![Texas Instruments logo] **TEXAS INSTRUMENTS**

54ABT244

54ABT244 Octal Buffer/Line Driver with TRI-STATE Outputs

Check for Samples: 54ABT244

FEATURES

- **Non-Inverting Buffers**
- **Output Sink Capability of 48 mA, Source Capability of 24 mA**
- **Output Switching Specified for Both 50 pF and 250 pF Loads**
- **Ensured Simultaneous Switching, Noise Level and Dynamic Threshold Performance**
- **Ensured 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**
- **Standard Microcircuit Drawing (SMD) 5962-9214701**

DESCRIPTION

The 'ABT244 is an octal buffer and line driver with TRI-STATE outputs designed to be employed as a memory and address driver, clock driver, or bus-oriented transmitter/receiver.
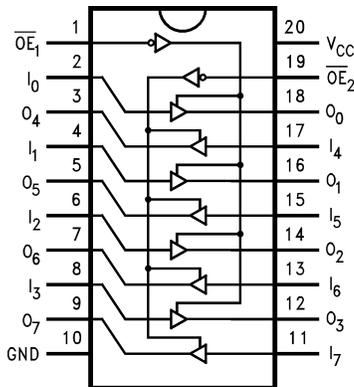
CONNECTION DIAGRAMS

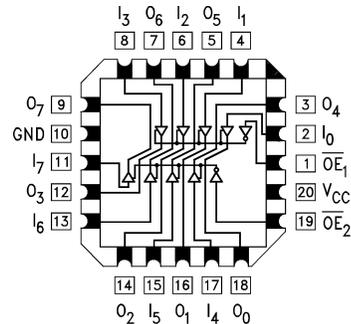**Figure 1. Pin Assignment for CDIP, and CLGA, See Package Number J, and NAF**

Figure 2. Pin Assignment for LCCC See Package Number NAJ

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

⚠ Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

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OBSOLETE

54ABT244

SNOS041B –JULY 1998–REVISED APRIL 2013

TEXAS
INSTRUMENTS

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TRUTH TABLE [1]

$\overline{OE}_1$	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

(1) H = HIGH Voltage Level
     L = LOW Voltage Level
     X = Immaterial
     Z = High Impedance

These devices have limited built-in ESD protection. The leads should be shorted together or the device placed in conductive foam during storage or handling to prevent electrostatic damage to the MOS gates.

ABSOLUTE MAXIMUM RATINGS [1][2]

Storage Temperature		−65°C to +150°C
Ambient Temperature under Bias		−55°C to +125°C
Junction Temperature under Bias	Ceramic	−55°C to +175°C
V_{CC} Pin Potential to Ground Pin		−0.5V to +7.0V
Input Voltage [3]		−0.5V to +7.0V
Input Current [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		−500 mA
Over Voltage Latchup (I/O)		10V

(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.
(2) If Military/Aerospace specified devices are required, please contact the Texas Instruments Sales Office/ Distributors for availability and specifications.
(3) Either voltage limit or current limit is sufficient to protect inputs.

RECOMMENDED OPERATING CONDITIONS

Free Air Ambient Temperature	Military	−55°C to +125°C
Supply Voltage	Military	+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		ABT244			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	54ABT	2.5			V	Min	I_{OH} = −3 mA
		54ABT	2.0			V	Min	I_{OH} = −24 mA
V_{OL}	Output LOW Voltage	54ABT			0.55	V	Min	I_{OL} = 48 mA
I_{IH}	Input HIGH Current				5	µA	Max	V_{IN} = 2.7V [1]
					5			V_{IN} = V_{CC}
I_{BVI}	Input HIGH Current Breakdown Test				7	µA	Max	V_{IN} = 7.0V

(1) Ensured, but not tested.

DC ELECTRICAL CHARACTERISTICS (continued)

Symbol	Parameter		ABT244			Units	V_{CC}	Conditions
			Min	Typ	Max			
I_{IL}	Input LOW Current				−5	µA	Max	V_{IN} = 0.5V [1]
					−5			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				30	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			2.5	mA	Max	V_I = V_{CC} − 2.1V
		Outputs TRI-STATE			2.5	mA		Enable Input V_I = V_{CC} − 2.1V
		Outputs TRI-STATE			50	µA		Data Input V_I = V_{CC} − 2.1V. All Others at V_{CC} or Ground
I_{CCD}	Dynamic I_{CC} [2]	No Load				mA/	Max	Outputs Open
					0.1	MHz		$\overline{OE}_n$ = GND, [3] One Bit Toggling, 50% Duty Cycle

(2)   Ensured, but not tested.
(3)   For 8 bits toggling, I_{CCD} < 0.8 mA/MHz.

