

# 74ABT2244

## Octal Buffer/Line Driver

### with 25Ω Series Resistors in the Outputs

#### General Description

The 'ABT2244 is an octal buffer and line driver designed to drive the capacitive inputs of MOS memory drivers, address drivers, clock drivers, and bus-oriented transmitters/receivers.

The 25Ω series resistors in the outputs reduce ringing and eliminate the need for external resistors.

#### Features

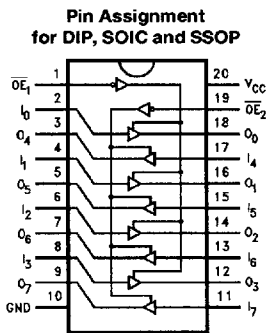
- Guaranteed latching protection
- High impedance glitch-free bus loading during entire power up and power down cycle
- Nondestructive hot insertion capability

Commercial	Package Number	Package Description
74ABT2244CSC (Note 1)	M20B	20-Lead (0.300" Wide) Molded Small Outline, JEDEC
74ABT2244CSJ (Note 1)	M20D	20-Lead (0.300" Wide) Molded Small Outline, EIAJ
74ABT2244CPC	N20B	20-Lead (0.300" Wide) Molded Dual-in-Line
74ABT2244CMSA (Note 1)	MSA20	20-Lead Molded Shrink Small Outline, EIAJ Type II
74ABT2244CMTC (Notes 1, 2)	MTC20	20-Lead Molded Thin Shrink Small Outline, JEDEC

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

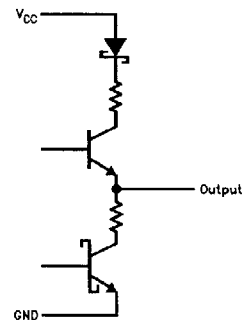
Note 2: Contact factory for package availability

#### Connection Diagrams



TL/F/10991-1

#### Schematic of Each Output



TL/F/10991-3

#### Truth Table

Pin Names	Description
$\overline{OE}_1, \overline{OE}_2$	Output Enable Input (Active Low)
$I_0-I_7$	Inputs
$O_0-O_7$	Outputs

$\overline{OE}_1$	$I_0-3$	$O_0-3$	$\overline{OE}_2$	$I_4-7$	$O_4-7$
H	X	Z	H	X	Z
L	H	H	L	H	H
L	L	L	L	L	L

H = HIGH Voltage Level  
L = LOW Voltage Level

X = Immaterial  
Z = High Impedance

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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 <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 in the HIGH State	-0.5V to 5.5V -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

**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 Commercial	-40°C to +85°C
Supply Voltage Commercial	+4.5V to +5.5V
Minimum Input Edge Rate Data Input	(ΔV/Δt) 50 mV/ns
Enable Input	20 mV/ns

### DC Electrical Characteristics

Symbol	Parameter	ABT2244			Units	V <sub>CC</sub>	Conditions
		Min	Typ	Max			
V <sub>IH</sub>	Input HIGH Voltage	2.0			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	74ABT	2.5		V	Min	I <sub>OH</sub> = -3 mA
		74ABT	2.0		V	Min	I <sub>OH</sub> = -32 mA
V <sub>OL</sub>	Output LOW Voltage	74ABT		0.8	V	Min	I <sub>OL</sub> = 15 mA
I <sub>IH</sub>	Input HIGH Current			5 5	μA	Max	V <sub>IN</sub> = 2.7V (Note 2) 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			-5 -5	μA	Max	V <sub>IN</sub> = 0.5V (Note 2) V <sub>IN</sub> = 0.0V
V <sub>ID</sub>	Input Leakage Test	4.75			V	0.0	I <sub>ID</sub> = 1.9 μA All Other Pins Grounded
I <sub>OZH</sub>	Output Leakage Current			50	μA	0 - 5.5V	V <sub>OUT</sub> = 2.7V; $\overline{OE} = 2.0V$
I <sub>OZL</sub>	Output Leakage Current			-50	μA	0 - 5.5V	V <sub>OUT</sub> = 0.5V; $\overline{OE} = 2.0V$
I <sub>OS</sub>	Output Short-Circuit Current	-100		-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			30	mA	Max	All Outputs LOW
I <sub>CCZ</sub>	Power Supply Current			50	μA	Max	$\overline{OE} = V_{CC}$ All Others at V <sub>CC</sub> or GND
I <sub>CCT</sub>	Additional I <sub>CC</sub> /Input	Outputs Enabled	2.5		mA	Max	V <sub>I</sub> = V <sub>CC</sub> - 2.1V Enable Input V <sub>I</sub> = V <sub>CC</sub> - 2.1V Data Input V <sub>I</sub> = V <sub>CC</sub> - 2.1V All Others at V <sub>CC</sub> or GND
		Outputs TRI-STATE®	2.5		mA		
		Outputs TRI-STATE	50		μA		
I <sub>CCD</sub>	Dynamic I <sub>CC</sub> (Note 2)	No Load		0.1	mA/ MHz	Max	Outputs Open $\overline{OE} = GND$ (Note 1) One Bit Toggling, 50% Duty Cycle

