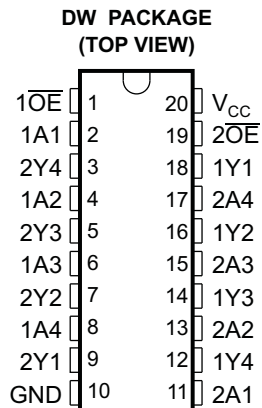


## FEATURES

- **Controlled Baseline**
  - One Assembly/Test Site, One Fabrication Site
- **Extended Temperature Performance of –55°C to 125°C**
- **Enhanced Diminishing Manufacturing Sources (DMS) Support**
- **Enhanced Product-Change Notification**
- **Qualification Pedigree <sup>(1)</sup>**
- **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**
- **Available In Plastic Small-Outline (DW) Package**

(1) Component qualification in accordance with JEDEC and industry standards to ensure reliable operation over an extended temperature range. This includes, but is not limited to, Highly Accelerated Stress Test (HAST) or biased 85/85, temperature cycle, autoclave or unbiased HAST, electromigration, bond intermetallic life, and mold compound life. Such qualification testing should not be viewed as justifying use of this component beyond specified performance and environmental limits.



## DESCRIPTION/ORDERING INFORMATION

The SN74BCT760 octal buffer and line driver is designed specifically to improve both the performance and density of 3-state memory address drivers, clock drivers, and bus-oriented receivers and transmitters.

The SN74BCT760 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 device is characterized for operation over the full military temperature range of –55°C to 125°C.

### ORDERING INFORMATION

T <sub>A</sub>	PACKAGE <sup>(1)</sup>		ORDERABLE PART NUMBER	TOP-SIDE MARKING
–55°C to 125°C	SOIC – DW	Tape and reel	SN74BCT760MDWREP	BCT760MEP

(1) Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at [www.ti.com/sc/package](http://www.ti.com/sc/package).

### FUNCTION TABLE

(each buffer)

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

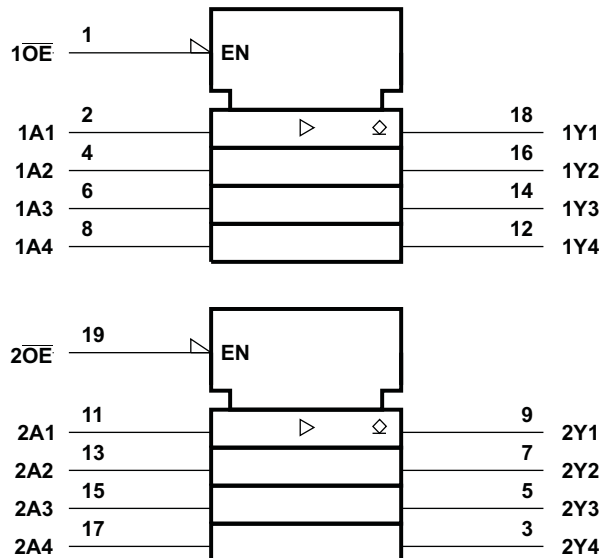


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# SN74BCT760-EP OCTAL BUFFER/DRIVER WITH OPEN-COLLECTOR OUTPUTS

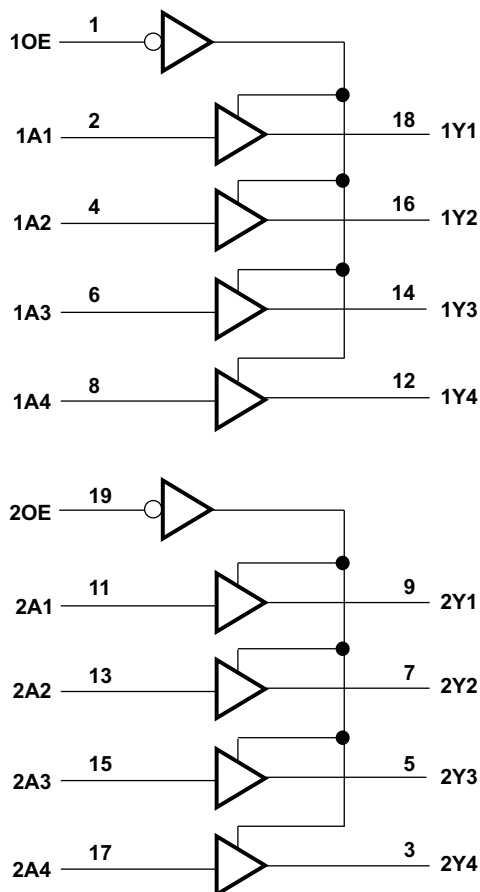
SCBS817B—JULY 2006—REVISED SEPTEMBER 2006