AC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	54ABT T_A = −55°C to +125°C V_{CC} = 4.5V–5.5V C_L = 50 pF		Units	Fig. No.
		Min	Max		
t_{PLH}	Propagation Delay	1.0	5.3	ns	See Figure 24
t_{PHL}	Data to Outputs	1.0	5.0		
t_{PZH}	Output Enable	0.8	6.5	ns	See Figure 23
t_{PZL}	Time	1.2	7.9		
t_{PHZ}	Output Disable	1.2	7.6	ns	See Figure 23
t_{PLZ}	Time	1.0	7.9		

CAPACITANCE

| Symbol	Parameter	Typ	Units	Conditions T_A = 25°C
C_{IN}	Input Capacitance	5.0	pF	V_{CC} = 0V
C_{OUT}[1]	Output Capacitance	9.0	pF	V_{CC} = 5.0V

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

TYPICAL PERFORMANCE CURVES

Dashed lines represent design characteristics; for specified specifications refer to AC ELECTRICAL CHARACTERISTICS .

t_{PLH} vs Temperature (T_A)
C_L = 50 pF, 1 Output Switching

Figure 3.

t_{PHL} vs Temperature (T_A)
C_L = 50 pF, 1 Output Switching

Figure 4.

t_{PLH} vs Load Capacitance
1 Output Switching, T_A = 25°C

Figure 5.

t_{PHL} vs Load Capacitance
1 Output Switching, T_A = 25°C

Figure 6.

t_{PLH} vs Load Capacitance
8 Outputs Switching, T_A = 25°C

Figure 7.

t_{PHL} vs Load Capacitance
8 Outputs Switching, T_A = 25°C

Figure 8.

Product Folder Links: *54ABT244*

TYPICAL PERFORMANCE CURVES (continued)

Dashed lines represent design characteristics; for specified specifications refer to AC ELECTRICAL CHARACTERISTICS .

t_{PZL} vs Temperature (T_A)
C_L = 50 pF, 1 Output Switching

Figure 9.

t_{PLZ} vs Temperature (T_A)
C_L = 50 pF, 1 Output Switching

Figure 10.

t_{PZH} vs Temperature (T_A)
C_L = 50 pF, 1 Output Switching

Figure 11.

t_{PHZ} vs Temperature (T_A)
C_L = 50 pF, 1 Output Switching

Figure 12.

t_{PZH} vs Temperature (T_A)
C_L = 50 pF, 8 Outputs Switching

Figure 13.