**Note 1:** For 8 bits toggling, I<sub>CCD</sub> < 0.8 mA/MHz

**Note 2:** Guaranteed, but not tested

### AC Electrical Characteristics (SOIC and SSOP package)

Symbol	Parameter	74ABT			74ABT		Units
		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		
		Min	Typ	Max	Min	Max	
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay Data to Outputs	1.0	2.2	3.9	1.0	3.9	ns
		1.0	2.9	4.4	1.0	4.4	
t <sub>PZH</sub> t <sub>PZL</sub>	Output Enable Time	1.5	3.7	6.0	1.5	6.0	ns
		2.1	4.3	7.0	2.1	7.0	
t <sub>PHZ</sub> t <sub>PLZ</sub>	Output Disable Time	1.7	3.5	5.8	1.7	5.8	ns
		1.7	3.7	5.8	1.7	5.8	

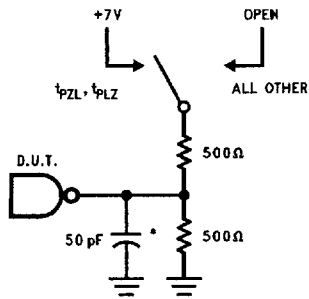
### Capacitance

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 1)	Output Capacitance	9.0	pF	V <sub>CC</sub> = 5.0V

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

: ■ 6501122 0083511 94T ■

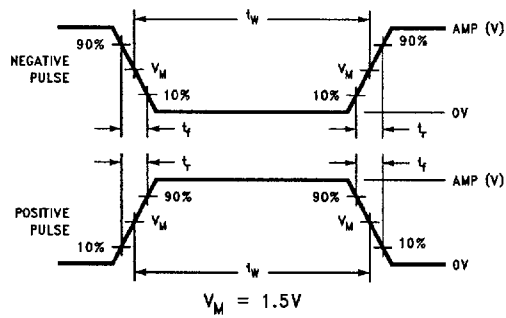
# AC Loading



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\*Includes jig and probe capacitance

FIGURE 1. Standard AC Test Load

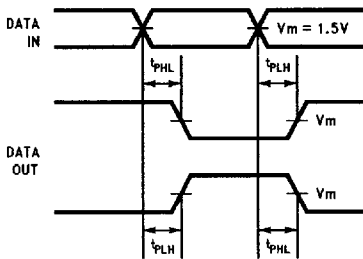


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FIGURE 2a. Test Input Signal Levels

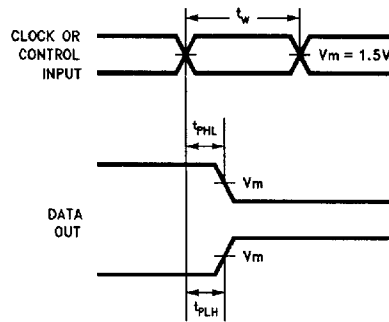
Amplitude	Rep. Rate	$t_w$	$t_r$	$t_f$
3.0V	1 MHz	500 ns	2.5 ns	2.5 ns

