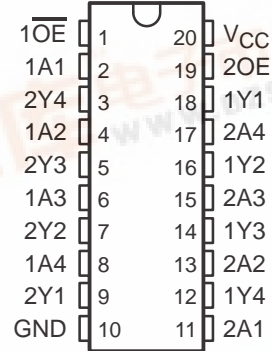


# SN64BCT757 OCTAL BUFFER/DRIVER WITH OPEN-COLLECTOR OUTPUTS

SCBS479 – MARCH 1993 – REVISED MAY 1994

- BiCMOS Design Significantly Reduces  $I_{CCZ}$
- ESD Protection Exceeds 2000 V Per MIL-STD-883C, Method 3015; Exceeds 200 V Using Machine Model (C = 200 pF, R = 0)
- High-Impedance State During Power Up and Power Down
- Open-Collector Outputs Drive Bus Lines or Buffer-Memory Address Registers
- Package Options Include Plastic Small-Outline (DW) Packages and Standard Plastic and Ceramic 300-mil DIPs (N)

DW OR N PACKAGE  
(TOP VIEW)



## description

This 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 device provides complementary output-enable (OE and  $\overline{OE}$ ) inputs and noninverting outputs.

The SN64BCT757 is characterized for operation from  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$  and  $0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .

FUNCTION TABLES

| INPUTS           |    | OUTPUT |
|------------------|----|--------|
| $\overline{1OE}$ | 1A | 1Y     |
| H                | X  | H      |
| L                | L  | L      |
| L                | H  | H      |

| INPUTS |    | OUTPUT |
|--------|----|--------|
| 2OE    | 2A | 2Y     |
| L      | X  | H      |
| H      | L  | L      |
| H      | H  | H      |



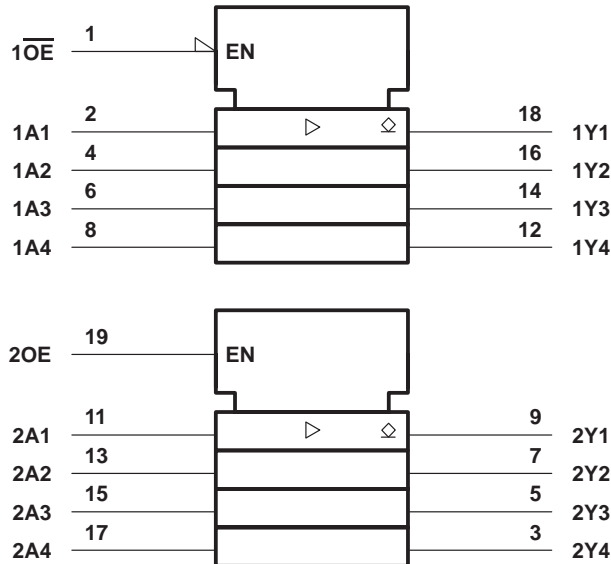
# SN64BCT757

## OCTAL BUFFER/DRIVER

### WITH OPEN-COLLECTOR OUTPUTS

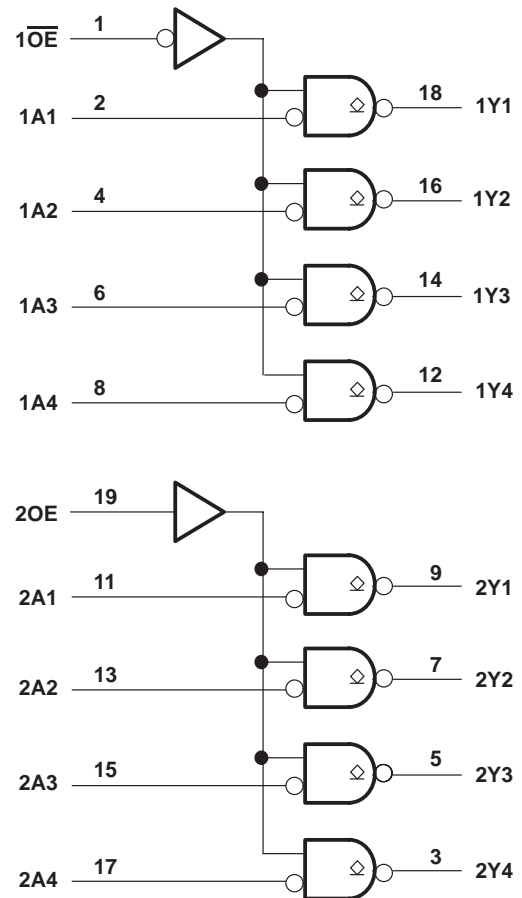
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#### logic symbol†



