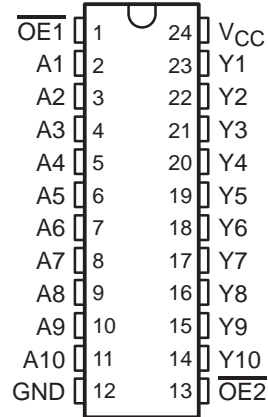


# SN54BCT2827C, SN74BCT2827C 10-BIT BUS/MOS MEMORY DRIVERS WITH 3-STATE OUTPUTS

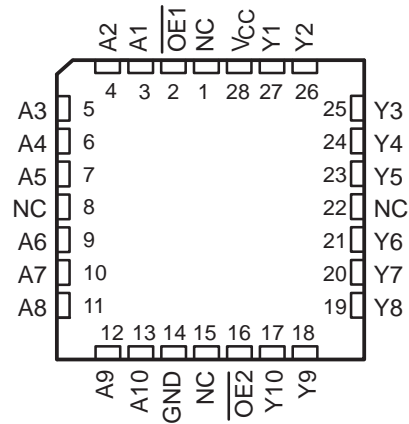
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- BiCMOS Design Substantially Reduces  $I_{CCZ}$
- Output Ports Have Equivalent 25- $\Omega$  Resistors; No External Resistors Are Required
- Specifically Designed to Drive MOS DRAMs
- 3-State Outputs Drive Bus Lines or Buffer Memory Address Registers
- Flow-Through Architecture Optimizes PCB Layout
- Power-Up High-Impedance State
- ESD Protection Exceeds 2000 V Per MIL-STD-883C, Method 3015
- 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)

SN54BCT2827C . . . JT OR W PACKAGE  
SN74BCT2827C . . . DW OR NT PACKAGE  
(TOP VIEW)



SN54BCT2827C . . . FK PACKAGE  
(TOP VIEW)



NC - No internal connection

## description

These 10-bit buffers and bus drivers are specifically designed to drive the capacitive input characteristics of MOS DRAMs. They 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 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 SN54BCT2827C is characterized for operation over the full military temperature range of  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ . The SN74BCT2827C is characterized for operation from  $0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .

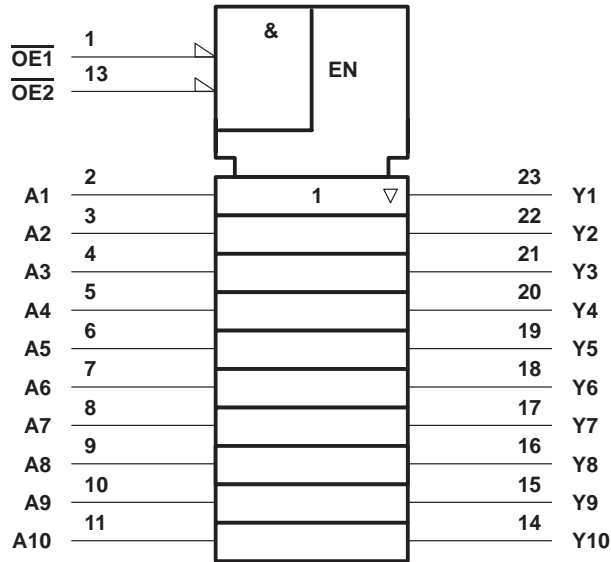
FUNCTION TABLE

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

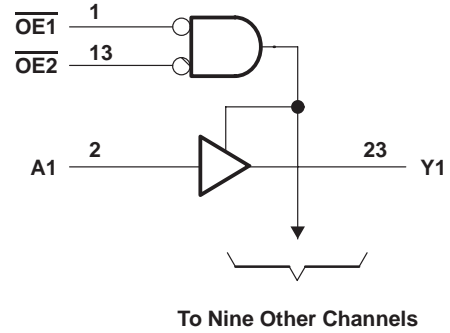
# SN54BCT2827C, SN74BCT2827C 10-BIT BUS/MOS MEMORY DRIVERS WITH 3-STATE OUTPUTS

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## logic symbol†



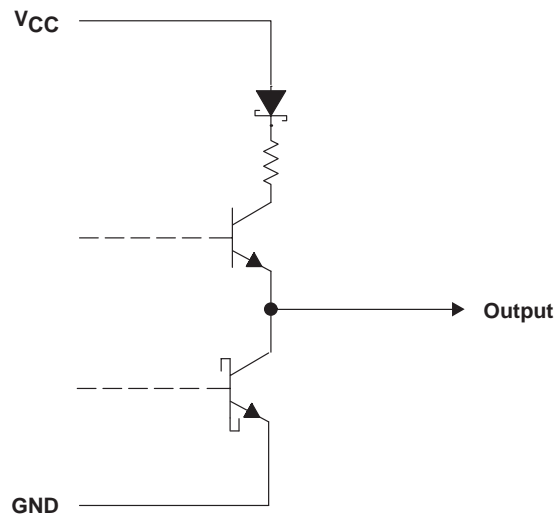
## logic diagram (positive logic)



† 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.

