

# Quad buffer (3-State)

# 74ABT125

## FEATURES

- Quad bus interface
- 3-State buffers
- Output capability: +64mA/-32mA
- Latch-up protection exceeds 500mA per Jeduc JC40.2 Std 17
- ESD protection exceeds 2000 V per MIL STD 883C Method 3015.6 and 200 V per Machine Model

## DESCRIPTION

The 74ABT125 high-performance BiCMOS device combines low static and dynamic power dissipation with high speed and high output drive.

The 74ABT125 device is an quad buffer that is ideal for driving bus lines. The device features four Output Enables ( $\overline{OE}0$ ,  $\overline{OE}1$ ,  $\overline{OE}2$ ,  $\overline{OE}3$ ), each controlling one of the 3-State outputs.

## FUNCTION TABLE

INPUTS		OUTPUT
$\overline{OE}n$	$Dn$	$Qn$
L	L	L
L	H	H
H	X	Z

- H = High voltage level
- L = Low voltage level
- X = Don't care
- Z = High impedance "off" state

## QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS $T_{amb} = 25^{\circ}C; GND = 0V$	TYPICAL	UNIT
$t_{PLH}$ $t_{PHL}$	Propagation delay An to Yn	$C_L = 50pF; V_{CC} = 5V$	2.9	ns
$C_{IN}$	Input capacitance	$V_I = 0V \text{ or } V_{CC}$	4	pF
$C_{OUT}$	Output capacitance	$V_I = 0V \text{ or } V_{CC}$	7	pF
$I_{CCZ}$	Total supply current	Outputs Disabled; $V_{CC} = 5.5V$	500	nA

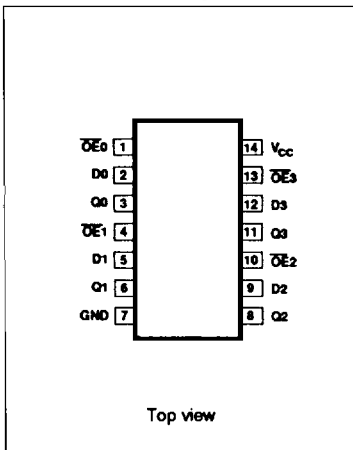
## ORDERING INFORMATION

PACKAGES	TEMPERATURE RANGE	ORDER CODE
14-pin plastic DIP	-40°C to +85°C	74ABT125N
14-pin plastic SOL	-40°C to +85°C	74ABT125D

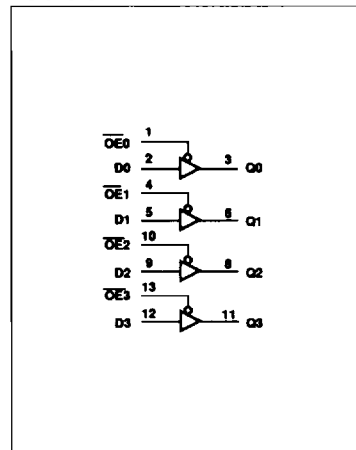
## PIN DESCRIPTION

PIN NUMBER	SYMBOL	FUNCTION
2, 5, 9, 12	D0 - D3	Data inputs
3, 6, 8, 11	Q0 - Q3	Data outputs
1, 4, 10, 13	$\overline{OE}0 - \overline{OE}3$	Data outputs
7	GND	Ground (0V)
14	$V_{CC}$	Positive supply voltage

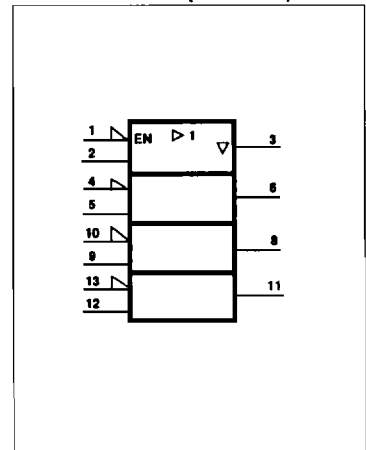
## PIN CONFIGURATION



## LOGIC SYMBOL



## LOGIC SYMBOL (IEEE/IEC)



## Quad buffer (3-State)

74ABT125

ABSOLUTE MAXIMUM RATINGS<sup>1, 2</sup>

SYMBOL	PARAMETER	CONDITIONS	RATING	UNIT
V <sub>CC</sub>	DC supply voltage		-0.5 to +7.0	V
I <sub>IK</sub>	DC input diode current	V <sub>I</sub> < 0	-18	mA
V <sub>I</sub>	DC input voltage <sup>3</sup>		-1.2 to +7.0	V
I <sub>OK</sub>	DC output diode current	V <sub>O</sub> < 0	-50	mA
V <sub>OUT</sub>	DC output voltage <sup>3</sup>	output in Off or High state	-0.5 to +5.5	V
I <sub>OUT</sub>	DC output current	output in Low state	128	mA
T <sub>stg</sub>	Storage temperature range		-65 to 150	°C

