FAIRCHILD SEMICONDUCTOR®

January 1995
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# 74ABT126
# Quad Buffer with 3-STATE Outputs

## General Description

The ABT126 contains four independent non-inverting buffers with 3-STATE outputs.

## Features

- Non-inverting buffers
- Output sink capability of 64 mA, source capability of 32 m
- Guaranteed latchup protection
- High impedance glitch free bus loading during entire power up and power down cycle
- Nondestructive hot insertion capability
- Disable time less than enable time to avoid bus contention

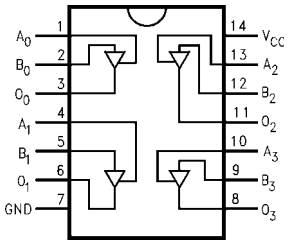
## Ordering Code:

| Order Number | Package Number | Package Description |
|---|---|---|
| 74ABT126CSC | M14A | 14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150" Narrow |
| 74ABT126CSJ | M14D | Pb-Free 14-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide |
| 74ABT126CMTC | MTC14 | 14-Lead Thin Shrink Small Outline Package (TSSOP), JEDEC MO-153, 4.4mm Wide |
| 74ABT126CMTCX_NL (Note 1) | MTC14 | Pb-Free 14-Lead Thin Shrink Small Outline Package (TSSOP), JEDEC MO-153, 4.4mm Wide |

Devices also available in Tape and Reel. Specify by appending suffix letter "X" to the ordering code.
Pb-Free package per JEDEC J-STD-020B.

**Note 1:** "_NL" indicates Pb-Free package (per JEDEC J-STD-020B). Device available in Tape and Reel only.

## Connection Diagram




## Pin Descriptions

| Pin Names | Descriptions |
|---|---|
| $A_n$, $B_n$ | Inputs |
| $O_n$ | Outputs |

## Function Table

| Inputs | | Output |
|---|---|---|
| $A_n$ | $B_n$ | $O_n$ |
| H | L | L |
| H | H | H |
| L | X | Z |

H = HIGH Voltage Level
L = LOW Voltage Level
Z = HIGH Impedance
X = Immaterial

## Absolute Maximum Ratings(Note 2)

| | |
|---|---|
| Storage Temperature | −65°C to +150°C |
| Ambient Temperature under Bias | −55°C to +125°C |
| Junction Temperature under Bias | −55°C to +150°C |
| $V_{CC}$ Pin Potential to Ground Pin | −0.5V to +7.0V |
| Input Voltage (Note 3) | −0.5V to +7.0V |
| Input Current (Note 3) | −30 mA to +5.0 mA |
| Voltage Applied to Any Output | |
| in the Disabled or | |
| Power-Off State | −0.5V to 5.5V |
| in the HIGH State | −0.5V to $V_{CC}$ |
| Current Applied to Output | |
| in LOW State (Max) | twice the rated $I_{OL}$ (mA) |
| DC Latchup Source Current | |
| (Across Comm Operating Range) | −300 mA |
| Over Voltage Latchup (I/O) | 10V |

## Recommended Operating Conditions

| | |
|---|---|
| Free Air Ambient Temperature | −40°C to +85°C |
| Supply Voltage | +4.5V to +5.5V |
| Minimum Input Edge Rate ($\Delta V/\Delta t$) | |
| Data Input | 50 mV/ns |
| Enable Input | 100 mV/ns |

**Note 2:** 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 3:** Either voltage limit or current limit is sufficient to protect inputs.

