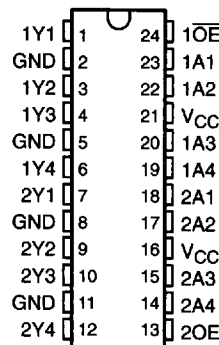


**SN74ABT25241**  
**25-Ω OCTAL BUFFER/DRIVER**  
**WITH 3-STATE OUTPUTS**

JUNE 1992 – REVISED JULY 1993

- State-of-the-Art EPIC-IIB™ BiCMOS Design Significantly Reduces Power Dissipation
- ESD Protection Exceeds 2000 V Per MIL-STD-883C, Method 3015; Exceeds 200 V Using Machine Model (C = 200 pF, R = 0)
- Latch-Up Performance Exceeds 500 mA Per JEDEC Standard JESD-17
- Typical  $V_{OLP}$  (Output Ground Bounce) < 1 V at  $V_{CC} = 5$  V,  $T_A = 25^\circ\text{C}$
- Designed to Facilitate Incident-Wave Switching for Line Impedances of 25 Ω or Greater
- Distributed  $V_{CC}$  and GND Pins Minimize Noise Generated by the Simultaneous Switching of Outputs
- Bus-Hold Inputs Eliminate the Need for External Pullup Resistors
- Package Options Include Plastic Small-Outline Packages and Standard Plastic 300-mil DIPs

DW OR NT PACKAGE  
(TOP VIEW)



**description**

The SN74ABT25241 is a 25-Ω octal buffer and line driver designed specifically to improve both the performance and density of 3-state memory address drivers, clock drivers, and bus-oriented transceivers.

The SN74ABT25241 contains complementary output-enable ( $1\overline{OE}$  and  $2OE$ ) inputs. When  $1\overline{OE}$  is low and  $2OE$  is high, the device transmits data from the A inputs to the Y outputs. When  $1\overline{OE}$  and  $2OE$  are high, the outputs are in the high-impedance state. Output-enable  $1\overline{OE}$  affects only the 1Y outputs; output-enable  $2OE$  affects only the 2Y outputs.

This buffer/driver is capable of sinking 188 mA of  $I_{OL}$  current, which facilitates switching 25-Ω transmission lines on the incident wave. The distributed  $V_{CC}$  and GND pins minimize switching noise for more reliable system operation.

Active bus-hold circuitry is provided to hold unused or floating inputs at a valid logic level.

To ensure the high-impedance state during power up or power down,  $\overline{OE}$  should be tied to  $V_{CC}$  through a pullup resistor; the minimum value of the resistor is determined by the current-sinking capability of the driver. OE should be tied to GND through a pulldown resistor; the minimum value of the resistor is determined by the current-sourcing capability of the driver.

The SN74ABT25241 is characterized for operation from  $-40^\circ\text{C}$  to  $85^\circ\text{C}$ .

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PRODUCT PREVIEW

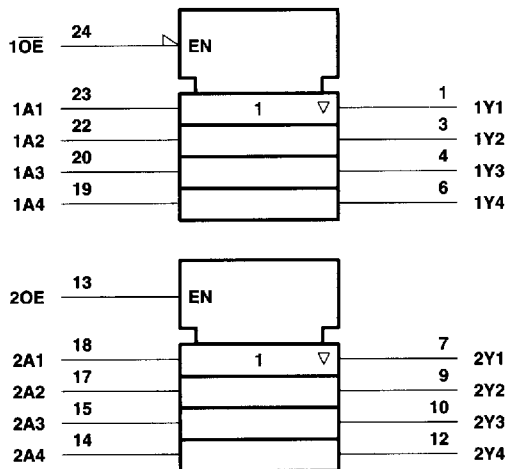
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FUNCTION TABLES

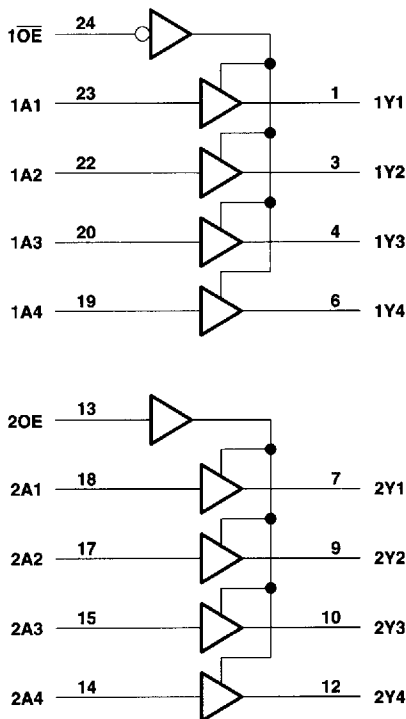
INPUTS		OUTPUT
$\overline{1OE}$	1A	1Y
L	H	H
L	L	L
H	X	Z

