

SN54BCT760, SN74BCT760 OCTAL BUFFERS AND LINE DRIVERS WITH OPEN-COLLECTOR OUTPUTS

D3301, JULY 1989

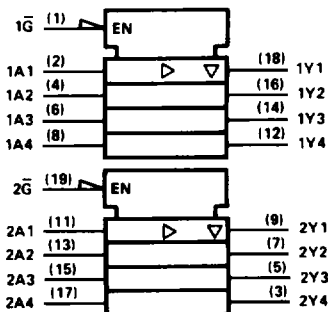
- Open-Collector Version of 'BCT244
- Open-Collector Outputs Drive Bus Lines or Buffer Memory Address Registers
- ESD Protection Exceeds 2000 V per MIL-STD-883C Method 3015
- Package Options Include "Small Outline" Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs
- Dependable Texas Instruments Quality and Reliability

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 'BCT756 and 'BCT757, these devices provide the choice of selected combinations of inverting outputs, symmetrical \bar{G} (active-low output control) inputs, and complementary G and \bar{G} inputs.

The SN54BCT760 is characterized for operation over the full military temperature range of -55°C to 125°C . The SN74BCT760 is characterized for operation from 0°C to 70°C .

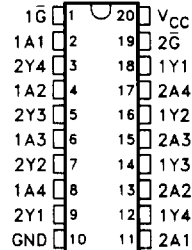
logic symbol†



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

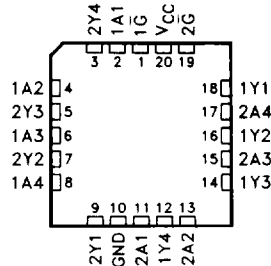
SN54BCT760 ... J PACKAGE
SN74BCT760 ... DW OR N PACKAGE

(TOP VIEW)



SN54BCT760 ... JK PACKAGE

(TOP VIEW)



FUNCTION TABLE

OUTPUT CONTROL \bar{G}	DATA INPUT A	OUTPUT Y
H	X	Z
L	L	L
L	H	H

PRODUCTION DATA documents contain information 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.

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INSTRUMENTS

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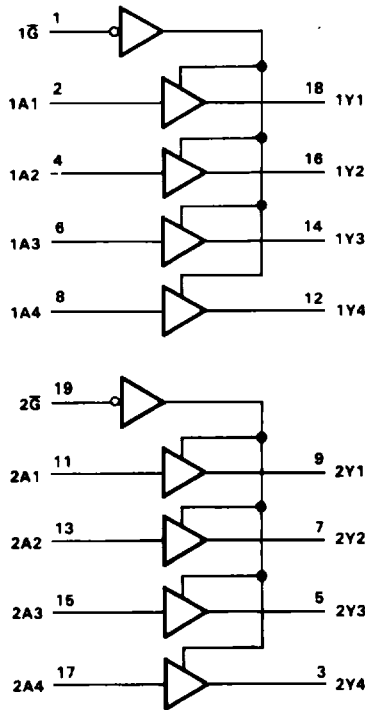
2-75

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BiCMOS Circuits

SN54BCT760, SN74BCT760
OCTAL BUFFERS AND LINE DRIVERS
WITH OPEN-COLLECTOR OUTPUTS

logic diagram (positive logic)



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BICMOS Circuits

absolute maximum ratings over operating free-air temperature range (unless otherwise noted)[†]

Supply voltage, V_{CC}	-0.5 V to 7 V
Input voltage, V_i (see Note 1)	-0.5 V to 7 V
Input current, I_i	-30 mA to 5 mA
Voltage applied to any output in the disabled or power-off state	-0.5 V to 5.5 V
Voltage applied to any output in the high state	-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.

SN54BCT760, SN74BCT760
OCTAL BUFFERS AND LINE DRIVERS
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recommended operating conditions

	SN54BCT760			SN74BCT760			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
V _{OH} High-level output voltage			5.5			5.5	V
I _{OL} Low-level output current			48			64	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	SN54BCT760			SN74BCT760			UNIT	
		MIN	TYP†	MAX	MIN	TYP†	MAX		
V _{IK}	V _{CC} = 4.5 V, I _I = -18 mA			-1.2			-1.2	V	
I _{OH}	V _{CC} = 4.5 V, V _{OH} = 5.5 V			0.1			0.1	mA	
V _{OL}	V _{CC} = 4.5 V, I _{OL} = 48 mA		0.38	0.55				V	
	V _{CC} = 4.5 V, I _{OL} = 64 mA				0.42	0.55			
I _I	V _{CC} = 5.5 V, V _I = 5.5 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			-1			-1	mA	
I _{CC}	V _{CC} = 5.5 V, Outputs open	Outputs high		21	33	21		33	μA
		Outputs low		48	76	48		76	
C _i	V _{CC} = 5 V, V _I = 2.5 V or 0.5 V			6			6	pF	
C _o	V _{CC} = 5 V, V _I = 2.5 V or 0.5 V			10			10	pF	

† All typical values are at V_{CC} = 5 V, T_A = 25°C.

'BCT760 switching characteristics (see Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V _{CC} = 5 V, C _L = 50 pF, R _L = 500 Ω, T _A = 25°C			V _{CC} = 4.5 V to 5.5 V, C _L = 50 pF, R _L = 500 Ω, T _A = MIN to MAX‡				UNIT
			'BCT760			SN54BCT760		SN74BCT760		
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t _{PLH}	Any A	Y	6.3	8	9.5	6.3	11.1	6.3	10	ns
t _{PHL}			2.1	4.3	6.5	2.1	7.7	2.1	7.2	
t _{PLH}	Any \bar{A}	Y	8.6	13	15.2	8.6	18.7	8.6	17.5	ns
t _{PHL}			3.2	6.2	8.9	3.2	10.4	3.2	9.9	

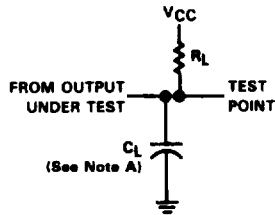
‡ For conditions shown as MIN or MAX, use the appropriate values specified under recommended operating conditions.

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BICMOS Circuits

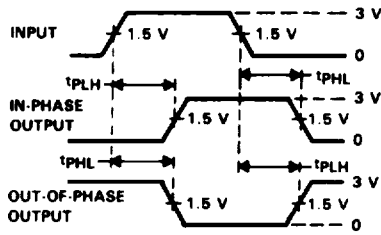


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PARAMETER MEASUREMENT INFORMATION



LOAD CIRCUIT



VOLTAGE WAVEFORMS
PROPAGATION DELAY TIMES

NOTES: A. C_L includes probe and jig capacitance.

B. All input pulses are supplied by generators having the following characteristics: PRR \leq 10 MHz, $Z_0 = 50 \Omega$, $t_r \leq 2.5$ ns, $t_f \leq 2.5$ ns.

C. The outputs are measured one at a time with one input transition per measurement.

FIGURE 1. SWITCHING CHARACTERISTICS