t_{PHZ} vs Temperature (T_A)
C_L = 50 pF, 8 Outputs Switching
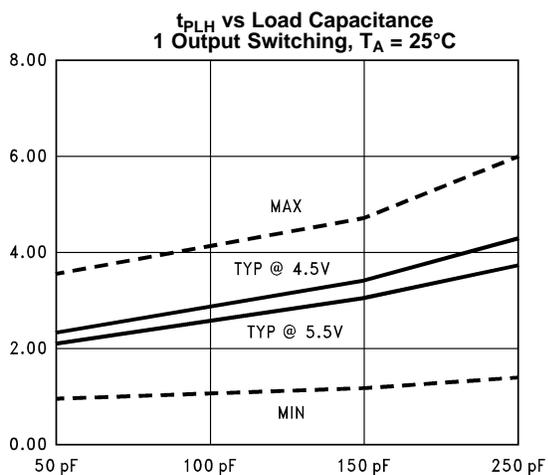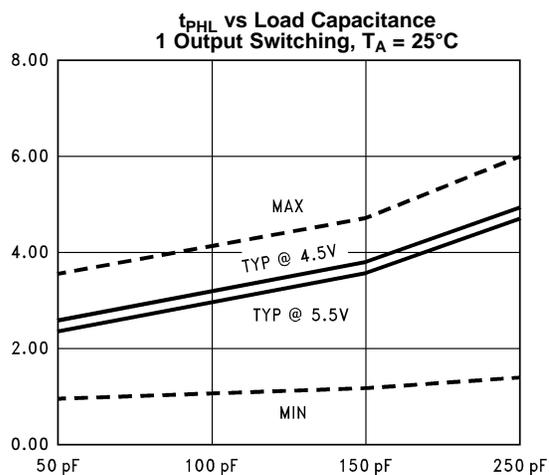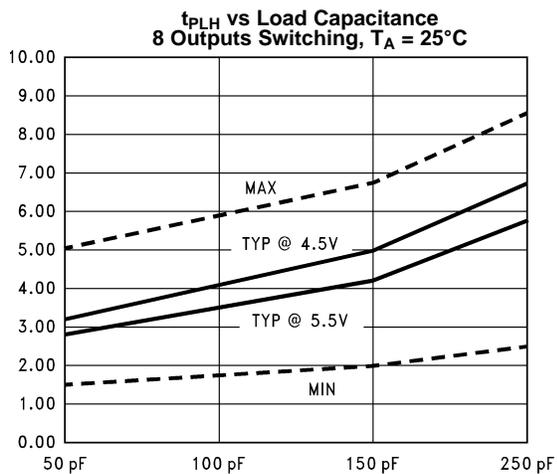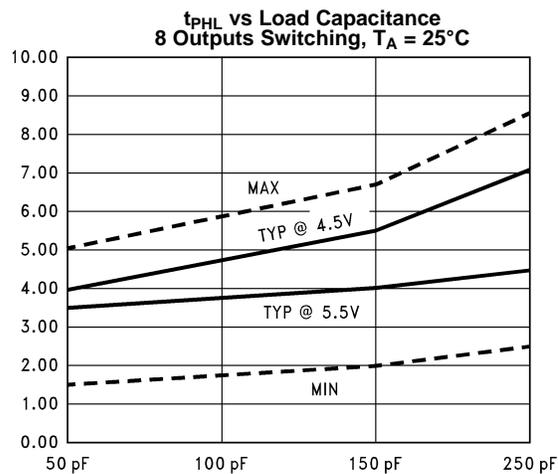
Figure 14.