INPUTS		OUTPUT
$\overline{2OE}$	2A	2Y
H	H	H
H	L	L
L	X	Z

logic symbol†



logic diagram (positive logic)



† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

PRODUCT PREVIEW

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**absolute maximum ratings over operating free-air temperature range (unless otherwise noted)†**

Supply voltage range, $V_{CC}$ .....	-0.5 V to 7 V
Input voltage range, $V_I$ (see Note 1) .....	-0.5 V to 7 V
Voltage range applied to any output in the disabled or power-off state, $V_O$ .....	-0.5 V to 5.5 V
Voltage range applied to any output in the high state, $V_O$ .....	-0.5 V to $V_{CC}$
Input clamp current, $I_{IK}$ ( $V_I < 0$ ) .....	-18 mA
Output clamp current, $I_{OK}$ ( $V_O < 0$ ) .....	-50 mA
Current into any output in the low state, $I_O$ .....	376 mA
Operating free-air temperature range .....	-40°C to 85°C
Maximum power dissipation at $T_A = 55^\circ\text{C}$ (in still air): DW package .....	1 W
NT package .....	1.3 W
Storage temperature range .....	-65°C to 150°C

† Stresses beyond those listed under "absolute maximum ratings" 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.

NOTE 1: The input and output negative-voltage ratings may be exceeded if the input and output clamp-current ratings are observed.

**recommended operating conditions (see Note 2)**

		MIN	MAX	UNIT
$V_{CC}$	Supply voltage	4.5	5.5	V
$V_{IH}$	High-level input voltage	2		V
$V_{IL}$	Low-level input voltage		0.8	V
$V_I$	Input voltage	0	$V_{CC}$	V
$I_{IK}$	Input clamp current		-18	mA
$I_{OH}$	High-level output current		-80	mA
$I_{OL}$	Low-level output current		188	mA
$\Delta t/\Delta v$	Input transition rise or fall rate		10	ns/V
				Outputs enabled
$T_A$	Operating free-air temperature	-40	85	°C

NOTE 2: Unused or floating inputs must be held high or low.

**PRODUCT PREVIEW**



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**25-Ω OCTAL BUFFER/DRIVER**  
**WITH 3-STATE OUTPUTS**

JUNE 1992 - REVISED JULY 1993

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**electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)**

PARAMETER	TEST CONDITIONS		MIN	TYP†	MAX	UNIT
$V_{IK}$	$V_{CC} = 4.5\text{ V}$ ,	$I_I = -18\text{ mA}$			-1.2	V
$V_{OH}$	$V_{CC} = 4.5\text{ V}$ ,	$I_{OH} = -3\text{ mA}$	2.7			V
	$V_{CC} = 5\text{ V}$ ,	$I_{OH} = -80\text{ mA}$	2.4			
$V_{OL}$	$V_{CC} = 4.5\text{ V}$	$I_{OL} = 94\text{ mA}$			0.55	V
		$I_{OL} = 188\text{ mA}$			0.7	
$I_I$	$V_{CC} = 5.5\text{ V}$ ,	$V_I = V_{CC}$ or GND			±1	μA
$I_{OZH}$	$V_{CC} = 5.5\text{ V}$ ,	$V_O = 2.7\text{ V}$			50	μA
$I_{OZL}$	$V_{CC} = 5.5\text{ V}$ ,	$V_O = 0.5\text{ V}$			-50	μA
$I_{off}$	$V_{CC} = 0$ ,	$V_I$ or $V_O \leq 4.5\text{ V}$			±100	μA
$I_{CEX}$	$V_{CC} = 5.5\text{ V}$ ,	$V_O = 5.5\text{ V}$	Outputs high		50	μA
$I_O‡$	$V_{CC} = 5.5\text{ V}$ ,	$V_O = 2.5\text{ V}$	-50		180	mA
$I_{CC}$	$V_{CC} = 5.5\text{ V}$ , $V_I = V_{CC}$ or GND	Outputs open,	Outputs high		500	μA
			Outputs low		30	mA
			Outputs disabled		500	μA
$\Delta I_{CC}§$	$V_{CC} = 5.5\text{ V}$ , Other inputs at $V_{CC}$ or GND	One input at 3.4 V,			1	mA
$C_I$	$V_{CC} = 5\text{ V}$ ,	$V_I = V_{CC}$ or GND				pF
$C_O$	$V_{CC} = 5\text{ V}$ ,	$V_O = V_{CC}$ or GND				pF

† All typical values are at  $V_{CC} = 5\text{ V}$ ,  $T_A = 25^\circ\text{C}$ .

‡ 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 that is at the specified TTL voltage level rather than  $V_{CC}$  or GND.

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