

## 74ABT125 Quad Buffer with 3-STATE Outputs

### General Description

The ABT125 contains four independent non-inverting buffers with 3-STATE outputs.

### Features

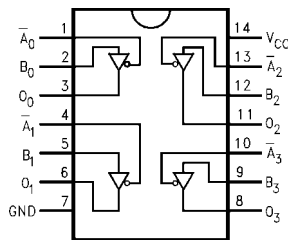
- Non-inverting buffers
- Output sink capability of 64 mA, source capability of 32 mA
- Guaranteed latchup protection
- High impedance glitch free bus loading during entire power up and power down cycle
- Nondestructive hot insertion capability
- Disable time less than enable time to avoid bus contention

### Ordering Code:

Order Number	Package Number	Package Description
74ABT125CSC	M14A	14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-120, 0.150" Narrow Body
74ABT125CSJ	M14D	14-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide
74ABT125CMTC	MTC14	14-Lead Thin Shrink Small Outline Package (TSSOP), JEDEC MO-153, 4.4mm Wide

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

### Connection Diagram



### Pin Descriptions

Pin Names	Descriptions
$\bar{A}_n, B_n$	Inputs
$O_n$	Outputs

### Function Table

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

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

**Absolute Maximum Ratings** (Note 1)

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 <sub>CC</sub> Pin Potential to Ground Pin	-0.5V to +7.0V
Input Voltage (Note 2)	-0.5V to +7.0V
Input Current (Note 2)	-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 <sub>CC</sub>
Current Applied to Output in LOW State (Max)	twice the rated I <sub>OL</sub> (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	20 mV/ns

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

**DC Electrical Characteristics**

Symbol	Parameter	Min	Typ	Max	Units	V <sub>CC</sub>	Conditions
V <sub>IH</sub>	Input HIGH Voltage				V		Recognized HIGH Signal
V <sub>IL</sub>	Input LOW Voltage			0.8	V		Recognized LOW Signal
V <sub>CD</sub>	Input Clamp Diode Voltage			-1.2	V	Min	I <sub>IN</sub> = -18 mA
V <sub>OH</sub>	Output HIGH Voltage	2.5			V	Min	I <sub>OH</sub> = -3 mA
		2.0			V	Min	I <sub>OH</sub> = -32 mA
V <sub>OL</sub>	Output LOW Voltage			0.55	V	Min	I <sub>OL</sub> = 64 mA
I <sub>IH</sub>	Input HIGH Current			1	μA	Max	V <sub>IN</sub> = 2.7V (Note 3)
				1	μA	Max	V <sub>IN</sub> = V <sub>CC</sub>
I <sub>BVI</sub>	Input HIGH Current Breakdown Test			7	μA	Max	V <sub>IN</sub> = 7.0V
I <sub>IL</sub>	Input LOW Current			-1	μA	Max	V <sub>IN</sub> = 0.5V (Note 3)
				-1	μA	Max	V <sub>IN</sub> = 0.0V
I <sub>ID</sub>	Input Leakage Test				V	0.0	I <sub>ID</sub> = 1.9 μA, All Other Pin Grounded
I <sub>OZH</sub>	Output Leakage Current			10	μA	0-5.5V	V <sub>OUT</sub> = 2.7V; $\overline{OE}_n = 2.0V$
I <sub>OZL</sub>	Output Leakage Current			-10	μA	0-5.5V	V <sub>OUT</sub> = 0.5V; $\overline{OE}_n = 2.0V$
I <sub>OS</sub>	Output Short-Circuit Current			-275	mA	Max	V <sub>OUT</sub> = 0.0V
I <sub>CEX</sub>	Output HIGH Leakage Current			50	μA	Max	V <sub>OUT</sub> = V <sub>CC</sub>
I <sub>ZZ</sub>	Bus Drainage Test			100	μA	0.0	V <sub>OUT</sub> = 5.5V; All Others GND
I <sub>CCH</sub>	Power Supply Current			50	μA	Max	All Outputs HIGH
I <sub>CCL</sub>	Power Supply Current			15	mA	Max	All Outputs LOW
I <sub>CCZ</sub>	Power Supply Current			50	μA	Max	$\overline{OE}_n = V_{CC}$ ; All Others at V <sub>CC</sub> or Ground
I <sub>CC1</sub>	Additional I <sub>CC</sub> /Input Outputs Enabled Outputs 3-STATE Outputs 3-STATE			1.5	mA	Max	V <sub>I</sub> = V <sub>CC</sub> - 2.1V
				1.5	mA		Enable Input V <sub>I</sub> = V <sub>CC</sub> - 2.1V
				50	μA		Data Input V <sub>I</sub> = V <sub>CC</sub> - 2.1V All Others at V <sub>CC</sub> or Ground
I <sub>CCD</sub>	Dynamic I <sub>CC</sub> No Load (Note 3)			0.1	mA/ MHz	Max	Outputs Open $\overline{OE}_n = GND$ , (Note 4) One Bit Toggling, 50% Duty Cycle

