

74ABT125 Quad Buffer with TRI-STATE® Outputs

General Description

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

Features

- Non-inverting buffers
- Output sink capability of 64 mA, source capability of 32 mA

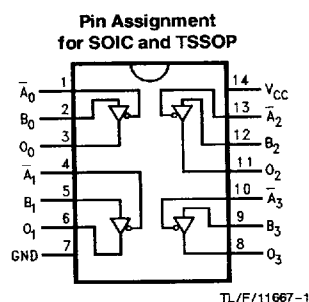
- Guaranteed latchup protection
- High impedance glitch free bus loading during entire power up and power down cycle
- Nondestructive hot insertion capability
- Disable time less than enable time to avoid bus contention

Commercial	Package Number	Package Description
74ABT125CSC (Note 1)	M14A	14-Lead (0.150" Wide) Molded Small Outline, JEDEC
74ABT125CSJ (Note 1)	M14D	14-Lead (0.300" Wide) Molded Small Outline, EIAJ
74ABT125CMTC (Notes 1, 2)	MTC14	14-Lead Molded Thin Shrink Small Outline, JEDEC

Note 1: Devices also available in 13" reel. Use suffix = SCX, SJX, and MTCX.

Note 2: Contact factory for package availability

Connection Diagram



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

Function Table		Output
Inputs		
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

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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	
Plastic	−55°C to +150°C
V _{CC} 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 in the HIGH State	−0.5V to 5.5V −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)	−500 mA A −300 mA
Over Voltage Latchup (I/O)	10V

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.

Recommended Operating Conditions

Free Air Ambient Temperature	−40°C to +85°C
Commercial	
Supply Voltage	
Commercial	+4.5V to +5.5V
Minimum Input Edge Rate	(ΔV/Δt)
Data Input	50 mV/ns
Enable Input	20 mV/ns

DC Electrical Characteristics

Symbol	Parameter	ABT125			Units	V _{CC}	Conditions
		Min	Typ	Max			
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	74ABT	2.5		V	Min	I _{OH} = −3 mA
		74ABT	2.0		V	Min	I _{OH} = −32 mA
V _{OL}	Output LOW Voltage	74ABT		0.55	V	Min	I _{OL} = 64 mA
I _{IH}	Input HIGH Current			5 5	μA	Max	V _{IN} = 2.7V (Note 2) V _{IN} = V _{CC}
I _{BVI}	Input HIGH Current Breakdown Test			7	μA	Max	V _{IN} = 7.0V
I _{IL}	Input LOW Current			−5 −5	μA	Max	V _{IN} = 0.5V (Note 2) V _{IN} = 0.0V
V _{ID}	Input Leakage Test	4.75			V	0.0	I _{ID} = 1.9 μA, All Other Pins Grounded
I _{OZH}	Output Leakage Current			50	μA	0 − 5.5V	V _{OUT} = 2.7V; $\overline{OE}_n$ = 2.0V
I _{OZL}	Output Leakage Current			−50	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 Outputs TRI-STATE Outputs TRI-STATE	1.5		mA	Max	V _I = V _{CC} − 2.1V Enable Input V _I = V _{CC} − 2.1V Data Input V _I = V _{CC} − 2.1V All Others at V _{CC} or Ground
			1.5		mA		
			50		μA		
I _{CCD}	Dynamic I _{CC} (Note 2)	No Load		0.1	mA/ MHz	Max	Outputs Open $\overline{OE}_n$ = GND, (Note 1) One Bit Toggling, 50% Duty Cycle

Note 1: For 8 bits toggling, I_{CCD} < 0.8 mA/MHz

Note 2: Guaranteed, but not tested

AC Electrical Characteristics (SOIC and SSOP package)

