

FAIRCHILD
SEMICONDUCTOR®

March 1994
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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 latching 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

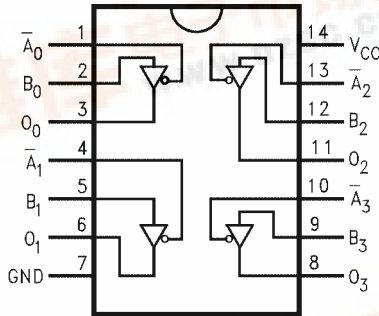
Ordering Code:

Order Number	Package Number	Package Description
74ABT125CSC	M14A	14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150" Narrow
74ABT125CSJ	M14D	Pb-Free 14-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide
74ABT125CMT	MTC14	14-Lead Thin Shrink Small Outline Package (TSSOP), JEDEC MO-153, 4.4mm Wide
74ABT125CMTCX_NL (Note 1)	MTC14	Pb-Free 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.
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
\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

74ABT125 Quad Buffer with 3-STATE Outputs



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	20 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				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	μA	Max	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	μA	Max	V _{IN} = 0.0V
V _{ID}	Input Leakage Test				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			-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 _{CC} T	Additional I _{CC} /Input Outputs Enabled Outputs 3-STATE Outputs 3-STATE			1.5	mA	Max	V _I = V _{CC} - 2.1V
				1.5	mA	Max	Enable Input V _I = V _{CC} - 2.1V
				50	μA	Max	Data Input V _I = V _{CC} - 2.1V All Others at V _{CC} or Ground
I _{CC} D	Dynamic I _{CC} No Load (Note 4)			0.1	mA/ MHz	Max	Outputs Open $\overline{OE}_n = GND$, (Note 5) One Bit Toggling, 50% Duty Cycle

Note 4: Guaranteed, but not tested.

Note 5: For 8 bits toggling, I_{CC}D < 0.8 mA/MHz.

AC Electrical Characteristics

Symbol	Parameter	$T_A = +25^\circ\text{C}$ $V_{CC} = +5\text{V}$ $C_L = 50\text{ pF}$			$T_A = -40^\circ\text{C to } +85^\circ\text{C}$ $V_{CC} = 4.5\text{V} - 5.5\text{V}$ $C_L = 50\text{ pF}$		Units
		Min	Typ	Max	Min	Max	
t_{PLH}	Propagation Delay	1.0		4.6	1.0	4.6	ns
t_{PHL}	Data to Outputs	1.0		4.9	1.0	4.9	
t_{PZH}	Output Enable	1.0		5.1	1.0	5.1	ns
t_{PZL}	Time	1.0		6.8	1.0	6.8	
t_{PHZ}	Output Disable	1.0		6.2	1.0	6.2	ns
t_{PLZ}	Time	1.0		5.5	1.0	5.5	

