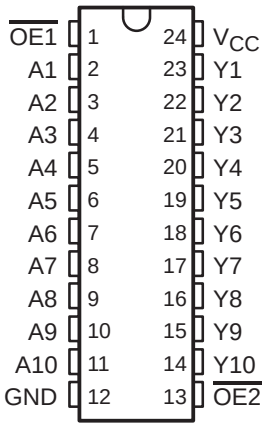
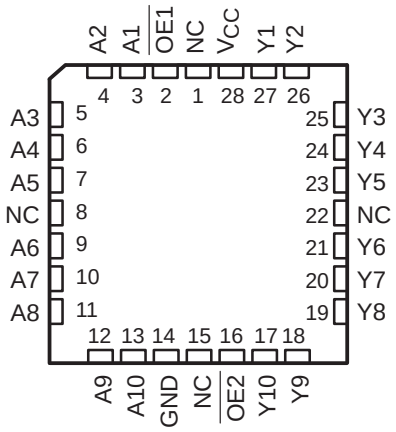
- **State-of-the-Art BiCMOS Design Significantly Reduces I_{CCZ}**
- **ESD Protection Exceeds 2000 V Per MIL-STD-883C, Method 3015; Exceeds 200 V Using Machine Model (C = 200 pF, R = 0)**
- **3-State Inverting Outputs Drive Bus Lines or Buffer Memory Address Registers**
- **P-N-P Inputs Reduce dc Loading**
- **Flow-Through Architecture Optimizes PCB Layout**
- **Package Options Include Plastic Small-Outline (DW) Packages, Ceramic Chip Carriers (FK) and Flatpacks (W), and Standard Plastic and Ceramic 300-mil DIPs (JT, NT)**

SN54BCT29828B . . . JT OR W PACKAGE
SN74BCT29828B . . . DW OR NT PACKAGE
(TOP VIEW)



SN54BCT29828B . . . FK PACKAGE
(TOP VIEW)



NC – No internal connection

description

These 10-bit buffers and bus drivers provide high-performance bus interface for wide data paths or buses carrying parity.

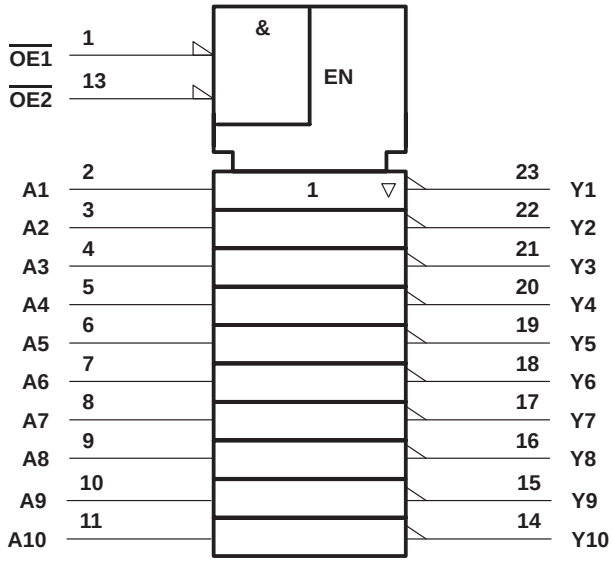
The 3-state control gate is a 2-input AND gate with active-low inputs so that if either output-enable ($\overline{OE1}$ or $\overline{OE2}$) input is high, all ten outputs are in the high-impedance state. The outputs are also in the high-impedance state during power-up and power-down conditions. The outputs remain in the high-impedance state while the device is powered down.

The SN54BCT29828B is characterized for operation over the full military temperature range of –55°C to 125°C. The SN74BCT29828B is characterized for operation from 0°C to 70°C.