## LOGIC SYMBOL <sup>(1)</sup>



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

## LOGIC DIAGRAM (POSITIVE LOGIC)



## Absolute Maximum Ratings<sup>(1)</sup>

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

	MIN	MAX	UNIT
V <sub>CC</sub> Supply voltage range	-0.5	7	V
V <sub>I</sub> Input voltage range <sup>(2)</sup>	-0.5	7	V
I <sub>I</sub> Input current range	-30	5	mA
V <sub>O</sub> Voltage range applied to any output in the disabled or power-off state	-0.5	5.5	V
V <sub>O</sub> Voltage range applied to any output in the high state	-0.5	V <sub>CC</sub>	V
Current into any output in the low state		96	mA
Operating free-air temperature range <sup>(3)</sup>	-55	125	°C
T <sub>stg</sub> Storage temperature range	-65	150	°C

- (1) 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.
- (2) The negative input voltage rating may be exceeded if the input clamp current rating is observed.
- (3) Long-term high-temperature storage and/or extended use at maximum recommended operating conditions may result in a reduction of overall device life. See [http://www.ti.com/ep\\_quality](http://www.ti.com/ep_quality) for additional information on enhanced plastic packaging.

## Recommended Operating Conditions

	MIN	NOM	MAX	UNIT
V <sub>CC</sub> Supply voltage	4.5	5	5.5	V
V <sub>IH</sub> High-level input voltage	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		MIN	TYP <sup>(1)</sup>	MAX	UNIT
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>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	mA
			Outputs low	48	76	
			$\overline{OE}$ disabled	6	10	
C <sub>i</sub>	V <sub>CC</sub> = 5 V,	V <sub>I</sub> = 2.5 V or 0.5 V		6		pF
C <sub>o</sub>	V <sub>CC</sub> = 5 V,	V <sub>I</sub> = 2.5 V or 0.5 V		10		pF

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

# SN74BCT760-EP OCTAL BUFFER/DRIVER WITH OPEN-COLLECTOR OUTPUTS

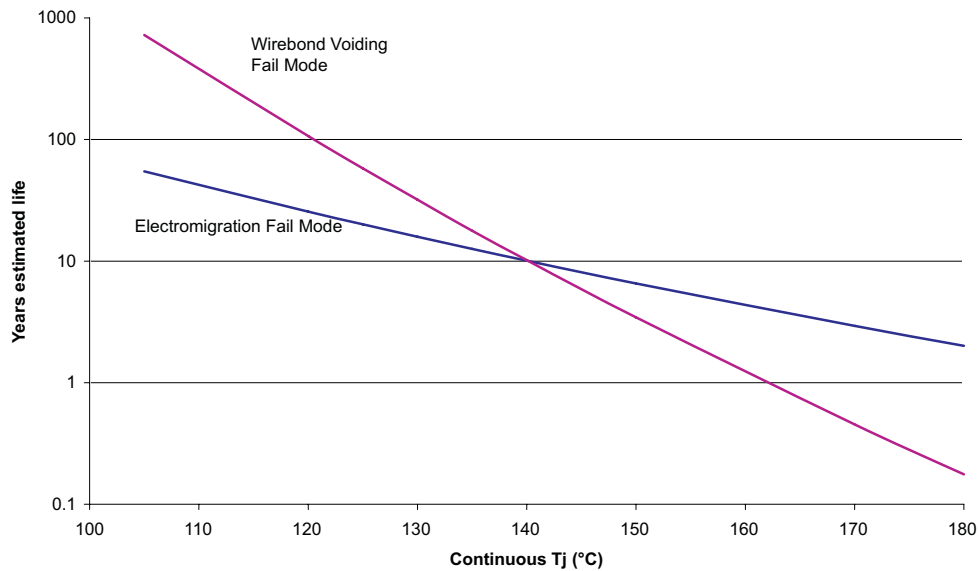
SCBS817B–JULY 2006–REVISED SEPTEMBER 2006

## Switching Characteristics

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 5\text{ V},$ $C_L = 50\text{ pF},$ $R_L = 500\ \Omega,$ $T_A = 25^\circ\text{C}$			$V_{CC} = 4.5\text{ V to }5.5\text{ V},$ $C_L = 50\text{ pF},$ $R_L = 500\ \Omega,$ $T_A = \text{MIN to MAX}^{(1)}$		UNIT
			MIN	TYP	MAX	MIN	MAX	
$t_{PLH}$	Any A	Y	6.3	8	9.5	6.3	11.1	ns
$t_{PHL}$			2.1	4.3	6.5	2.1	7.7	
$t_{PLH}$	$\overline{OE}$	Y	8.6	13	15.2	8.6	18.7	ns
$t_{PHL}$			3.2	6.2	8.9	3.2	10.4	

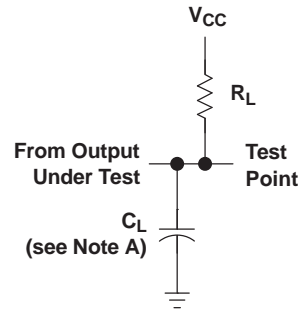
(1) For conditions shown as MIN or MAX, use the appropriate values specified under recommended operating conditions.