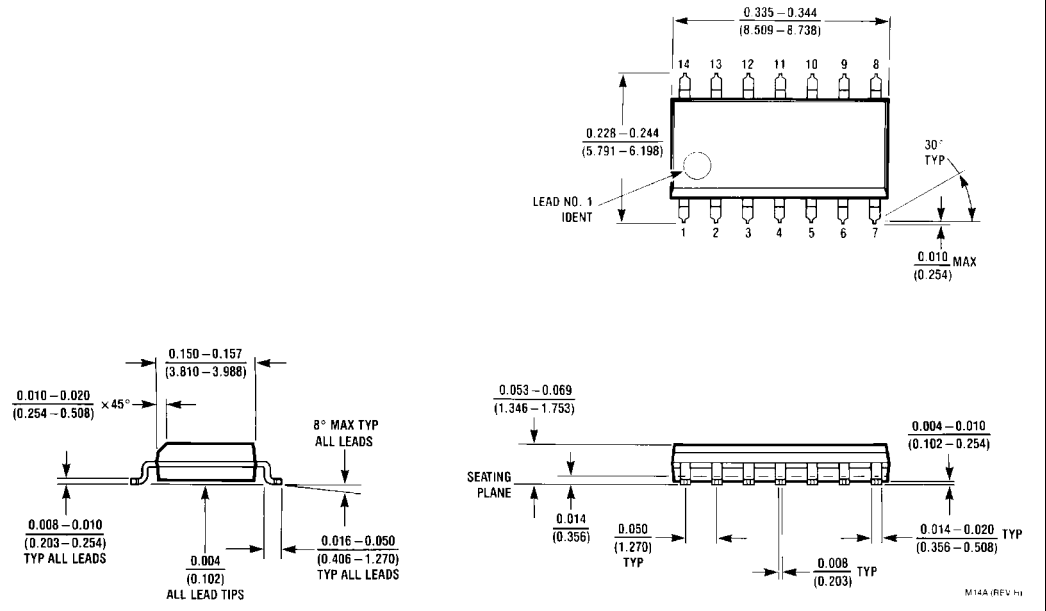
Capacitance

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

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

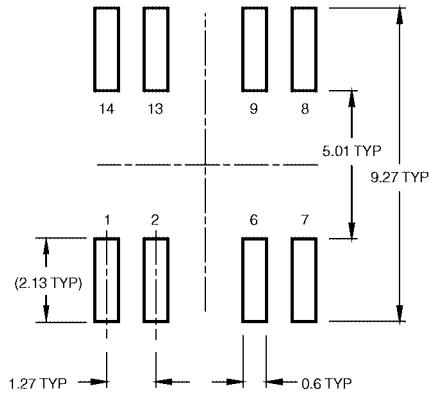
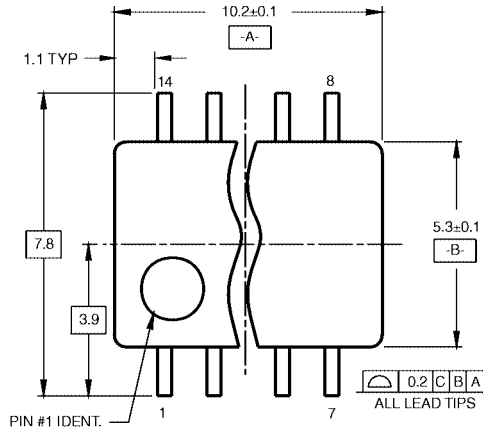
74ABT125

Physical Dimensions inches (millimeters) unless otherwise noted

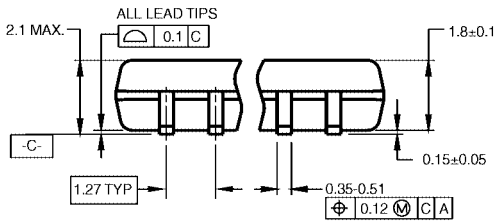


**14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150" Narrow
Package Number M14A**

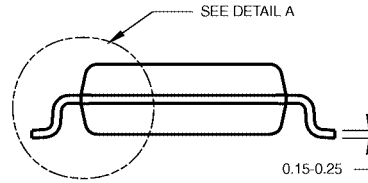
Physical Dimensions inches (millimeters) unless otherwise noted (Continued)



LAND PATTERN RECOMMENDATION



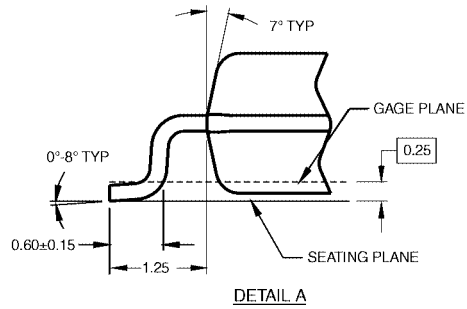
DIMENSIONS ARE IN MILLIMETERS



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.

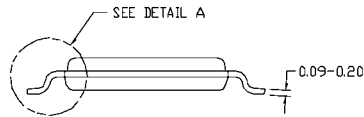
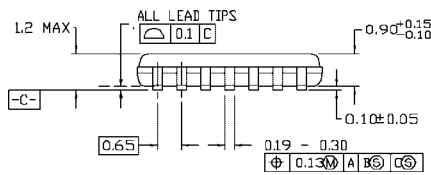
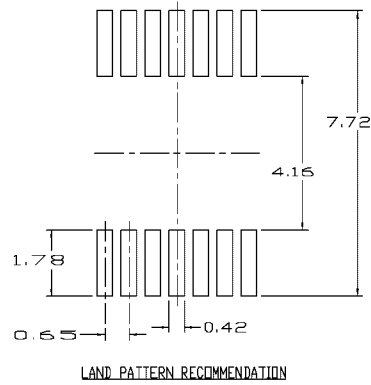
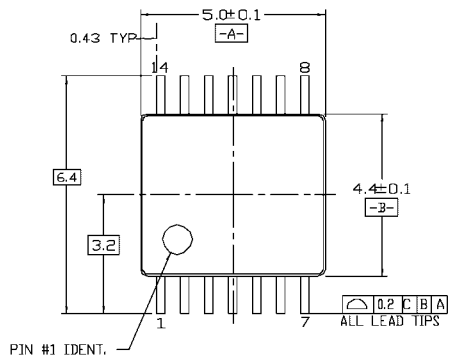
M14DRevB1



DETAIL A

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

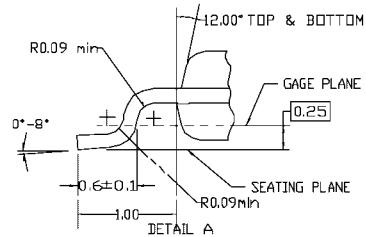
Physical Dimensions inches (millimeters) unless otherwise noted (Continued)



NOTES:

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

MTC14revD



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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