## DC Electrical Characteristics

| Symbol | Parameter | | Min | Typ | Max | Units | $V_{CC}$ | Conditions |
|---|---|---|---|---|---|---|---|---|
| $V_{IH}$ | Input HIGH Voltage | | 2.0 | | | V | | Recognized HIGH Signal |
| $V_{IL}$ | Input LOW Voltage | | | | 0.8 | V | | Recognized LOW Signal |
| $V_{CD}$ | Input Clamp Diode Voltage | | | | −1.2 | V | Min | $I_{IN}$ = −18 mA |
| $V_{OH}$ | Output HIGH Voltage | | 2.5 | | | V | Min | $I_{OH}$ = −3 mA |
| | | | 2.0 | | | V | Min | $I_{OH}$ = −32 mA |
| $V_{OL}$ | Output LOW Voltage | | | | 0.55 | V | Min | $I_{OL}$ = 64 mA |
| $I_{IH}$ | Input HIGH Current | | | | 1 | μA | Max | $V_{IN}$ = 2.7V (Note 4) |
| | | | | | 1 | | | $V_{IN}$ = $V_{CC}$ |
| $I_{BVI}$ | Input HIGH Current Breakdown Test | | | | 7 | μA | Max | $V_{IN}$ = 7.0V |
| $I_{IL}$ | Input LOW Current | | | | −1 | μA | Max | $V_{IN}$ = 0.5V (Note 4) |
| | | | | | −1 | | | $V_{IN}$ = 0.0V |
| $V_{ID}$ | Input Leakage Test | | 4.75 | | | V | 0.0 | $I_{ID}$ = 1.9 μA, All Other Pin Grounded |
| $I_{OZH}$ | Output Leakage Current | | | | 10 | μA | 0 − 5.5V | $V_{OUT}$ = 2.7V; $\overline{OE}_n$ = 2.0V |
| $I_{OZL}$ | Output Leakage Current | | | | −10 | μA | 0 − 5.5V | $V_{OUT}$ = 0.5V; $\overline{OE}_n$ = 2.0V |
| $I_{OS}$ | Output Short-Circuit Current | | -100 | | −275 | mA | Max | $V_{OUT}$ = 0.0V |
| $I_{CEX}$ | Output HIGH Leakage Current | | | | 50 | μA | Max | $V_{OUT}$ = $V_{CC}$ |
| $I_{ZZ}$ | Bus Drainage Test | | | | 100 | μA | 0.0 | $V_{OUT}$ = 5.5V; All Others GND |
| $I_{CCH}$ | Power Supply Current | | | | 50 | μA | Max | All Outputs HIGH |
| $I_{CCL}$ | Power Supply Current | | | | 15 | mA | Max | All Outputs LOW |
| $I_{CCZ}$ | Power Supply Current | | | | 50 | μA | Max | $\overline{OE}_n$ = $V_{CC}$; |
| | | | | | | | | All Others at $V_{CC}$ or Ground |
| $I_{CCT}$ | Additional $I_{CC}$/Input | Outputs Enabled | | | 1.5 | mA | Max | $V_I$ = $V_{CC}$ − 2.1V |
| | | Outputs 3-STATE | | | 1.5 | mA | | Enable Input $V_I$ = $V_{CC}$ − 2.1V |
| | | Outputs 3-STATE | | | 50 | μA | | Data Input $V_I$ = $V_{CC}$ − 2.1V |
| | | | | | | | | All Others at $V_{CC}$ or Ground |
| $I_{CCD}$ | Dynamic $I_{CC}$ | No Load | | | | mA/ | | Outputs Open |
| | (Note 4) | | | | 0.1 | MHz | Max | $\overline{OE}_n$ = GND, (Note 5) |
| | | | | | | | | One Bit Toggling, 50% Duty Cycle |

