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

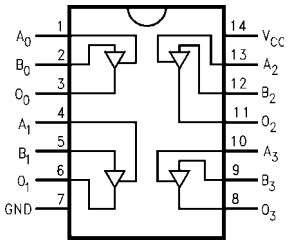
Ordering Code:

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

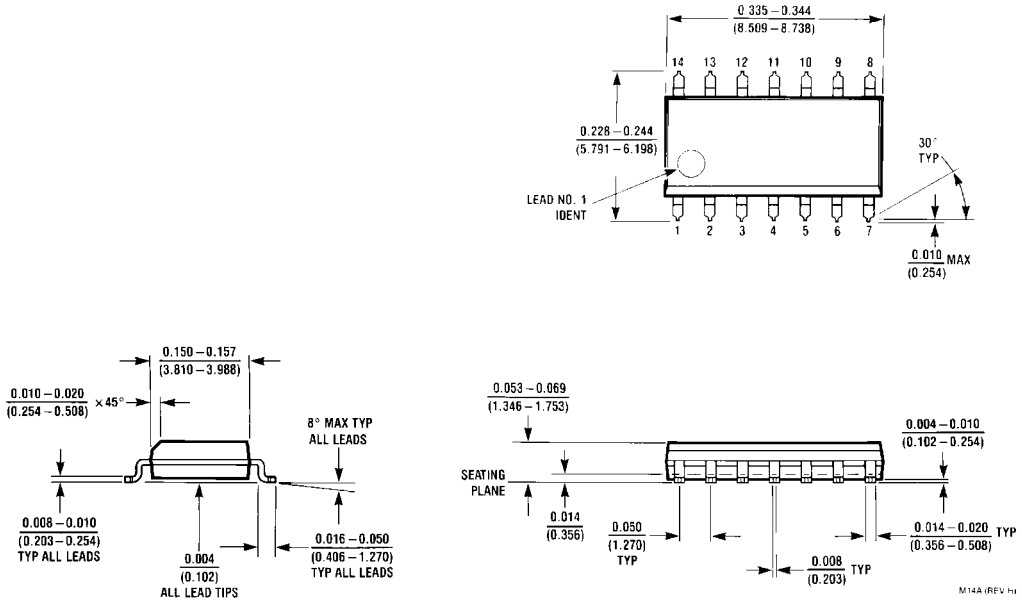
Symbol	Parameter	$T_A = +25°C$, $V_{CC} = +5V$, $C_L = 50$ pF			$T_A = -40°C$ to $+85°C$, $V_{CC} = 4.5V–5.5V$, $C_L = 50$ pF		Units
		Min	Typ	Max	Min	Max	
t_{PLH}	Propagation Delay	1.0		4.4	1.0	4.4	ns
t_{PHL}	Data to Outputs	1.0		4.6	1.0	4.6	
t_{PZH}	Output Enable	1.0		6.5	1.0	6.5	ns
t_{PZL}	Time	1.0		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	$V_{CC} = 5.0V$

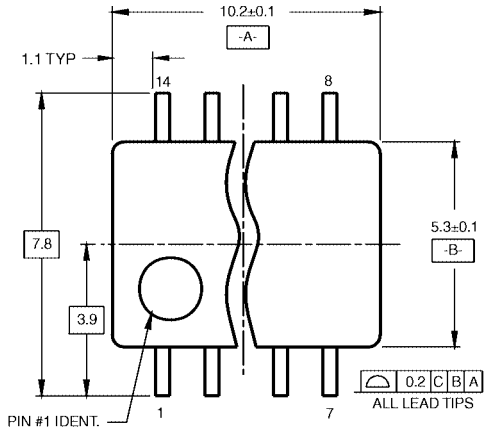
Note 6: C_{OUT} is measured at frequency f = 1 MHz, per MIL-STD-883, Method 3012.