TYPICAL PERFORMANCE CURVES (continued)
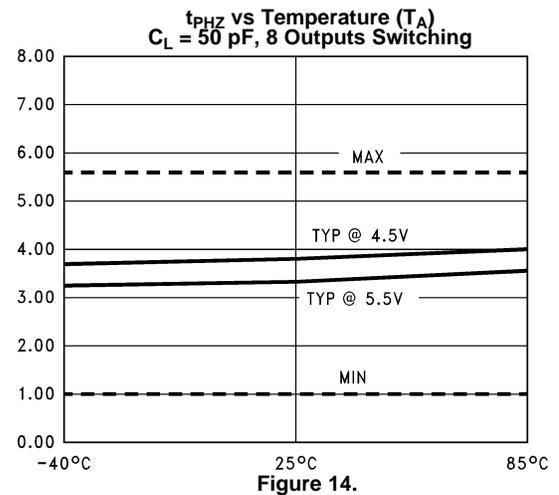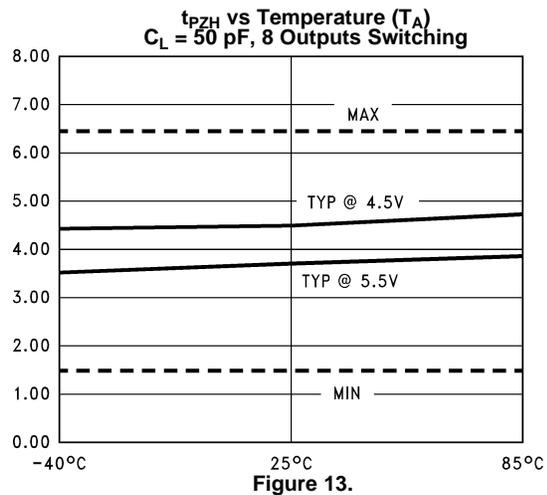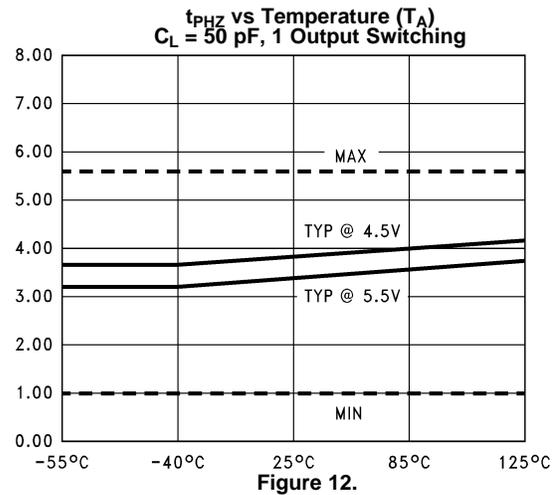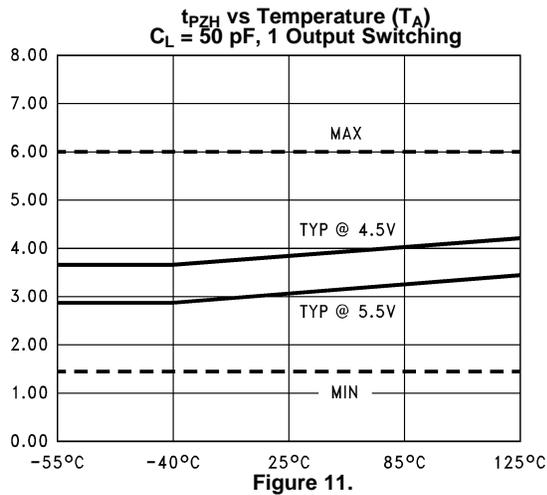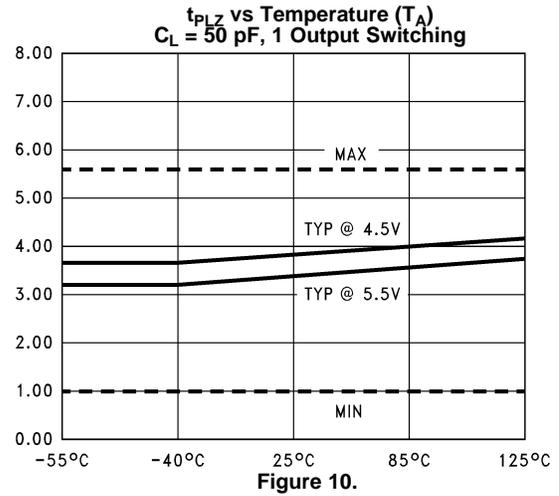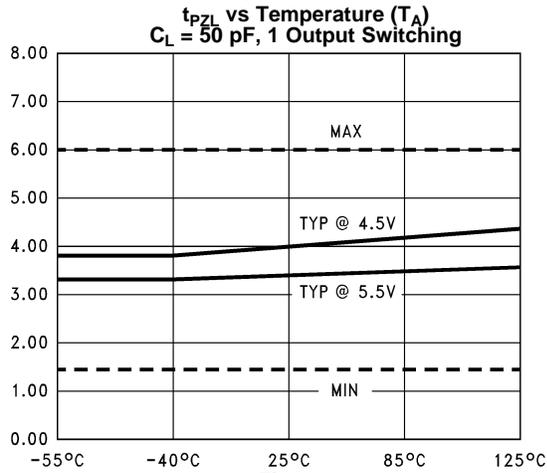
Dashed lines represent design characteristics; for specified specifications refer to AC ELECTRICAL CHARACTERISTICS .

Figure 15.

Figure 16.

Figure 17.

