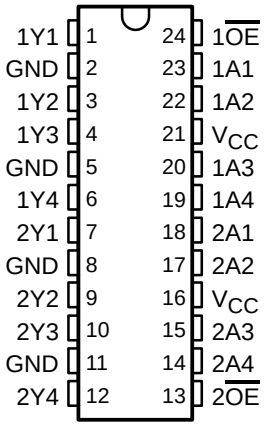
- **State-of-the-Art BiCMOS Design Significantly Reduces I_{CCZ}**
- **ESD Protection Exceeds 2000 V Per MIL-STD-883C, Method 3015; Exceeds 200 V Using Machine Model (C = 200 pF, R = 0)**
- **Designed to Facilitate Incident-Wave Switching for Line Impedances of 25 Ω or Greater**
- **Distributed V_{CC} and GND Pins Minimize Noise Generated by the Simultaneous Switching of Outputs**
- **Package Options Include Plastic Small-Outline (DW) Packages and Standard Plastic 300-mil DIPs (NT)**

DW OR NT PACKAGE
(TOP VIEW)



description

This 25-Ω octal buffers and line driver is designed specifically to improve both the performance and density of 3-state memory address drivers, clock drivers, and bus-oriented receivers and transmitters.

The SN74BCT25240 is capable of sinking 188-mA I_{OL}, 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.

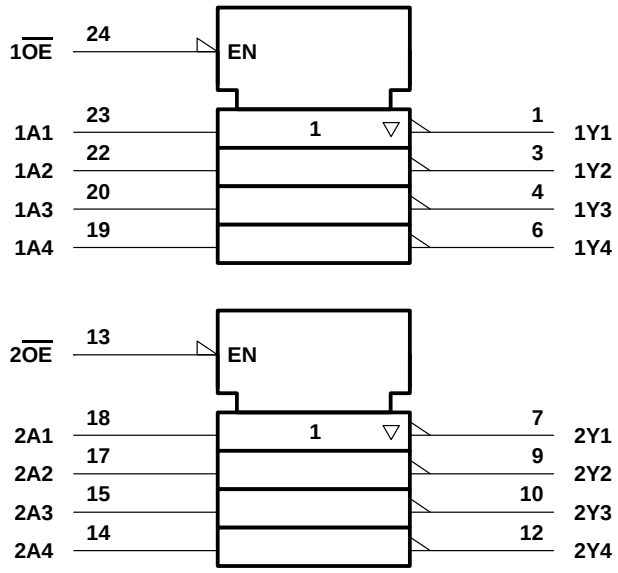
When the output-enable ($1\overline{OE}$ and $2\overline{OE}$) inputs are low, the device transmits the inverted A-input data to the Y outputs. When $1\overline{OE}$ and $2\overline{OE}$ are high, the outputs are in the high-impedance state. $1\overline{OE}$ affects only the 1Y outputs; $2\overline{OE}$ affects only the 2Y outputs.

The SN74BCT25240 is characterized for operation from 0°C to 70°C.

FUNCTION TABLE
(each buffer/driver)

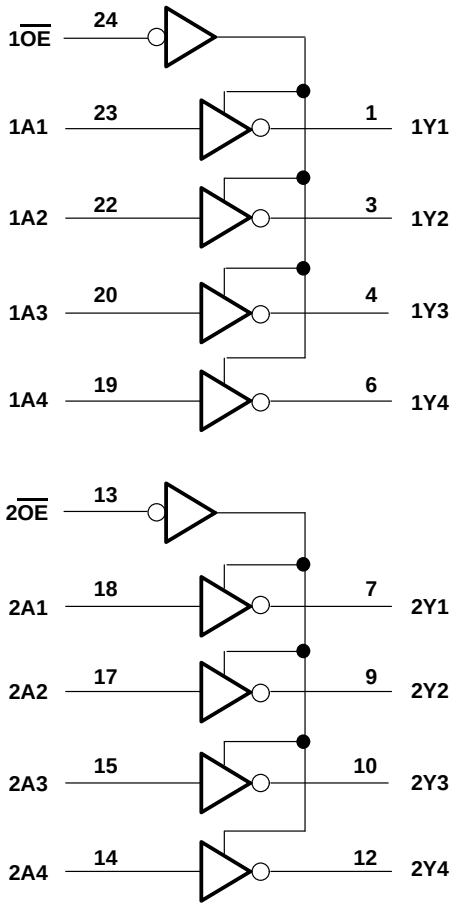
INPUTS		OUTPUT
$\overline{OE}$	A	Y
L	H	L
L	L	H
H	X	Z

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 applied to any output in the disabled or power-off state, V_O . . . . . –0.5 V to 5.5 V
Voltage applied to any output in the high state, V_O . . . . . –0.5 V to V_{CC}
Input clamp current, I_{IK} (V_I < 0) . . . . . –30 mA
Current into any output in the low state, I_O . . . . . 376 mA
Operating free-air temperature range . . . . . 0°C to 70°C
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 negative-voltage rating may be exceeded if the input clamp-current rating is observed.

recommended operating conditions (see Note 2)

		MIN	NOM	MAX	UNIT
V_{CC}	Supply voltage	4.5	5	5.5	V
V_{IH}	High-level input voltage	2			V
V_{IL}	Low-level input voltage			0.5	V
I_{IK}	Input clamp current			–18	mA
I_{OH}	High-level output current			–80	mA
I_{OL}	Low-level output current			188	mA
T_A	Operating free-air temperature	0		70	°C

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

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} = 4.75 V,	I_{OH} = – 3 mA	2.7			V
	V_{CC} = 4.5 V,	I_{OH} = – 80 mA	2			
V_{OL}	V_{CC} = 4.5 V	I_{OL} = 94 mA		0.42	0.55	V
		I_{OL} = 188 mA			0.7	
I_I	V_{CC} = 5.5 V,	V_I = 5.5 V			0.1	mA
I_{IH}	V_{CC} = 5.5 V,	V_I = 2.7 V			20	µA
I_{IL}	V_{CC} = 5.5 V,	V_I = 0.5 V			–0.6	mA
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_{CCL}	V_{CC} = 5.5 V,	Outputs open		90	127	mA
I_{CCH}	V_{CC} = 5.5 V,	Outputs open		39	55	mA
I_{CCZ}	V_{CC} = 5.5 V,	Outputs open		7	10	mA
C_i	V_{CC} = 5 V,	V_I = 2.5 V or 0.5 V		6.5		pF
C_o	V_{CC} = 5 V,	V_O = 2.5 V or 0.5 V		16.5		pF

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

switching characteristics over recommended ranges of supply voltage and operating free-air temperature, C_L = 50 pF (unless otherwise noted) (see Note 3)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V_{CC} = 5 V, T_A = 25°C			MIN	MAX	UNIT
			MIN	TYP	MAX			
t_{PLH}	A	Y	0.6	2.8	4.4	0.6	5	ns
t_{PHL}			0.5	2.1	3.6	0.5	3.7	
t_{PZH}	$\overline{OE}$	Y	1.8	4.3	6.2	1.8	7.2	ns
t_{PZL}			3.7	6.5	8.7	3.7	10.3	
t_{PHZ}	$\overline{OE}$	Y	1.2	3.9	5.7	1.2	6.7	ns
t_{PLZ}			2.7	5.8	8.2	2.7	8.9	

NOTE 3: Load circuits and voltage waveforms are shown in Section 1.

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