FIGURE 2b. Test Input Signal Requirements



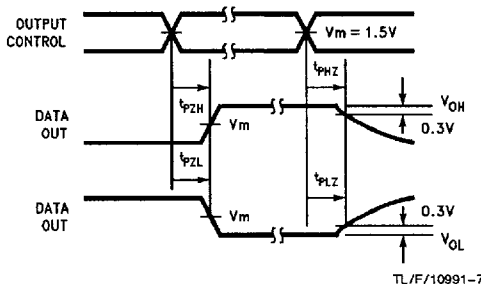
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FIGURE 3. Propagation Delay Waveforms for Inverting and Non-Inverting Functions



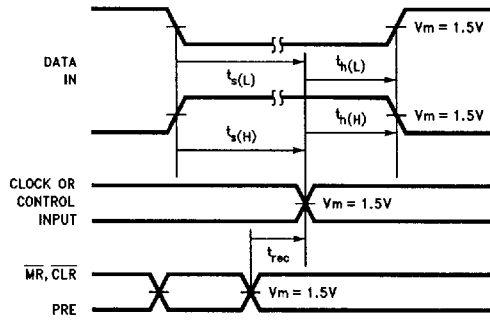
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FIGURE 4. Propagation Delay, Pulse Width Waveforms



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FIGURE 5. TRI-STATE Output HIGH and LOW Enable and Disable Times

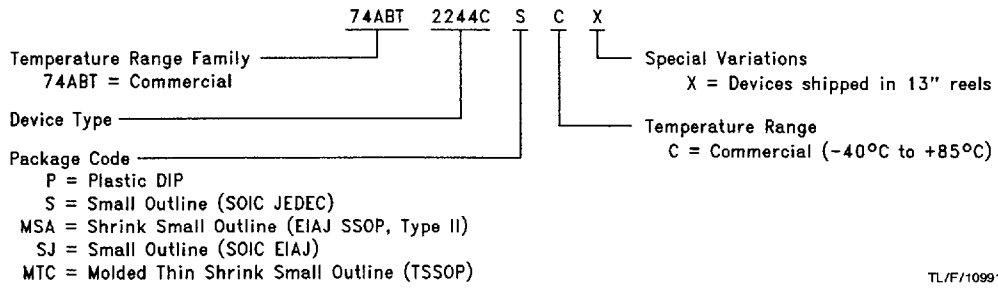


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FIGURE 6. Setup Time, Hold Time and Recovery Time Waveforms

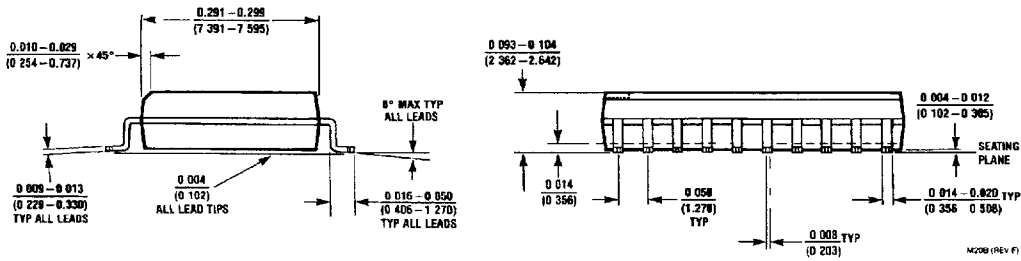
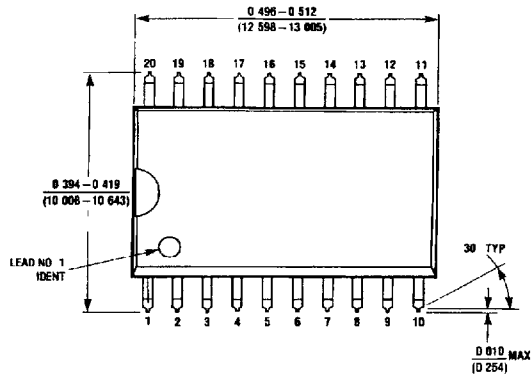
## Ordering Information