Figure 18.
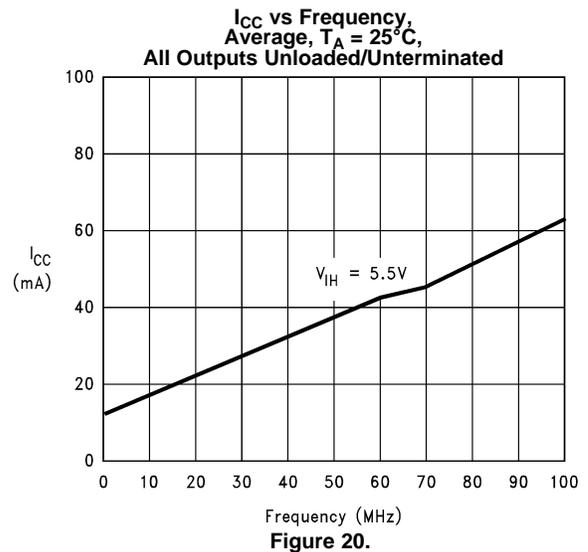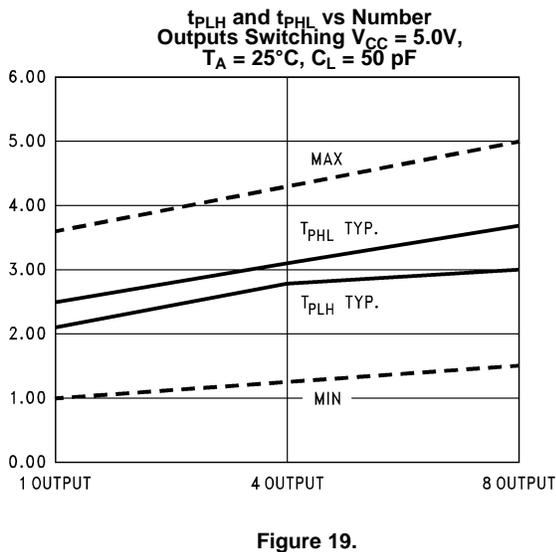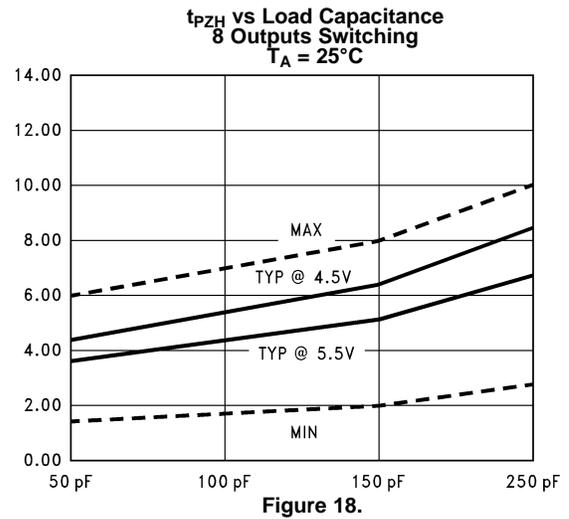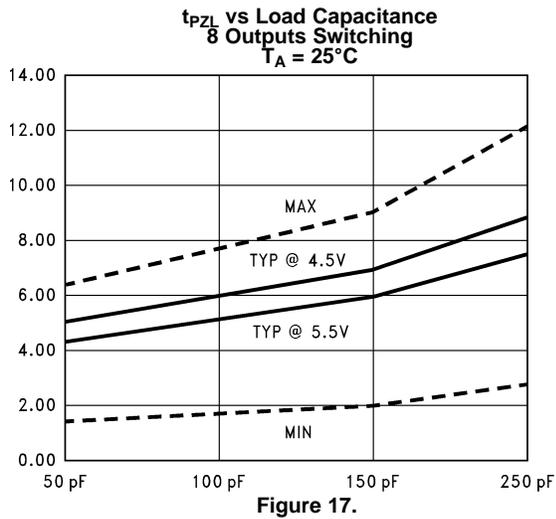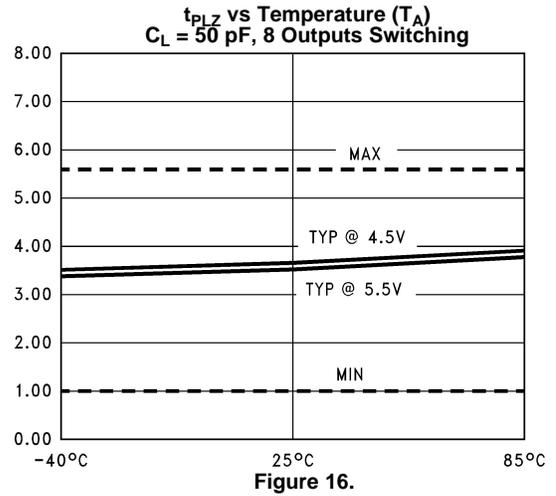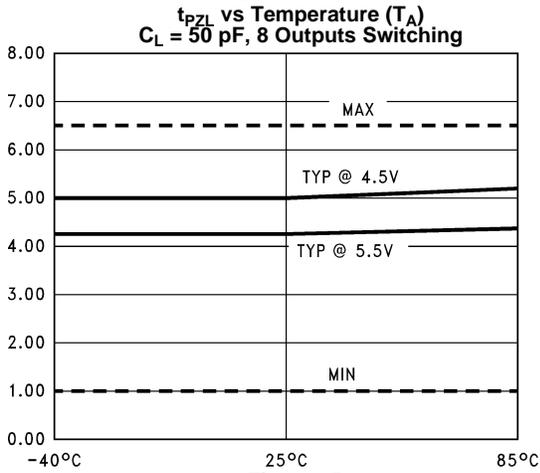
Figure 19.