## schematic of each output



# SN54BCT2827C, SN74BCT2827C 10-BIT BUS/MOS MEMORY DRIVERS WITH 3-STATE OUTPUTS

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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, $I_{IK}$ .....	–30 mA
Current into any output in the low state .....	24 mA
Operating free-air temperature range: SN54BCT2827C .....	–55°C to 125°C
SN74BCT2827C .....	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

		SN54BCT2827C			SN74BCT2827C			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			–1			–1	mA
$I_{OL}$	Low-level output current			12			12	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	SN54BCT2827C			SN74BCT2827C			UNIT
		MIN	TYP‡	MAX	MIN	TYP‡	MAX	
$V_{IK}$	$V_{CC} = 4.5\text{ V}$ , $I_I = -18\text{ mA}$			–1.2			–1.2	V
$V_{OH}$	$V_{CC} = 4.5\text{ V to } 5.5\text{ V}$ , $I_{OH} = -1\text{ mA}$	$V_{CC}-2$			$V_{CC}-2$			V
$V_{OL}$	$V_{CC} = 4.5\text{ V}$		0.15	0.5		0.15	0.5	V
			0.35	0.8		0.35	0.8	
$I_{OZH}$	$V_{CC} = 5.5\text{ V}$ , $V_O = 2.7\text{ V}$			20			20	μA
$I_{OZL}$	$V_{CC} = 5.5\text{ V}$ , $V_O = 0.5\text{ V}$			–20			–20	μA
$I_{OL(sink)}$	$V_{CC} = 4.5\text{ V}$ , $V_O = 2\text{ V}$	50			50			mA
$I_I$	$V_{CC} = 5.5\text{ V}$ , $V_I = 7\text{ V}$			0.1			0.1	mA
$I_{IH}$	$V_{CC} = 5.5\text{ V}$ , $V_I = 2.7\text{ V}$			20			20	μA
$I_{IL}$	$V_{CC} = 5.5\text{ V}$ , $V_I = 0.5\text{ V}$			–0.2			–0.2	mA
$I_{O§}$	$V_{CC} = 5.5\text{ V}$ , $V_O = 2.25\text{ V}$	–30		–112	–30		–112	mA
$I_{CCL}$	$V_{CC} = 5.5\text{ V}$ , Outputs open		28	40		28	40	mA
$I_{CCZ}$	$V_{CC} = 5.5\text{ V}$ , Outputs open		3.8	6		3.8	6	mA
$C_i$	$V_{CC} = 5\text{ V}$ , $V_I = 2.5\text{ V or } 0.5\text{ V}$		5			5		pF
$C_o$	$V_{CC} = 5\text{ V}$ , $V_I = 2.5\text{ V or } 0.5\text{ V}$		8			8		pF

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

§ The output conditions have been chosen to produce a current that closely approximates one half of the true short circuit output current,  $I_{OS}$ .



# SN54BCT2827C, SN74BCT2827C 10-BIT BUS/MOS MEMORY DRIVERS WITH 3-STATE OUTPUTS

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## switching characteristics (see Note 2)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V <sub>CC</sub> = 5 V, C <sub>L</sub> = 50 pF, R1 = 500 Ω, R2 = 500 Ω, T <sub>A</sub> = 25°C			V <sub>CC</sub> = 4.5 V to 5.5 V, C <sub>L</sub> = 50 pF, R1 = 500 Ω, R2 = 500 Ω, T <sub>A</sub> = MIN to MAX†				UNIT
			'BCT2827C			SN54BCT2827C		SN74BCT2827C		
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t <sub>PLH</sub>	A	Y	0.9	3.6	5.2	0.9	6.6	0.9	6	ns
t <sub>PHL</sub>			2	5.1	7.2	2	8.2	2	7.8	
t <sub>PZH</sub>	$\overline{\text{OE}}$	Y	2.8	5.6	8	2.8	10.7	2.8	10.7	ns
t <sub>PZL</sub>			5	8.9	11	5	13.7	5	12.9	
t <sub>PHZ</sub>	$\overline{\text{OE}}$	Y	3.2	6.7	8.5	3.2	14	3.2	13	ns
t <sub>PLZ</sub>			2.7	5.3	10.5	2.7	11	2.7	10	

