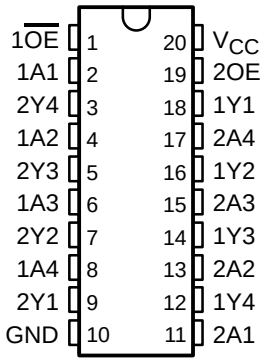
- **State-of-the-Art BiCMOS Design Significantly Reduces I_{CCZ}**
- **ESD Protection Exceeds 2000 V Per MIL-STD-883C, Method 3015**
- **Output Ports Have Equivalent 33-Ω Series Resistors, So No External Resistors Are Required**
- **3-State Outputs Drive Bus Lines or Buffer Memory Address Registers**
- **Package Options Include Plastic Small-Outline (DW) Packages and Standard Plastic 300-mil DIPs (N)**

DW OR N PACKAGE
(TOP VIEW)



description

These octal buffers and line drivers are designed specifically to improve both the performance and density of 3-state memory address drivers, clock drivers, and bus-oriented receivers and transmitters. Taken together with the ′BCT2240 and ′BCT2244, these devices provide the choice of selected combinations of inverting and noninverting outputs, symmetrical active-low output-enable ($\overline{OE}$) inputs, and complementary OE and $\overline{OE}$ inputs. These devices feature high fan-out and improved fan-in.

The outputs, which are designed to source or sink up to 12 mA, include 33-Ω series resistors to reduce overshoot and undershoot.

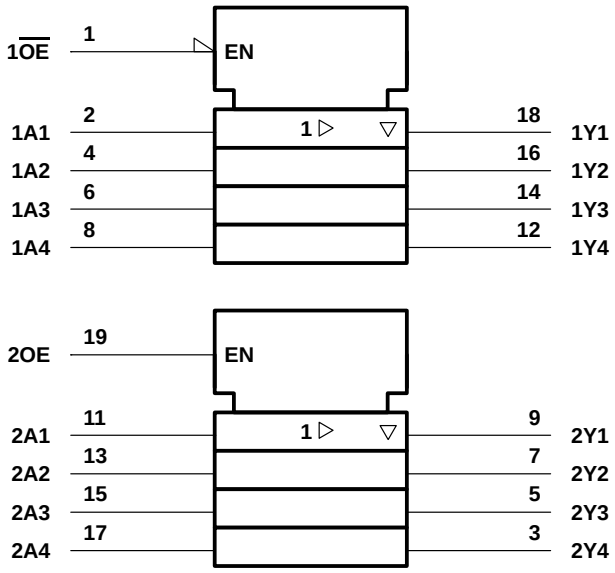
The SN74BCT2241 is characterized for operation from 0°C to 70°C.

FUNCTION TABLES

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

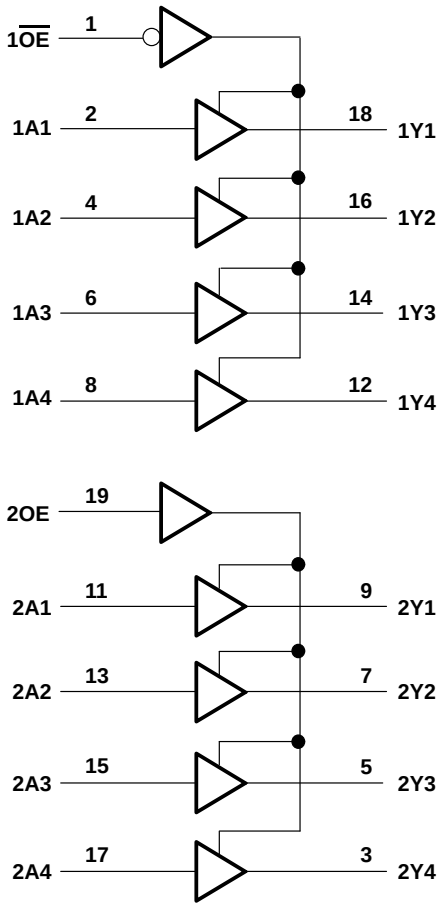
INPUTS		OUTPUT
2OE	2A	2Y
H	H	H
H	L	L
L	X	Z

logic symbol†

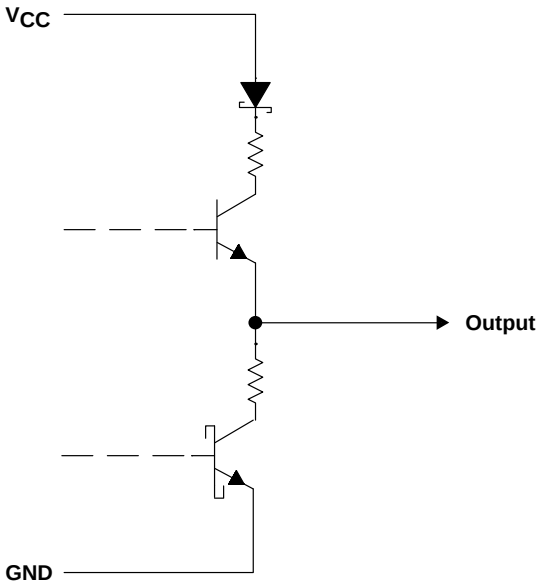


† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

logic diagram (positive logic)



schematic of Y outputs



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} . . . . . –30 mA
Current into any output in the low state, I_O . . . . . 24 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

		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			0.8	V
I_{IK}	Input clamp current			–18	mA
I_{OH}	High-level output current			–12	mA
I_{OL}	Low-level output current			12	mA
T_A	Operating free-air temperature	0		70	°C

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} = –1 mA	2.4	3.3		V
		I_{OH} = –12 mA	2			
	V_{CC} = 4.75 V,	I_{OH} = –3 mA	2.7			
V_{OL}	V_{CC} = 4.5 V	I_{OL} = 1 mA		0.15	0.5	V
		I_{OL} = 12 mA		0.42	0.8	
I_I	V_{CC} = 5.5 V,	V_I = 7 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			–1	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_{OS}‡	V_{CC} = 5.5 V,	V_O = 0	–100		–225	mA
I_{CCH}	V_{CC} = 5.5 V,	Outputs open		23	37	mA
I_{CCL}	V_{CC} = 5.5 V,	Outputs open		48	76	mA
I_{CCZ}	V_{CC} = 5.5 V,	Outputs open		6	9	mA
C_i	V_{CC} = 5 V,	V_I = 2.5 V or 0.5 V		6		pF
C_o	V_{CC} = 5 V,	V_O = 2.5 V or 0.5 V		11		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.

switching characteristics over recommended ranges of supply voltage and operating free-air temperature, C_L = 50 pF (unless otherwise noted) (see Note 2)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V_{CC} = 5 V, T_A = 25°C			MIN	MAX	UNIT
			MIN	TYP	MAX			
t_{PLH}	A	Y	1.1	3	4.4	1.1	4.9	ns
t_{PHL}			2.9	4.9	6.6	2.9	6.9	
t_{PZH}	OE or $\overline{OE}$	Y	2.7	6	7.8	2.7	8.9	ns
t_{PZL}			4.1	7.7	9.4	4.1	10.3	
t_{PHZ}	OE or $\overline{OE}$	Y	2.5	5.2	7.2	2.5	8.7	ns
t_{PLZ}			3.2	7.1	9.5	3.2	11.3	

NOTE 2: Load circuit and voltage waveforms are shown in Section 1.

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