Figure 20.

AC LOADING
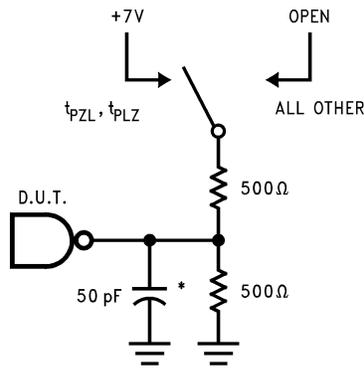
*Includes jig and probe capacitance

Figure 21. Standard AC Test Load

$V_M = 1.5V$
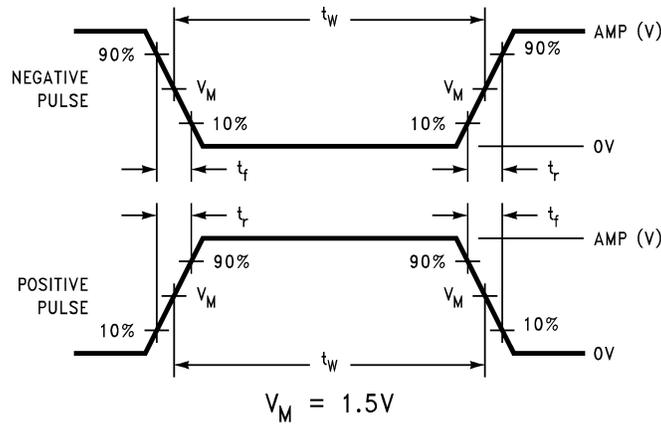
Figure 22. Test Input Signal Levels

Table 1. Test Input Signal Requirements

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

AC WAVEFORMS
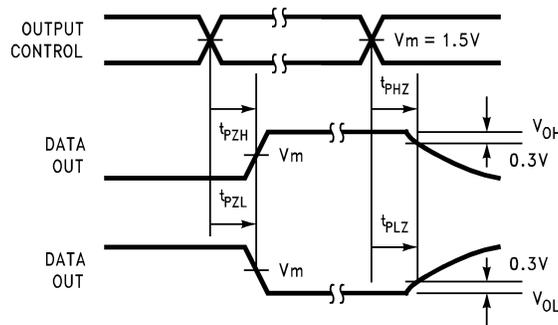
**Figure 23. TRI-STATE Output HIGH
and LOW Enable and Disable Times**

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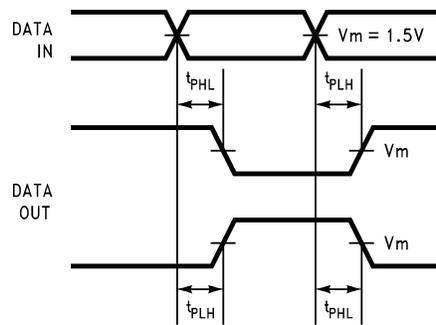
Figure 24. Propagation Delay Waveforms for Inverting and Non-Inverting Functions

Product Folder Links: *54ABT244*

REVISION HISTORY

Changes from Revision A (April 2013) to Revision B   **Page**

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