FUNCTION TABLE

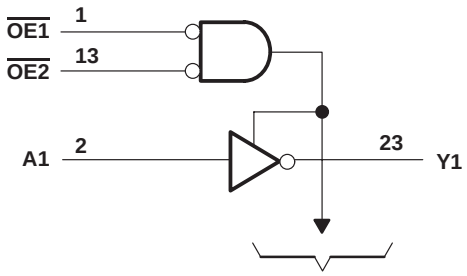
INPUTS			OUTPUT
$\overline{OE1}$	$\overline{OE2}$	A	Y
L	L	L	H
L	L	H	L
H	X	X	Z
X	H	X	Z

logic symbol†



† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.
Pin numbers shown are for the DW, JT, NT, and W packages.

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) . . . . . –30 mA
Current into any output in the low state, I_O: SN54BCT29828B . . . . . 48 mA
SN74BCT29828B . . . . . 96 mA
Operating free-air temperature range: SN54BCT29828B . . . . . –55°C to 125°C
SN74BCT29828B . . . . . 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 and output negative-voltage ratings may be exceeded if the input and output clamp-current ratings are observed.

recommended operating conditions

		SN54BCT29828B			SN74BCT29828B			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V_{CC}	Supply voltage	4.5	5	5.5	4.5	5	5.5	V
V_{IH}	High-level input voltage	2			2			V
V_{IL}	Low-level input voltage			0.8			0.8	V
I_{IK}	Input clamp current			–18			–18	mA
I_{OH}	High-level output current			–15			–24	mA
I_{OL}	Low-level output current			24			48	mA
T_A	Operating free-air temperature	–55		125	0		70	°C

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

PARAMETER	TEST CONDITIONS		SN54BCT29828B			SN74BCT29828B			UNIT
			MIN	TYP†	MAX	MIN	TYP†	MAX	
V_{IK}	V_{CC} = 4.5 V,	I_I = –18 mA			–1.2			–1.2	V
V_{OH}	V_{CC} = 4.5 V	I_{OH} = –15 mA	2	3.2		2.4	3.3		V
		I_{OH} = – 24 mA				2	3.1		
	V_{CC} = 4.75 V,	I_{OH} = –3 mA				2.7			
V_{OL}	V_{CC} = 4.5 V	I_{OL} = 24 mA		0.38	0.55				V
		I_{OL} = 48 mA					0.42	0.5	
I_I	V_{CC} = 5.5 V,	V_I = 7 V			0.1			0.1	mA
I_{IH}	V_{CC} = 5.5 V,	V_I = 2.7 V			20			20	µA
I_{IL}	V_{CC} = 5.5 V,	V_I = 0.5 V			–0.2			–0.2	mA
I_{OS}‡	V_{CC} = 5.5 V,	V_O = 0	–75		–250	–75		–250	mA
I_{OZH}	V_{CC} = 5.5 V,	V_O = 2.7 V			20			20	µA
I_{OZL}	V_{CC} = 5.5 V,	V_O = 0.5 V			–20			–20	µA
I_{CCL}	V_{CC} = 5.5 V,	Outputs open		28			28	40	mA
I_{CCH}	V_{CC} = 5.5 V,	Outputs open		15			15	25	mA
I_{CCZ}	V_{CC} = 5.5 V,	Outputs open		3.5			3.5	6	mA
C_i	V_{CC} = 5 V,	V_I = 2.5 V or 0.5 V		4.5			4.5		pF
C_o	V_{CC} = 5 V,	V_O = 2.5 V or 0.5 V		7			7		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			SN54BCT29828B		SN74BCT29828B		UNIT
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t_{PLH}	A	Y	1	3.3	5.2	1	6.3	1	5.9	ns
t_{PHL}			1	2.7	4.2	1	4.9	1	4.5	
t_{PZH}	$\overline{OE}$	Y	2	5.3	7.7	2	9.2	2	8.6	ns
t_{PZL}			2	8.5	10.2	2	12.7	2	11.9	
t_{PHZ}	$\overline{OE}$	Y	2	5.4	7.6	2	9.4	2	8.7	ns
t_{PLZ}			2	5.1	6.8	2	9	2	8.1	

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

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