Symbol	Parameter	74ABT			74ABT		Units
		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		
		Min	Typ	Max	Min	Max	
t _{PLH} t _{PHL}	Propagation Delay Data to Outputs	1.0		4.6	1.0	4.6	ns
t _{PZH} t _{PZL}	Output Enable Time	1.0		5.1	1.0	5.1	ns
t _{PHZ} t _{PLZ}	Output Disable Time	1.0		6.2	1.0	6.2	ns

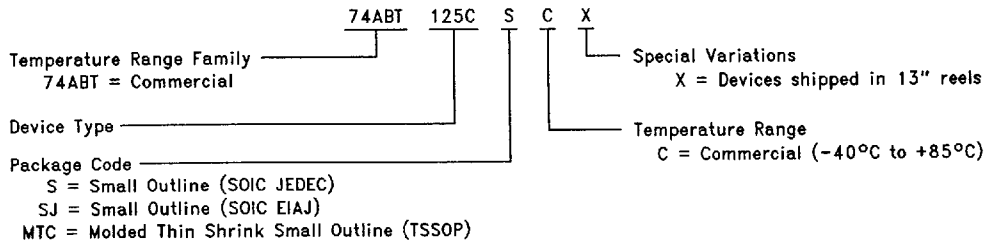
Capacitance

Symbol	Parameter	Typ	Units	Conditions T _A = 25°C
C _{IN}	Input Capacitance	5.0	pF	V _{CC} = 0V
C _{OUT} (Note 1)	Output Capacitance	9.0	pF	V _{CC} = 5.0V

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

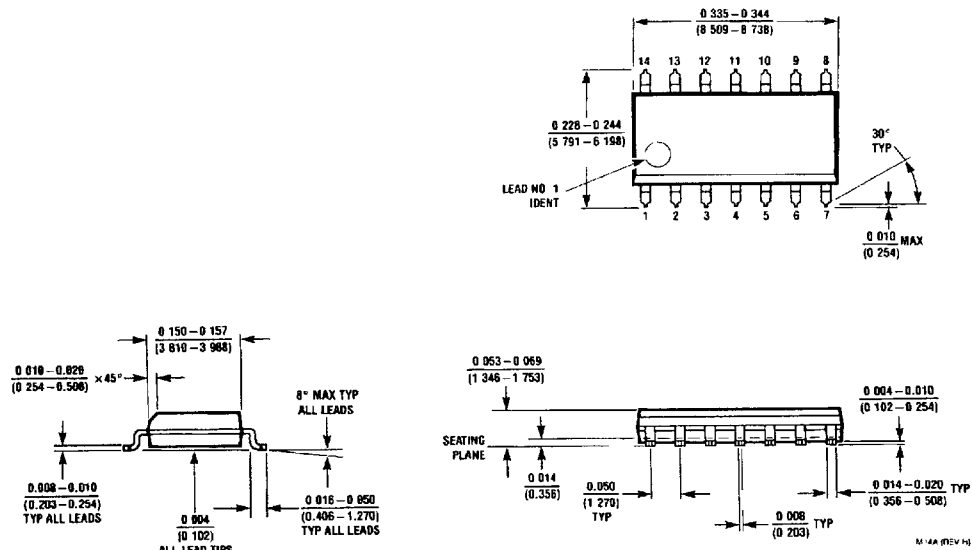
Ordering Information

The device number is used to form part of a simplified purchasing code where the package type and temperature range are defined as follows:

