SCBS007E - APRIL 1987 - REVISED NOVEMBER 1993

- BiCMOS Design Substantially Reduces I_{CCZ}
- Output Ports Have Equivalent 25-Ω 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)

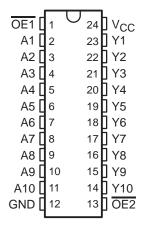
description

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.

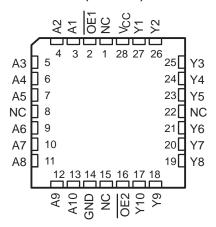
The 3-state control gate is a 2-input AND gate with active-low inputs so if either output-enable (OE1 or OE2) input is high, all ten outputs are in the high-impedance state. The outputs are also in the high-impedance state during power-up and power-down conditions. The outputs remain in the high-impedance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

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



SN54BCT2827C ... FK PACKAGE (TOP VIEW)



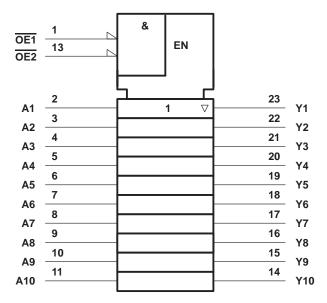
NC - No internal connection

FUNCTION TABLE

ı	NPUTS	OUTPUT	
OE1	OE2	Α	Υ
L	L	L	L
L	L	Н	Н
Н	X	Χ	Z
Х	Н	Χ	Z



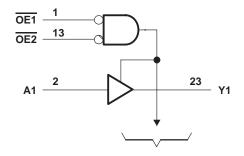
logic symbol[†]



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

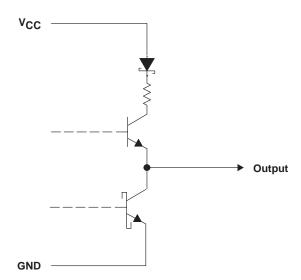
Pin numbers shown are for the DW, JT, NT, and W packages.

logic diagram (positive logic)



To Nine Other Channels

schematic of each output



SCBS007E - APRIL 1987 - REVISED NOVEMBER 1993

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.

recommended operating conditions

		SN54BCT2827C			SN74BCT2827C			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	UNII
VCC	Supply voltage	4.5	5	5.5	4.5	5	5.5	V
VIH	High-level input voltage	2			2			V
V _{IL}	Low-level input voltage			0.8			0.8	V
liK	Input clamp current			-18			-18	mA
ІОН	High-level output current			-1			-1	mA
loL	Low-level output current			12			12	mA
TA	Operating free-air temperature	-55		125	0		70	°C

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

PARAMETER	TEST CONDITIONS		SN54	SN54BCT2827C			SN74BCT2827C		
	lE31 C	MIN	TYP [‡]	MAX	MIN	TYP [‡]	MAX	UNIT	
VIK	$V_{CC} = 4.5 \text{ V},$	$I_{I} = -18 \text{ mA}$			-1.2			-1.2	V
Voн	$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V},$	$I_{OH} = -1 \text{ mA}$	V _{CC} -2			V _{CC} -2			V
VOL	V _{CC} = 4.5 V	$I_{OL} = 1 \text{ mA}$		0.15	0.5		0.15	0.5	V
VOL	VCC = 4.5 V	$I_{OL} = 12 \text{ mA}$		0.35	0.8		0.35	0.8	V
lozh	$V_{CC} = 5.5 \text{ V},$	$V_0 = 2.7 \text{ V}$			20			20	μΑ
lozL	$V_{CC} = 5.5 \text{ V},$	$V_0 = 0.5 V$			-20			-20	μΑ
lOL(sink)	V _{CC} = 4.5 V,	V _O = 2 V	50			50			mA
lį	V _{CC} = 5.5 V,	V _I = 7 V			0.1			0.1	mA
IH	V _{CC} = 5.5 V,	V _I = 2.7 V			20			20	μΑ
Ι _Ι Γ	V _{CC} = 5.5 V,	V _I = 0.5 V			-0.2			-0.2	mA
ΙΟ§	V _{CC} = 5.5 V,	V _O = 2.25 V	-30		-112	-30		-112	mA
^I CCL	V _{CC} = 5.5 V,	Outputs open		28	40		28	40	mA
Iccz	$V_{CC} = 5.5 \text{ V},$	Outputs open		3.8	6		3.8	6	mA
C _i	V _{CC} = 5 V,	V _I = 2.5 V or 0.5 V		5			5	·	pF
Co	V _{CC} = 5 V,	V _I = 2.5 V or 0.5 V		8			8		pF

 $[\]ddagger$ All typical values are at V_{CC} = 5 V, T_A = 25°C.

[§] The output conditions have been chosen to produce a current that closely approximates one half of the true short circuit output current, IOS.



NOTE 1: The input negative-voltage rating may be exceeded if the input clamp current rating is observed.

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

SCBS007E - APRIL 1987 - REVISED NOVEMBER 1993

switching characteristics (see Note 2)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 5 \text{ V},$ $C_L = 50 \text{ pF},$ $R1 = 500 \Omega,$ $R2 = 500 \Omega,$ $T_A = 25^{\circ}\text{C}$ BCT2827C		C _L R1 R2	= 50 pF = 500 Ω $= 500 \Omega$ = MIN to	,		UNIT	
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t _{PLH}	А	Y	0.9	3.6	5.2	0.9	6.6	0.9	6	ns
t _{PHL}			2	5.1	7.2	2	8.2	2	7.8	
^t PZH	ŌĒ	DE Y	2.8	5.6	8	2.8	10.7	2.8	10.7	no
t _{PZL}			5	8.9	11	5	13.7	5	12.9	ns
^t PHZ	ŌĒ		3.2	6.7	8.5	3.2	14	3.2	13	ns
^t PLZ		1	2.7	5.3	10.5	2.7	11	2.7	10	115

[†] 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.



IMPORTANT NOTICE

Texas Instruments and its subsidiaries (TI) reserve the right to make changes to their products or to discontinue any product or service without notice, and advise customers to obtain the latest version of relevant information to verify, before placing orders, that information being relied on is current and complete. All products are sold subject to the terms and conditions of sale supplied at the time of order acknowledgement, including those pertaining to warranty, patent infringement, and limitation of liability.

TI warrants performance of its semiconductor products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are utilized to the extent TI deems necessary to support this warranty. Specific testing of all parameters of each device is not necessarily performed, except those mandated by government requirements.

CERTAIN APPLICATIONS USING SEMICONDUCTOR PRODUCTS MAY INVOLVE POTENTIAL RISKS OF DEATH, PERSONAL INJURY, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE ("CRITICAL APPLICATIONS"). TI SEMICONDUCTOR PRODUCTS ARE NOT DESIGNED, AUTHORIZED, OR WARRANTED TO BE SUITABLE FOR USE IN LIFE-SUPPORT DEVICES OR SYSTEMS OR OTHER CRITICAL APPLICATIONS. INCLUSION OF TI PRODUCTS IN SUCH APPLICATIONS IS UNDERSTOOD TO BE FULLY AT THE CUSTOMER'S RISK.

In order to minimize risks associated with the customer's applications, adequate design and operating safeguards must be provided by the customer to minimize inherent or procedural hazards.

TI assumes no liability for applications assistance or customer product design. TI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right of TI covering or relating to any combination, machine, or process in which such semiconductor products or services might be or are used. TI's publication of information regarding any third party's products or services does not constitute TI's approval, warranty or endorsement thereof.

Copyright © 1998, Texas Instruments Incorporated