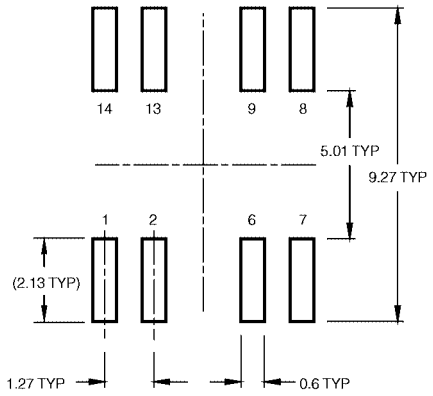
Physical Dimensions inches (millimeters) unless otherwise noted



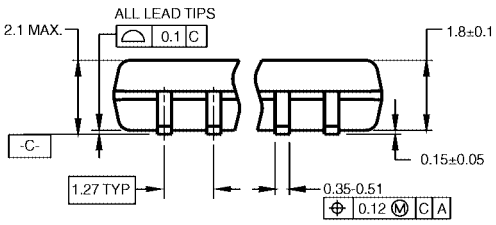
14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150" Narrow
Package Number M14A

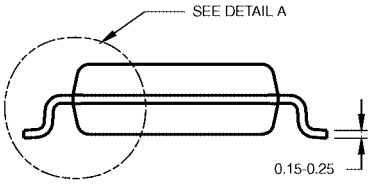
Physical Dimensions inches (millimeters) unless otherwise noted (Continued)





LAND PATTERN RECOMMENDATION





DIMENSIONS ARE IN MILLIMETERS

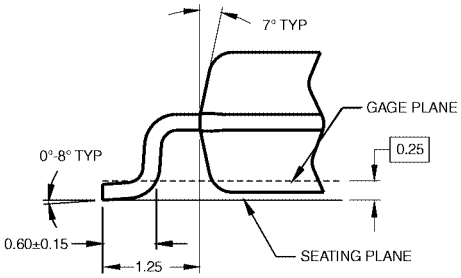
NOTES:

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.

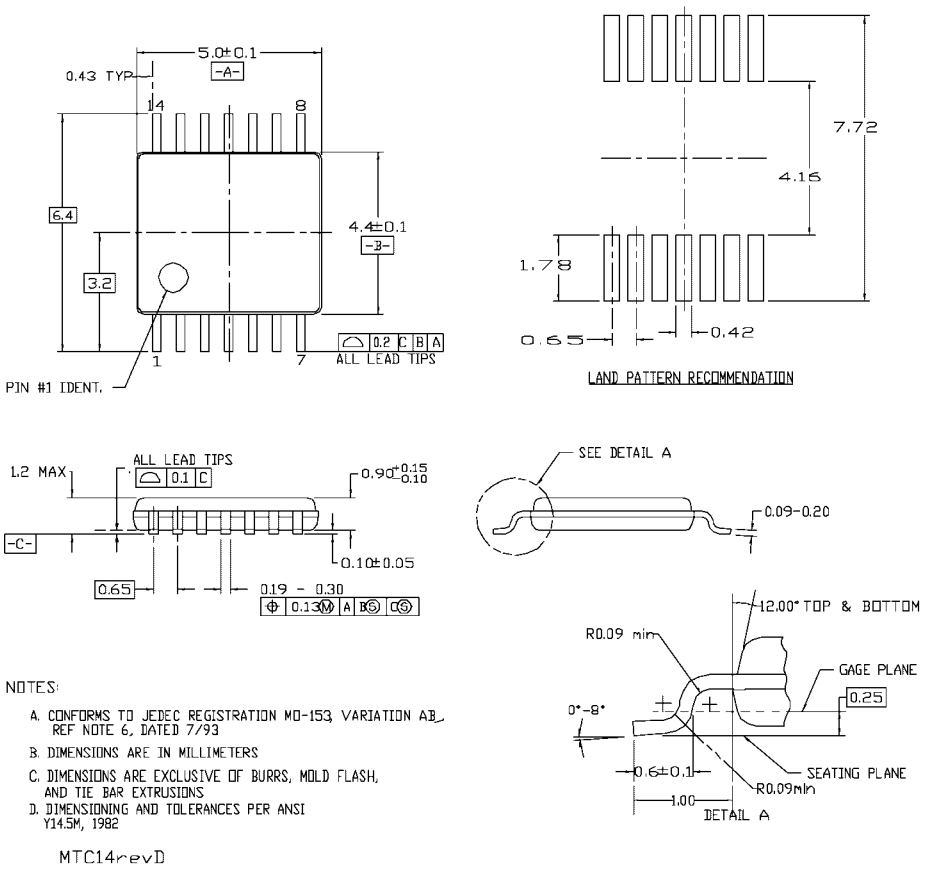
M14DRevB1



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)



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

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1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
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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