**Note 4:** Guaranteed, but not tested.

**Note 5:** For 8 bits toggling, $I_{CCD}$ < 0.8 mA/MHz.

## AC Electrical Characteristics

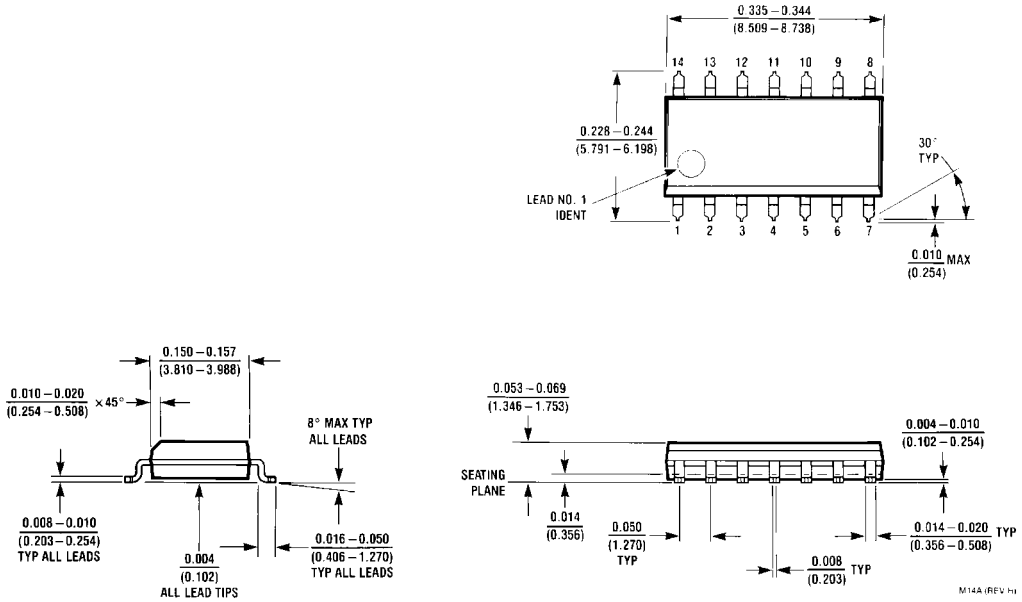
| Symbol | Parameter | $T_A = +25°C$, $V_{CC} = +5V$, $C_L = 50$ pF | | | $T_A = -40°C$ to $+85°C$, $V_{CC} = 4.5V–5.5V$, $C_L = 50$ pF | | Units |
|---|---|---|---|---|---|---|---|
| | | Min | Typ | Max | Min | Max | |
| $t_{PLH}$ | Propagation Delay | 1.0 | | 4.4 | 1.0 | 4.4 | ns |
| $t_{PHL}$ | Data to Outputs | 1.0 | | 4.6 | 1.0 | 4.6 | |
| $t_{PZH}$ | Output Enable | 1.0 | | 6.5 | 1.0 | 6.5 | ns |
| $t_{PZL}$ | Time | 1.0 | | 6.5 | 1.0 | 6.5 | |
| $t_{PHZ}$ | Output Disable | 1.0 | | 5.8 | 1.0 | 5.8 | ns |
| $t_{PLZ}$ | Time | 1.0 | | 5.5 | 1.0 | 5.5 | |

## Capacitance

| Symbol | Parameter | Typ | Units | Conditions $T_A = 25°C$ |
|---|---|---|---|---|
| $C_{IN}$ | Input Capacitance | 5.0 | pF | $V_{CC} = 0V$ |
| $C_{OUT}$ (Note 6) | Output Capacitance | 9.0 | pF | $V_{CC} = 5.0V$ |

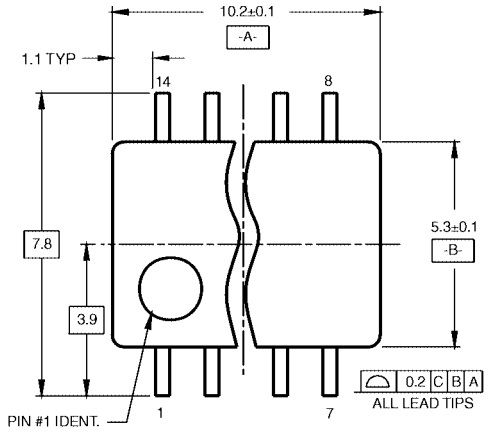
**Note 6:** $C_{OUT}$ is measured at frequency f = 1 MHz, per MIL-STD-883, Method 3012.

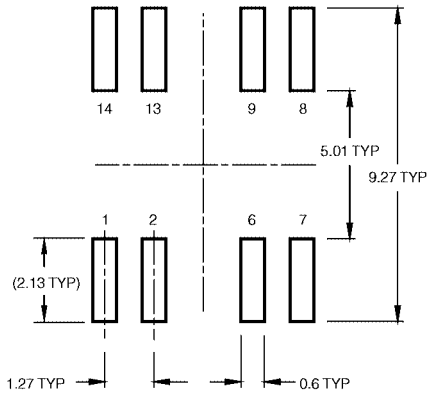
## Physical Dimensions inches (millimeters) unless otherwise noted