**Note 3:** Guaranteed, but not tested.

**Note 4:** For 8 bits toggling, I<sub>CCD</sub> < 0.8 mA/MHz.

## AC Electrical Characteristics

Symbol	Parameter	T <sub>A</sub> = +25°C V <sub>CC</sub> = +5V C <sub>L</sub> = 50 pF			T <sub>A</sub> = -40°C to +85°C V <sub>CC</sub> = 4.5V-5.5V C <sub>L</sub> = 50 pF		Units
		Min	Typ	Max	Min	Max	
t <sub>PLH</sub>	Propagation Delay	1.0		4.6	1.0	4.6	ns
t <sub>PHL</sub>	Data to Outputs	1.0		4.9	1.0	4.9	
t <sub>PZH</sub>	Output Enable	1.0		5.1	1.0	5.1	ns
t <sub>PZL</sub>	Time	1.0		6.8	1.0	6.8	
t <sub>PHZ</sub>	Output Disable	1.0		6.2	1.0	6.2	ns
t <sub>PLZ</sub>	Time	1.0		5.5	1.0	5.5	

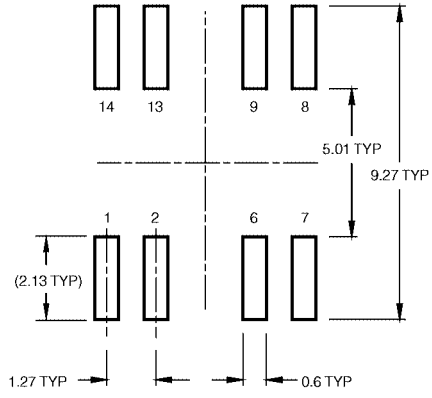
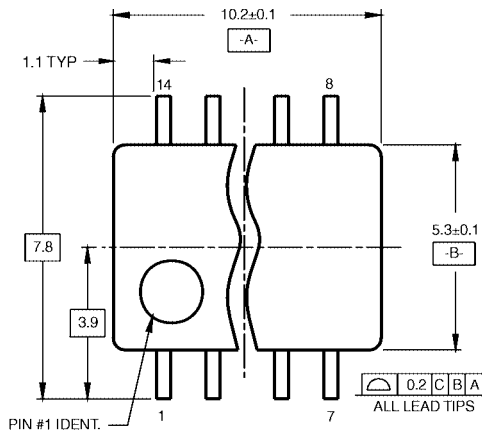
## Capacitance

Symbol	Parameter	Typ	Units	Conditions T <sub>A</sub> = 25°C
C <sub>IN</sub>	Input Capacitance	5.0	pF	V <sub>CC</sub> = 0V
C <sub>OUT</sub> (Note 5)	Output Capacitance	9.0	pF	V <sub>CC</sub> = 5.0V

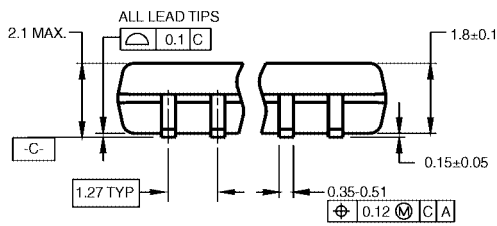
**Note 5:** C<sub>OUT</sub> is measured at frequency f = 1 MHz, per MIL-STD-883, Method 3012.



