 5: Sample tested (Method 5005, Table I) on each manufactured lot at -55°C, +25°C, and +125°C, Subgroups A1, 2, 3, 7, and 8.

Note 6: Guaranteed by applying specified input condition and testing V_{OH}/V_{OL}.

Timing Waveform

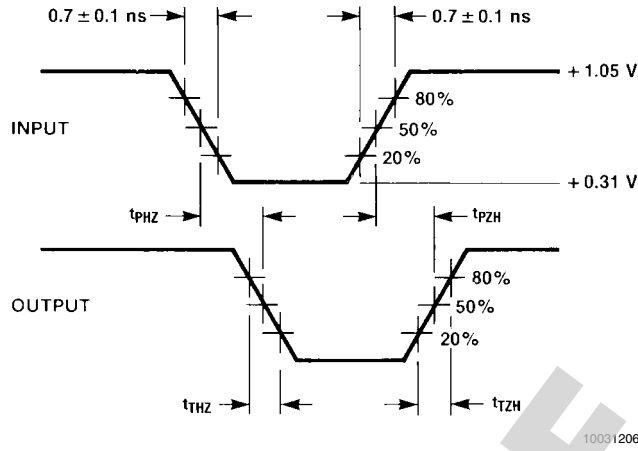
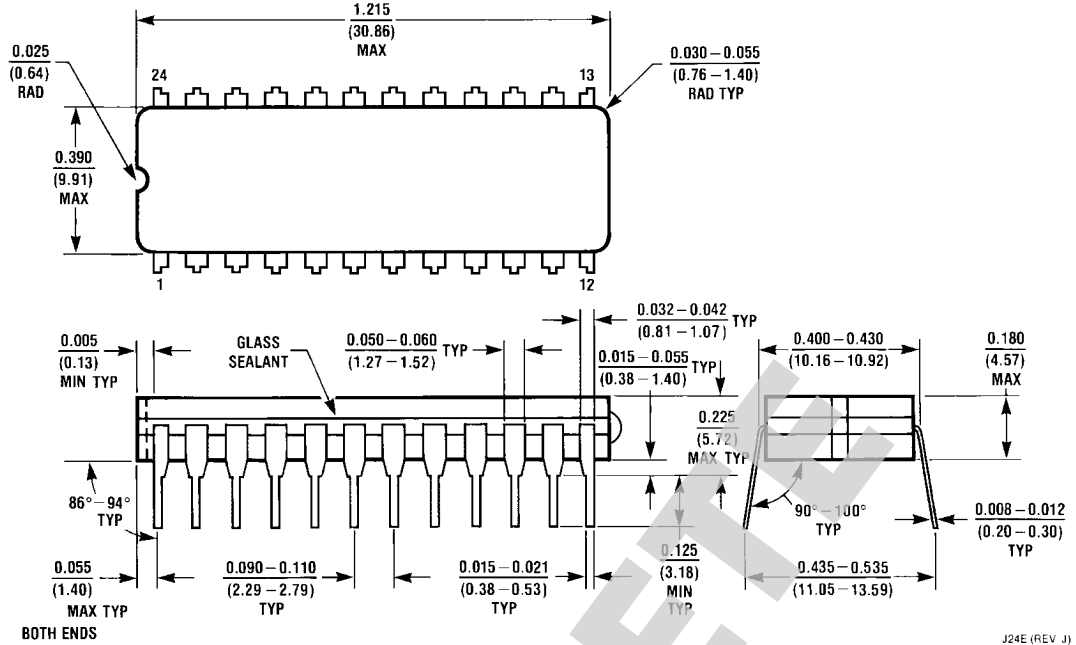


FIGURE 2. Propagation Delay and Transition Times

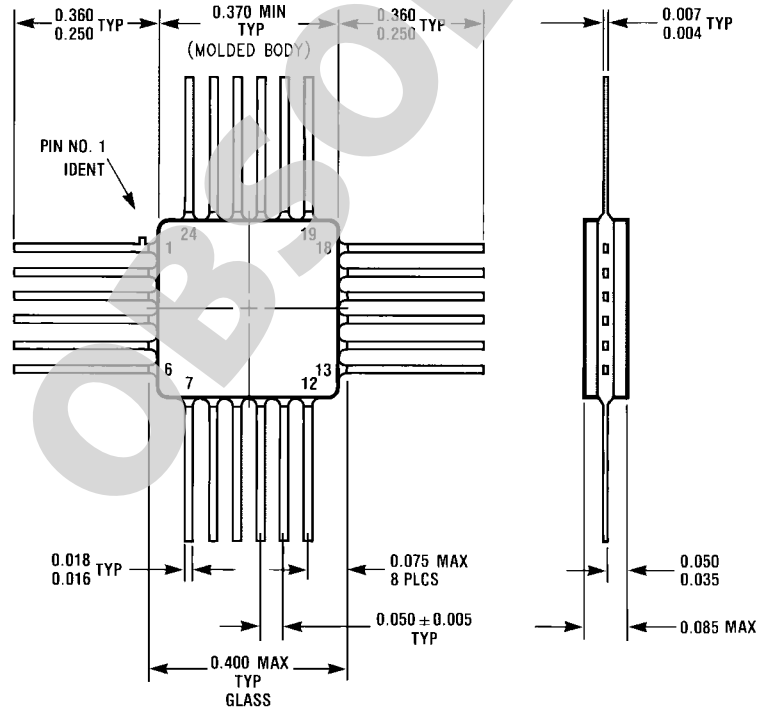
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Physical Dimensions inches (millimeters) unless otherwise noted



24 Lead Ceramic Dual-In-Line Package (0.400 Wide) (D)
NS Package Number J24E

J24E (REV. J)



24 Lead Quad Cerpak (F)
NS Package Number W24B

W24B (REV. D)

Notes

100323

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Notes

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