

# SN54BCT760, SN74BCT760 OCTAL BUFFERS/DRIVERS WITH OPEN-COLLECTOR OUTPUTS

SCBS034B - JULY 1989 - REVISED NOVEMBER 1993

- Open-Collector Version of 'BCT244
- Open-Collector Outputs Drive Bus Lines or Buffer Memory Address Registers
- ESD Protection Exceeds 2000 V Per MIL-STD-883C Method 3015
- Packages Options Include Plastic Small-Outline (DW) Packages, Ceramic Chip Carriers (FK) and Flatpacks (W), and Standard Plastic and Ceramic 300-mil DIPs (J, N)

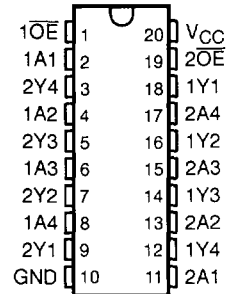
## description

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.

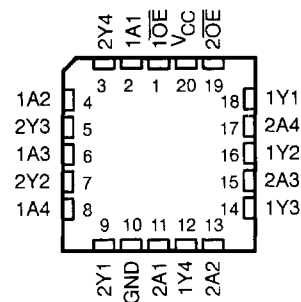
The 'BCT760 is organized as two 4-bit buffers/line drivers with separate output-enable ( $\overline{OE}$ ) inputs. When  $\overline{OE}$  is low, the device passes data from the A inputs to the Y outputs. When  $\overline{OE}$  is high, the outputs are in the high-impedance state.

The SN54BCT760 is characterized for operation over the full military temperature range of  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ . The SN74BCT760 is characterized for operation from  $0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .

SN54BCT760 ... J OR W PACKAGE  
SN74BCT760 ... DW OR N PACKAGE  
(TOP VIEW)



SN54BCT760 ... FK PACKAGE  
(TOP VIEW)



FUNCTION TABLE  
(each buffer)

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

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

 **TEXAS  
INSTRUMENTS**

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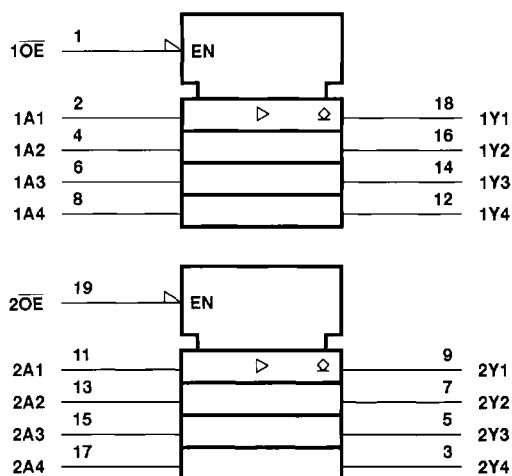
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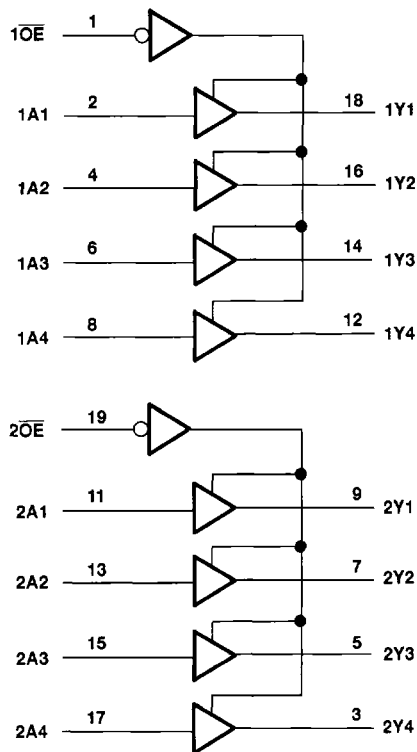
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**logic symbol†**



† 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
Input current range, $I_I$ .....	- 30 mA to 5 mA
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, $V_{OH}$ .....	- 0.5 V to $V_{CC}$
Current into any output in the low state: SN54BCT760 .....	96 mA
SN74BCT760 .....	128 mA
Operating free-air temperature range: SN54BCT760 .....	- 55°C to 125°C
SN74BCT760 .....	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 negative input voltage rating may be exceeded if the input clamp current rating is observed.



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**recommended operating conditions**

		SN54BCT760			SN74BCT760			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V <sub>CC</sub>	Supply voltage	4.5	5	5.5	4.5	5	5.5	V
V <sub>IH</sub>	High-level input voltage	2			2			V
V <sub>IL</sub>	Low-level input voltage				0.8			V
V <sub>OH</sub>	High-level output voltage				5.5			V
I <sub>IK</sub>	Input clamp current				-18			mA
I <sub>OL</sub>	Low-level output current				48			mA
T <sub>A</sub>	Operating free-air temperature	-55			125			°C

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

PARAMETER	TEST CONDITIONS		SN54BCT760		SN74BCT760		UNIT	
			MIN	TYP†	MAX	MIN		TYP†
V <sub>IK</sub>	V <sub>CC</sub> = 4.5 V,	I <sub>I</sub> = -18 mA			-1.2		V	
V <sub>OL</sub>	V <sub>CC</sub> = 4.5 V	I <sub>OL</sub> = 48 mA	0.38		0.55		V	
		I <sub>OL</sub> = 64 mA			0.42			
I <sub>I</sub>	V <sub>CC</sub> = 5.5 V,	V <sub>I</sub> = 7 V			0.1		mA	
I <sub>IH</sub>	V <sub>CC</sub> = 5.5 V,	V <sub>I</sub> = 2.7 V			20		μA	
I <sub>IL</sub>	V <sub>CC</sub> = 5.5 V,	V <sub>I</sub> = 0.5 V			-1		mA	
I <sub>OH</sub>	V <sub>CC</sub> = 4.5 V,	V <sub>OH</sub> = 5.5 V			0.1		mA	
I <sub>CC</sub>	V <sub>CC</sub> = 5.5 V,	Outputs open	Outputs high	21	33	21	33	mA
			Outputs low	48	76	48	76	
			$\overline{OE}$ disabled	6	10	6	10	
C <sub>i</sub>	V <sub>CC</sub> = 5 V,	V <sub>I</sub> = 2.5 V or 0.5 V	6		6		pF	
C <sub>o</sub>	V <sub>CC</sub> = 5 V,	V <sub>I</sub> = 2.5 V or 0.5 V	10		10		pF	

† All typical values are at V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C.

**switching characteristics (see Note 2)**

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V <sub>CC</sub> = 5 V, C <sub>L</sub> = 50 pF, R <sub>L</sub> = 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, R <sub>L</sub> = 500 Ω, T <sub>A</sub> = MIN to MAX‡				UNIT
			BCT760			SN54BCT760		SN74BCT760		
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t <sub>PLH</sub>	Any A	Y	6.3	8	9.5	6.3	11.1	6.3	10	ns
t <sub>PHL</sub>			2.1	4.3	6.5	2.1	7.7	2.1	7.2	
t <sub>PLH</sub>	$\overline{OE}$	Y	8.6	13	15.2	8.6	18.7	8.6	17.5	ns
t <sub>PHL</sub>			3.2	6.2	8.9	3.2	10.4	3.2	9.9	

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

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