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

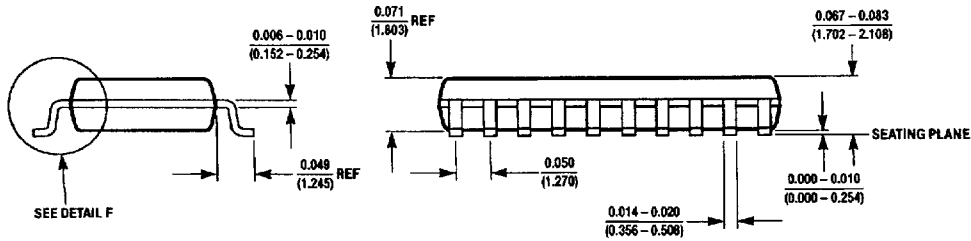
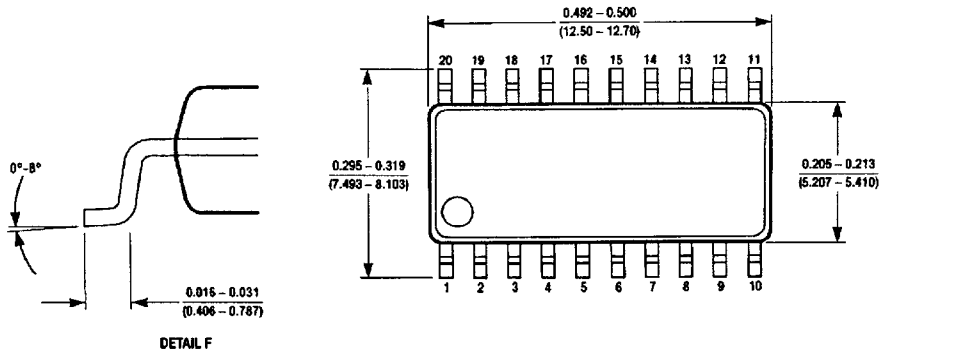


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**Physical Dimensions** inches (millimeters)