**SN74BCT760MDWREP Operating Life Derating Chart**

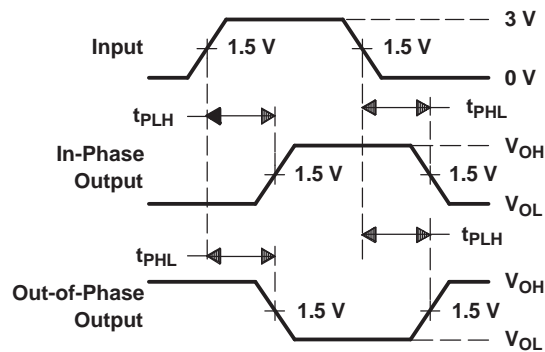


- A. See datasheet for absolute maximum ratings and minimum recommended operating conditions.
- B. Silicon operating life design goal is 10 years at 10°C junction temperature (does not include package interconnect life).
- C. Enhanced plastic product disclaimer applies.

**PARAMETER MEASUREMENT INFORMATION**



**LOAD CIRCUIT  
FOR OPEN-COLLECTOR OUTPUTS**



**VOLTAGE WAVEFORMS  
PROPAGATION DELAY TIMES**

- A.  $C_L$  includes probe and jig capacitance.
- B. All input pulses have the following characteristics:  $PRR \leq 1$  MHz,  $t_r = t_f = 2$  ns, duty cycle = 50%.
- C. The outputs are measured one at a time with one transition per measurement.

**Figure 1. Load Circuits and Voltage Waveforms**

**PACKAGING INFORMATION**

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
SN74BCT760MDWREP	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	NIPDAU	Level-1-260C-UNLIM	-55 to 125	BCT760MEP	<a href="#">Samples</a>
V62/06672-01XE	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	NIPDAU	Level-1-260C-UNLIM	-55 to 125	BCT760MEP	<a href="#">Samples</a>

(1) The marketing status values are defined as follows:

**ACTIVE:** Product device recommended for new designs.

**LIFEBUY:** TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

**NRND:** Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

**PREVIEW:** Device has been announced but is not in production. Samples may or may not be available.

**OBsolete:** TI has discontinued the production of the device.

(2) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".

**RoHS Exempt:** TI defines "RoHS Exempt" to mean products that contain lead but are compliant with EU RoHS pursuant to a specific EU RoHS exemption.

**Green:** TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of <=1000ppm threshold. Antimony trioxide based flame retardants must also meet the <=1000ppm threshold requirement.

(3) MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

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**OTHER QUALIFIED VERSIONS OF SN74BCT760-EP :**

- Catalog: [SN74BCT760](#)
- Military: [SN54BCT760](#)

## NOTE: Qualified Version Definitions:

- Catalog - TI's standard catalog product
- Military - QML certified for Military and Defense Applications

## TAPE AND REEL INFORMATION



### QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



\*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SN74BCT760MDWREP	SOIC	DW	20	2000	330.0	24.4	10.8	13.3	2.7	12.0	24.0	Q1



TAPE AND REEL BOX DIMENSIONS



\*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74BCT760MDWREP	SOIC	DW	20	2000	367.0	367.0	45.0

# DW0020A



# PACKAGE OUTLINE

## SOIC - 2.65 mm max height

SOIC



4220724/A 05/2016

### NOTES:

1. All linear dimensions are in millimeters. Dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.15 mm per side.
4. This dimension does not include interlead flash. Interlead flash shall not exceed 0.43 mm per side.
5. Reference JEDEC registration MS-013.

# EXAMPLE BOARD LAYOUT

DW0020A

SOIC - 2.65 mm max height

SOIC



LAND PATTERN EXAMPLE  
SCALE:6X



SOLDER MASK DETAILS

4220724/A 05/2016

NOTES: (continued)

- 6. Publication IPC-7351 may have alternate designs.
- 7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

# EXAMPLE STENCIL DESIGN

DW0020A

SOIC - 2.65 mm max height

SOIC



SOLDER PASTE EXAMPLE  
BASED ON 0.125 mm THICK STENCIL  
SCALE:6X

4220724/A 05/2016

NOTES: (continued)

8. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.
9. Board assembly site may have different recommendations for stencil design.

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