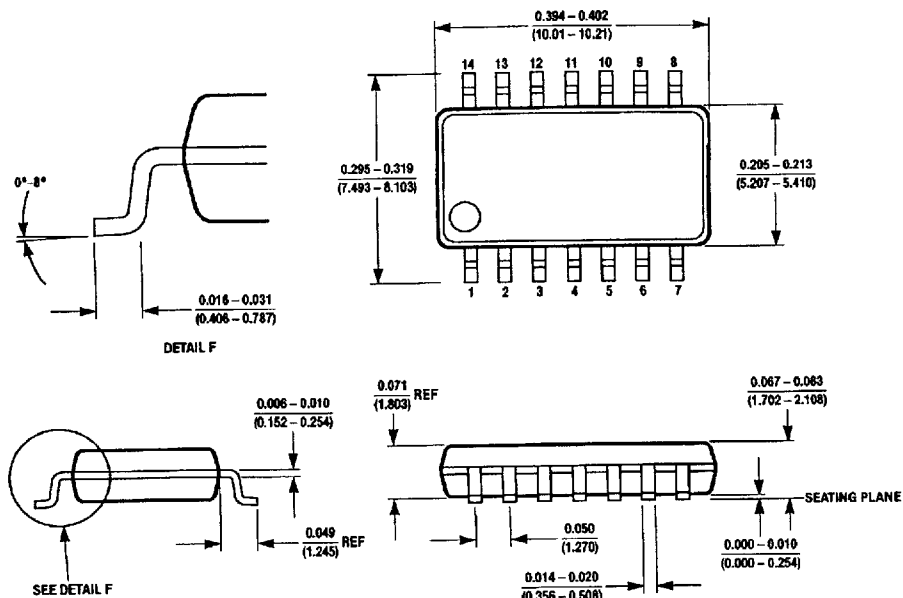


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Physical Dimensions inches (millimeters) (Continued)

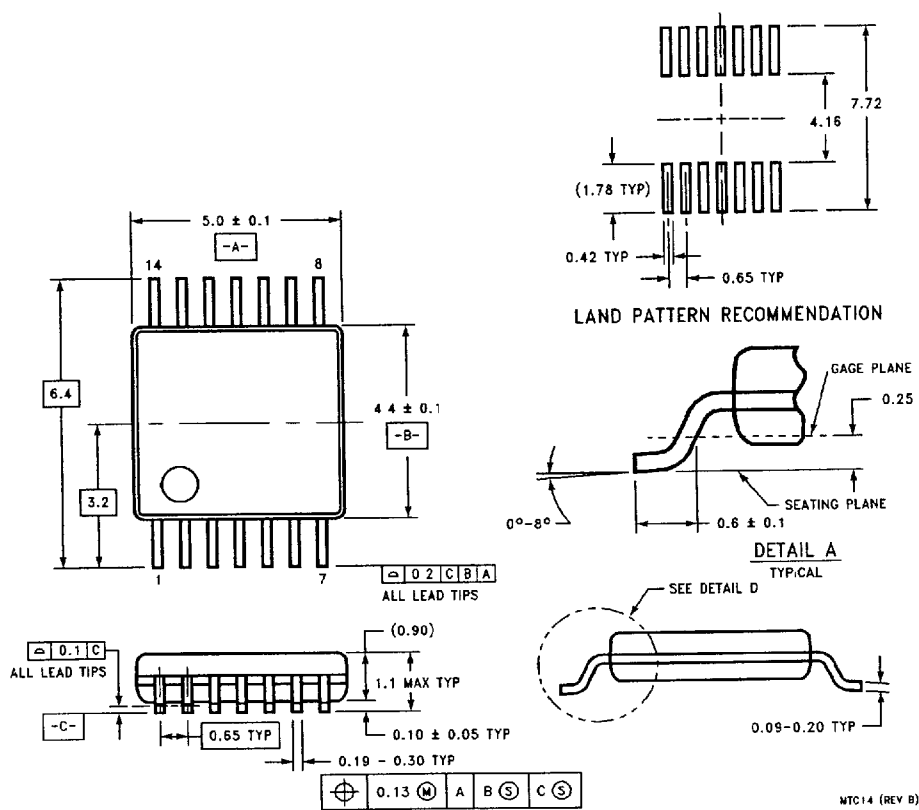


**14-Lead Small Outline Integrated Circuit (S)
NS Package Number M14A**



**14-Lead Small Outline Package—EIAJ (SJ)
NS Package Number M14D**

Physical Dimensions millimeters (Continued)



**14-Lead Molded Thin Shrink Small Outline Package, JEDEC
NS Package Number MTC14**

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