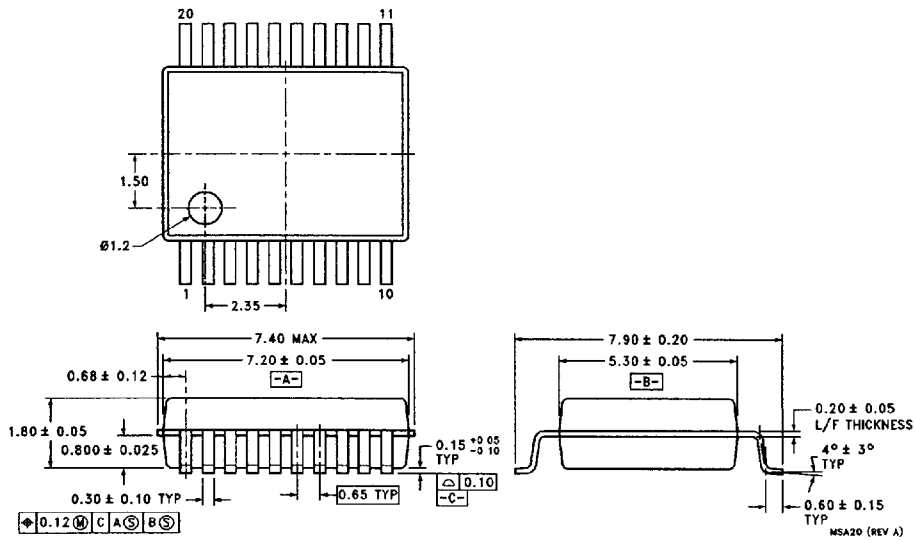


**20-Lead Small Outline Integrated Circuit JEDEC (S)**  
NS Package Number M20B

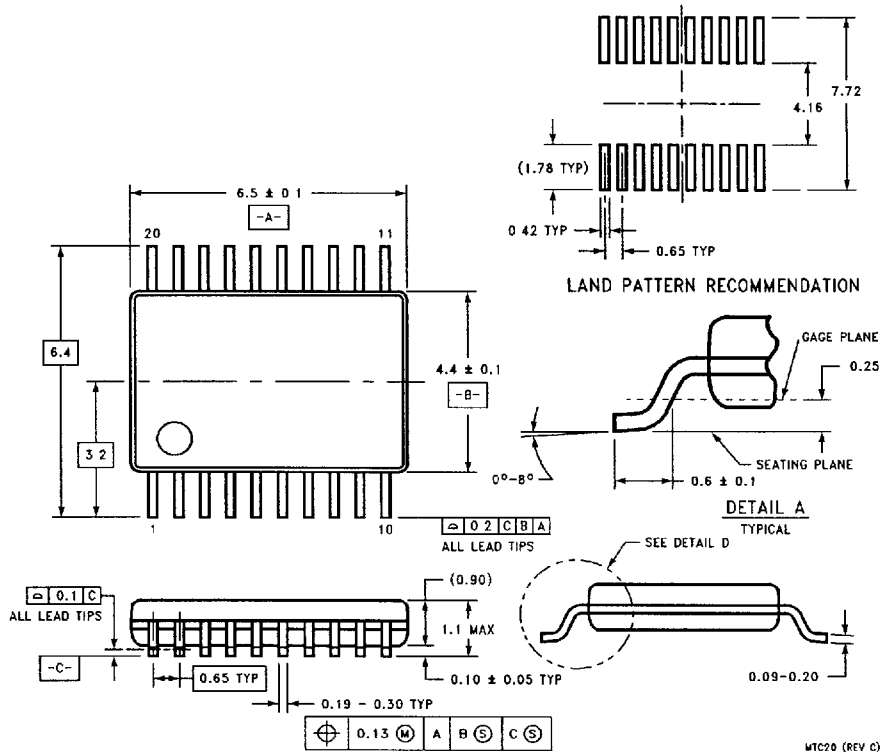


**20-Lead Small Outline Integrated Circuit EIAJ (SJ)**  
NS Package Number M20D

**Physical Dimensions** millimeters (Continued)

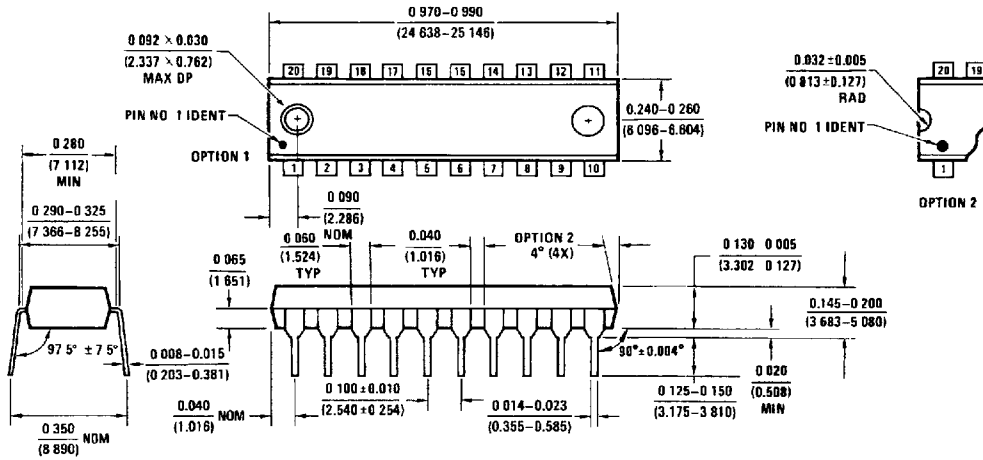


**20-Lead Plastic EIAJ SSOP, Type II (MSA)**  
NS Package Number MSA20



**20-Lead Molded Thin Shrink Small Outline Package, JEDEC**  
NS Package Number MTC20

**Physical Dimensions** inches (millimeters) (Continued)



**20-Lead Plastic Dual-In-Line Package (P)**  
NS Package Number N20B

NO26 (REV A)

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