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

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

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## SN74BCT2827C, 10-Bit Bus/MOS Memory Drivers With 3-State Outputs

DEVICE STATUS: **ACTIVE**

PARAMETER NAME	SN74BCT2827C
Voltage Nodes (V)	5
Vcc range (V)	4.5 to 5.5
Input Level	TTL
Output Level	TTL
Output Drive (mA)	-1/12
tpd max (ns)	7.8
Static Current	40

### FEATURES

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- BiCMOS Design Substantially Reduces  $I_{CCZ}$
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- Specifically Designed to Drive MOS DRAMs
- 3-State Outputs Drive Bus Lines or Buffer Memory Address Registers
- Flow-Through Architecture Optimizes PCB Layout
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- ESD Protection Exceeds 2000 V Per MIL-STD-883C, Method 3015
- 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)

### DESCRIPTION

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These 10-bit buffers and bus drivers are specifically designed to drive the capacitive input characteristics of MOS DRAMs. They 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 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 SN54BCT2827C is characterized for operation over the full military temperature range of -55°C to 125°C. The SN74BCT2827C is characterized for operation from 0°C to 70°C.

### TECHNICAL DOCUMENTS

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To view the following documents, [Acrobat Reader 4.0](#) is required.

To download a document to your hard drive, right-click on the link and choose 'Save'.

### DATASHEET

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Full datasheet in Acrobat PDF: [sn74bct2827c.pdf](#) (74 KB, Rev.E) (Updated: 01/01/1991)

### APPLICATION NOTES

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- [Bus-Interface Devices With Output-Damping Resistors Or Reduced-Drive Outputs \(Rev. A\)](#) (SCBA012A - Updated: 08/01/1997)
- [Designing With Logic \(Rev. C\)](#) (SDYA009C - Updated: 06/01/1997)
- [Evaluation of Nickel/Palladium/Gold-Finished Surface-Mount Integrated Circuits \(SZZA026\)](#) - Updated: 06/20/2001)
- [Implications of Slow or Floating CMOS Inputs \(Rev. C\)](#) (SCBA004C - Updated: 02/01/1998)
- [Input and Output Characteristics of Digital Integrated Circuits](#) (SDYA010 - Updated: 10/01/1996)
- [Live Insertion](#) (SDYA012 - Updated: 10/01/1996)
- [Timing Differences of 10-pF Versus 50pF Loading](#) (SCEA004 - Updated: 11/01/1996)

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- [Logic Reference Guide](#) (SCYB004, 1032 KB - Updated: 10/23/2001)
- [Logic Selection Guide Second Half 2002 \(Rev. R\)](#) (SDYU001R, 4274 KB - Updated: 07/19/2002)
- [Military Semiconductors Selection Guide 2002 \(Rev. B\)](#) (SGYC003B, 1648 KB - Updated: 04/22/2002)

**PRICING/AVAILABILITY/PKG**[▲Back to Top](#)

DEVICE INFORMATION							TI INVENTORY STATUS AS OF 3:00 PM GMT, 26 Sep 2002			REPORTED DISTRIBUTOR INVENTORY AS OF 3:00 PM GMT, 26 Sep 2002		
ORDERABLE DEVICE	STATUS	PACKAGE TYPE PINS	TEMP (°C)	PRODUCT CONTENT	BUDGETARY PRICING QTY   SUS	STD PACK QTY	IN STOCK	IN PROGRESS QTY DATE	LEAD TIME	DISTRIBUTOR COMPANY REGION	IN STOCK	PURCHASE
SN74BCT2827CDW	ACTIVE	<a href="#">SOP (DW)</a>   24	0 TO 70	<a href="#">View Contents</a>	1KU   1.75	25	775	100   24 Sep	12 WKS			
								> 10k   14 Oct				
SN74BCT2827CDWR	ACTIVE	<a href="#">SOP (DW)</a>   24	0 TO 70	<a href="#">View Contents</a>	1KU   1.78	2000	<a href="#">N/A*</a>	> 10k   09 Oct	12 WKS			
								> 10k   11 Dec				
SN74BCT2827CNSR	ACTIVE	<a href="#">SOP (NS)</a>   24		<a href="#">View Contents</a>	1KU   1.78	2000	<a href="#">N/A*</a>	8560   14 Oct	12 WKS			
								> 10k   21 Oct				
								> 10k   28 Oct				
								> 10k   04 Nov				
SN74BCT2827CNT	ACTIVE	<a href="#">PDIP (NT)</a>   24	0 TO 70	<a href="#">View Contents</a>	1KU   1.75	15	270	570   19 Sep	12 WKS			
								9169   09 Oct				
								> 10k   16 Oct				

Table Data Updated on: 9/26/2002