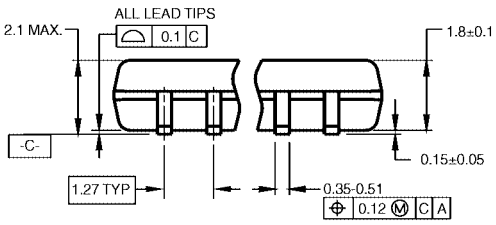

**14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150" Narrow**
**Package Number M14A**

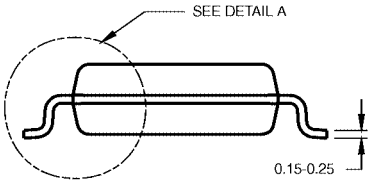
## Physical Dimensions inches (millimeters) unless otherwise noted (Continued)



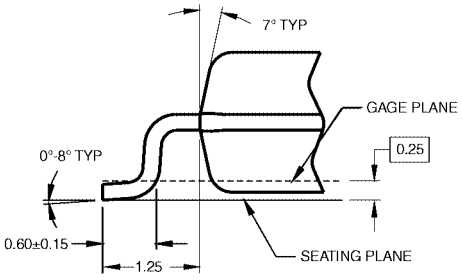




LAND PATTERN RECOMMENDATION




DIMENSIONS ARE IN MILLIMETERS




DETAIL A

NOTES:

A. CONFORMS TO EIAJ EDR-7320 REGISTRATION, ESTABLISHED IN DECEMBER, 1998.

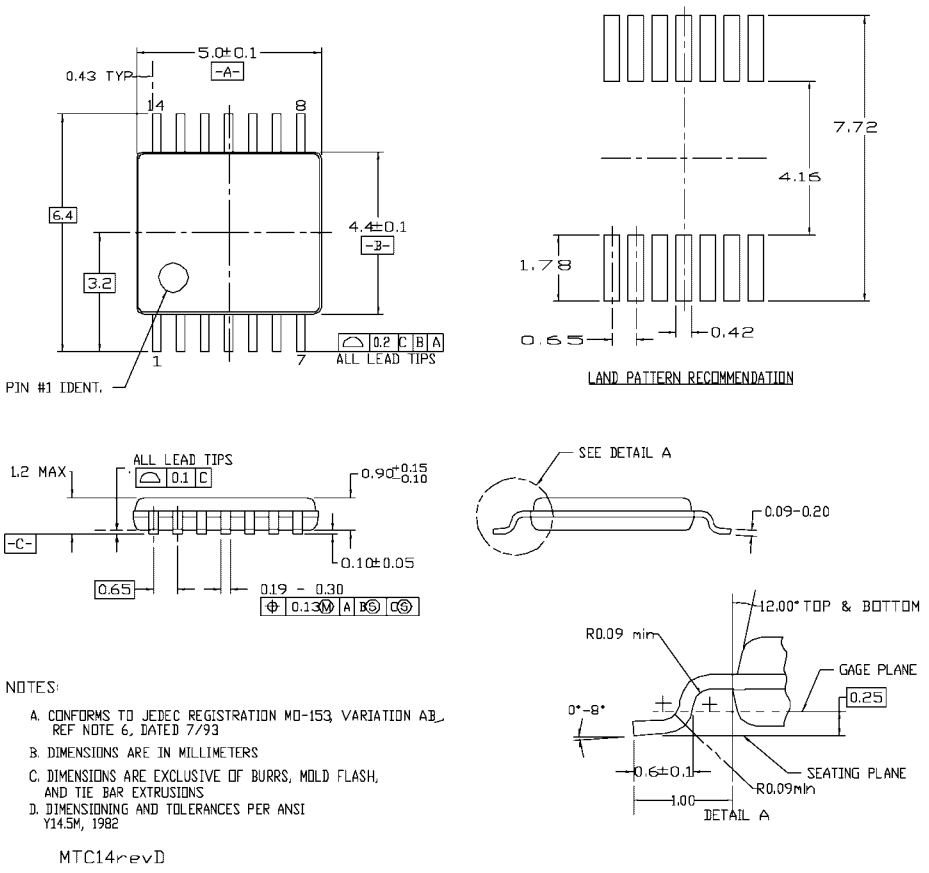
B. DIMENSIONS ARE IN MILLIMETERS.

C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSIONS.

M14DRevB1

**Pb-Free 14-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide**
**Package Number M14D**

## Physical Dimensions inches (millimeters) unless otherwise noted (Continued)




**14-Lead Thin Shrink Small Outline Package (TSSOP), JEDEC MO-153, 4.4mm Wide**
**Package Number MTC14**



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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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