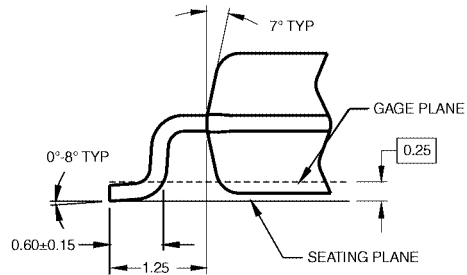
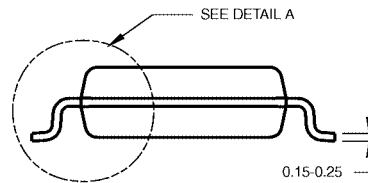
**Physical Dimensions** inches (millimeters) unless otherwise noted (Continued)



LAND PATTERN RECOMMENDATION



DIMENSIONS ARE IN MILLIMETERS



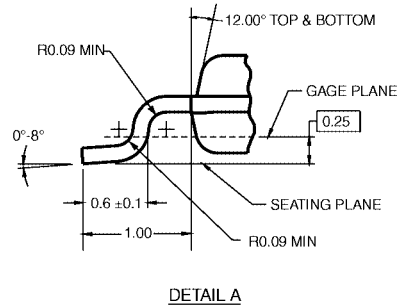
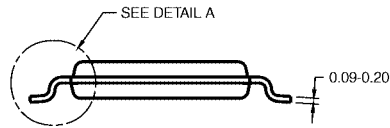
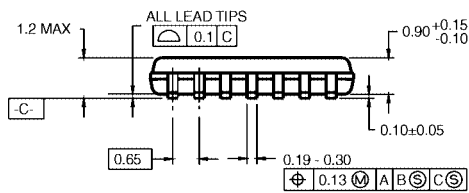
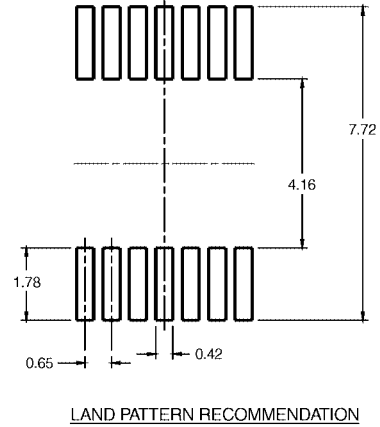
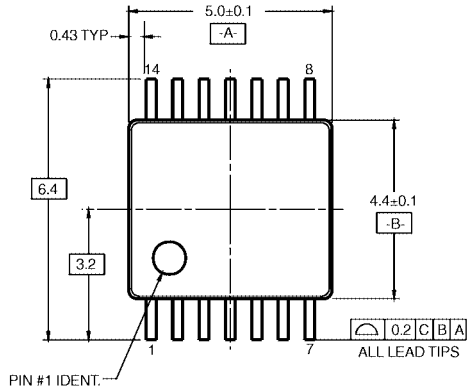
DETAIL A

- 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

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

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



- NOTES:
- CONFORMS TO JEDEC REGISTRATION MO-153, VARIATION AB, REF NOTE 6, DATE 7/93.
  - DIMENSIONS ARE IN MILLIMETERS.
  - DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSIONS.
  - DIMENSIONS AND TOLERANCES PER ANSI Y14.5M, 1982.

MTC14RevC3

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

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