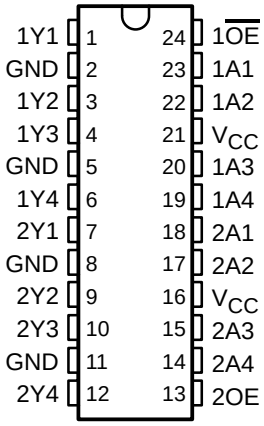
- **State-of-the-Art *EPIC*-IIB™ BiCMOS Design Significantly Reduces Power Dissipation**
- **ESD Protection Exceeds 2000 V Per MIL-STD-883C, Method 3015; Exceeds 200 V Using Machine Model (C = 200 pF, R = 0)**
- **Latch-Up Performance Exceeds 500 mA Per JEDEC Standard JESD-17**
- **Typical V_{OLP} (Output Ground Bounce) < 1 V at V_{CC} = 5 V, T_A = 25°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°C to 85°C.

PRODUCT PREVIEW

EPIC-IIB is a trademark of Texas Instruments Incorporated.

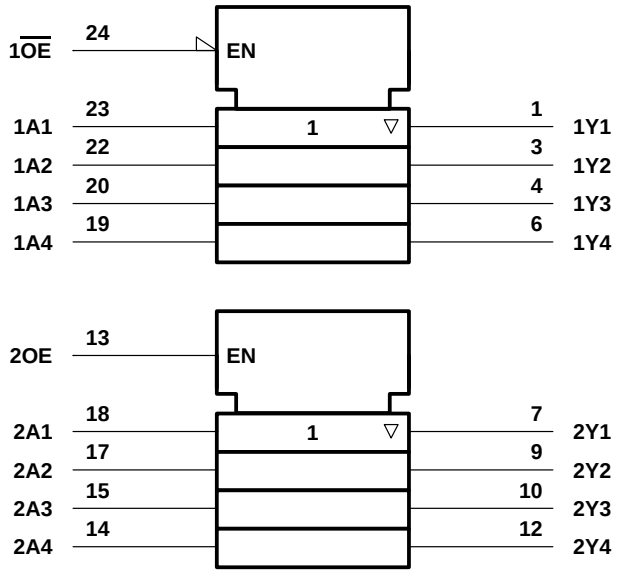
PRODUCT PREVIEW

FUNCTION TABLES

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

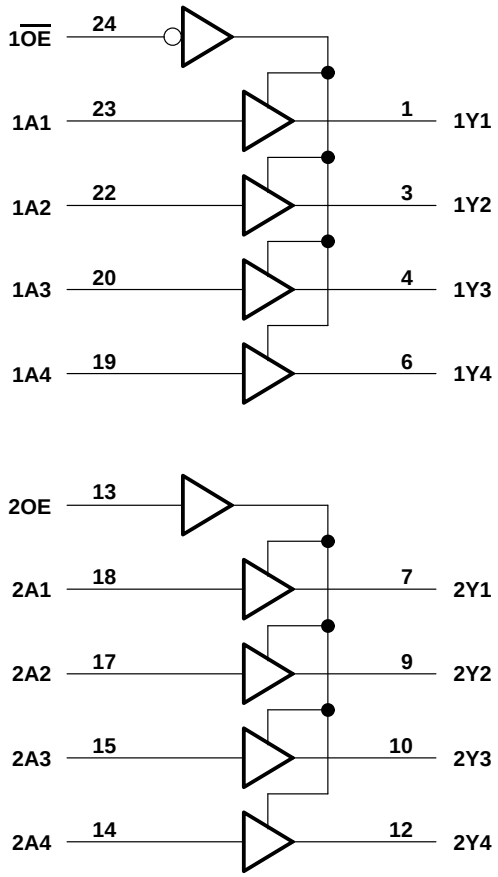
INPUTS		OUTPUT
2OE	2A	2Y
H	H	H
H	L	L
L	X	Z

logic symbol†



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

logic diagram (positive logic)



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°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	Outputs enabled		10	ns/V
T_A	Operating free-air temperature		–40	85	°C

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

PRODUCT PREVIEW

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 V,	I_I = –18 mA				–1.2	V
V_{OH}	V_{CC} = 4.5 V,	I_{OH} = – 3 mA		2.7			V
	V_{CC} = 5 V,	I_{OH} = – 80 mA		2.4			
V_{OL}	V_{CC} = 4.5 V	I_{OL} = 94 mA				0.55	V
		I_{OL} = 188 mA				0.7	
I_I	V_{CC} = 5.5 V,	V_I = V_{CC} or GND				±1	µA
I_{OZH}	V_{CC} = 5.5 V,	V_O = 2.7 V				50	µA
I_{OZL}	V_{CC} = 5.5 V,	V_O = 0.5 V				–50	µA
I_{off}	V_{CC} = 0,	V_I or V_O ≤ 4.5 V				±100	µA
I_{CEX}	V_{CC} = 5.5 V,	V_O = 5.5 V	Outputs high			50	µA
I_O‡	V_{CC} = 5.5 V,	V_O = 2.5 V		–50		180	mA
I_{CC}	V_{CC} = 5.5 V, V_I = V_{CC} or GND	Outputs open,	Outputs high			500	µA
			Outputs low			30	mA
			Outputs disabled			500	µA
ΔI_{CC}§	V_{CC} = 5.5 V, Other inputs at V_{CC} or GND	One input at 3.4 V,				1	mA
C_i	V_{CC} = 5 V,	V_I = V_{CC} or GND					pF
C_o	V_{CC} = 5 V,	V_O = V_{CC} or GND					pF

† All typical values are at V_{CC} = 5 V, T_A = 25°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.

PRODUCT PREVIEW

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