## NOTES:

1. Stresses beyond those listed may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.
2. The performance capability of a high-performance integrated circuit in conjunction with its thermal environment can create junction temperatures which are detrimental to reliability. The maximum junction temperature of this integrated circuit should not exceed 150°C.
3. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

## RECOMMENDED OPERATING CONDITIONS

SYMBOL	PARAMETER	LIMITS		UNIT
		Min	Max	
V <sub>CC</sub>	DC supply voltage	4.5	5.5	V
V <sub>I</sub>	Input voltage	0	V <sub>CC</sub>	V
V <sub>IH</sub>	High-level input voltage	2.0		V
V <sub>IL</sub>	Input voltage		0.8	V
I <sub>OH</sub>	High level output current		-32	mA
I <sub>OL</sub>	Low level output current		64	mA
ΔV/Δt	Input transition rise or fall rate	0	5	ns/V
T <sub>amb</sub>	Operating free-air temperature range	-40	+85	°C

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74ABT125

## DC ELECTRICAL CHARACTERISTICS

SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS					UNIT
			T <sub>amb</sub> = +25°C			T <sub>amb</sub> = -40°C to +85°C		
			Min	Typ	Max	Min	Max	
V <sub>IK</sub>	Input clamp voltage	V <sub>CC</sub> = 4.5V; I <sub>IK</sub> = -18mA		-0.9	-1.2		-1.2	V
V <sub>OH</sub>	High-level output voltage	V <sub>CC</sub> = 4.5V; I <sub>OH</sub> = -3mA; V <sub>I</sub> = V <sub>IL</sub> or V <sub>IH</sub>	2.5	2.9		2.5		V
		V <sub>CC</sub> = 5.0V; I <sub>OH</sub> = -3mA; V <sub>I</sub> = V <sub>IL</sub> or V <sub>IH</sub>	3.0	3.4		3.0		
		V <sub>CC</sub> = 4.5V; I <sub>OH</sub> = -32mA; V <sub>I</sub> = V <sub>IL</sub> or V <sub>IH</sub>	2.0	2.4		2.0		
V <sub>OL</sub>	Low-level output voltage	V <sub>CC</sub> = 4.5V; I <sub>OL</sub> = 64mA; V <sub>I</sub> = V <sub>IL</sub> or V <sub>IH</sub>		0.42	0.55		0.55	V
I <sub>I</sub>	Input leakage current	V <sub>CC</sub> = 5.5V; V <sub>I</sub> = GND or 5.5V		±0.01	±1.0		±1.0	µA
I <sub>OZH</sub>	3-State output High current	V <sub>CC</sub> = 5.5V; V <sub>O</sub> = 2.7V; V <sub>I</sub> = V <sub>IL</sub> or V <sub>IH</sub>		5.0	50		50	µA
I <sub>OZL</sub>	3-State output Low current	V <sub>CC</sub> = 5.5V; V <sub>O</sub> = 0.5V; V <sub>I</sub> = V <sub>IL</sub> or V <sub>IH</sub>		-5.0	-50		-50	µA
I <sub>O</sub>	Short-circuit output current <sup>1</sup>	V <sub>CC</sub> = 5.5V; V <sub>O</sub> = 2.5V	-50	-100	-180	-50	-180	mA
I <sub>CCH</sub>	Quiescent supply current	V <sub>CC</sub> = 5.5V; Outputs High; V <sub>I</sub> = GND or V <sub>CC</sub>		0.5	50		50	µA
I <sub>CCL</sub>		V <sub>CC</sub> = 5.5V; Outputs Low; V <sub>I</sub> = GND or V <sub>CC</sub>		24	30		30	mA
I <sub>CCZ</sub>		V <sub>CC</sub> = 5.5V; Outputs 3-State; V <sub>I</sub> = GND or V <sub>CC</sub>		0.5	50		50	µA
ΔI <sub>CC</sub>	Additional supply current per input pin <sup>2</sup>	Outputs enabled, one input at 3.4V, other inputs at V <sub>CC</sub> or GND; V <sub>CC</sub> = 5.5V		0.5	1.5		1.5	mA
		Outputs 3-State, one data input at 3.4V, other inputs at V <sub>CC</sub> or GND; V <sub>CC</sub> = 5.5V		0.5	50		50	µA
		Outputs 3-State, one enable input at 3.4V, other inputs at V <sub>CC</sub> or GND; V <sub>CC</sub> = 5.5V		0.5	1.5		1.5	mA

## NOTES:

- Not more than one output should be tested at a time, and the duration of the test should not exceed one second.
- This is the increase in supply current for each input at 3.4V.