† 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      |
| 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, $I_{IK}$ ( $V_I < 0$ ) .....                                   | -30 mA             |
| Current into any output in the low state, $I_O$ .....                               | 128 mA             |
| Operating free-air temperature range .....  | -40°C to 85°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 ratings may be exceeded if the input clamp-current ratings are observed.

**SN64BCT757**  
**OCTAL BUFFER/DRIVER**  
**WITH OPEN-COLLECTOR OUTPUTS**  
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**recommended operating conditions (see Note 2)**

|                          |                                | MIN | NOM | MAX | UNIT                   |
|--------------------------|--------------------------------|-----|-----|-----|------------------------|
| $V_{CC}$                 | Supply voltage                 | 4.5 | 5   | 5.5 | V                      |
| $V_{IH}$                 | High-level input voltage       | 2   |     |     | V                      |
| $V_{IL}$                 | Low-level input voltage        |     |     | 0.8 | V                      |
| $V_{OH}$                 | High-level output voltage      |     |     | 5.5 | V                      |
| $I_{IK}$                 | Input clamp current            |     |     | -18 | mA                     |
| $I_{OL}$                 | Low-level output current       |     |     | 64  | mA                     |
| $\Delta t/\Delta V_{CC}$ | Power-up ramp rate             | 2   |     |     | $\mu\text{s}/\text{V}$ |
| $T_A$                    | Operating free-air temperature | -40 |     | 85  | $^{\circ}\text{C}$     |

NOTE 2: Unused or floating inputs must be held high or low.

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

| PARAMETER | TEST CONDITIONS                                 |   | MIN                               | TYP† | MAX  | UNIT          |
|-----------|---|---|-----------------------------------|------|------|---------------|
| $V_{IK}$  | $V_{CC} = 4.5\text{ V}$ ,                       | $I_I = -18\text{ mA}$   |                                   |      | -1.2 | V             |
| $I_{OH}$  | $V_{CC} = 4.5\text{ V}$ ,                       | $V_{OH} = 5.5\text{ V}$   |                                   |      | 0.1  | mA            |
| $V_{OL}$  | $V_{CC} = 4.5\text{ V}$ ,                       | $I_{OL} = 64\text{ mA}$   |                                   | 0.42 | 0.55 | V             |
| $I_{OZ}$  | $V_{CC} = 0\text{ to }2.3\text{ V}$ (power up), | $V_O = 2.7\text{ V}$ ,<br>$\overline{OE} = 0.8\text{ V}$ or $OE = 2\text{ V}$ |                                   |      | 50   | $\mu\text{A}$ |
| $I_{OZ}$  | $V_{CC} = 1.8\text{ V to }0$ (power down),      | $V_O = 2.7\text{ V}$ ,<br>$\overline{OE} = 0.8\text{ V}$ or $OE = 2\text{ V}$ |                                   |      | 50   | $\mu\text{A}$ |
| $I_I$     | $V_{CC} = 5.5\text{ V}$ ,                       | $V_I = 7\text{ V}$  |                                   |      | 0.1  | mA            |
| $I_{IH}$  | $V_{CC} = 5.5\text{ V}$ ,                       | $V_I = 2.7\text{ V}$  |                                   |      | 20   | $\mu\text{A}$ |
| $I_{IL}$  | $V_{CC} = 5.5\text{ V}$ ,                       | $V_I = 0.5\text{ V}$  |                                   |      | -1   | mA            |
| $I_{CC}$  | $V_{CC} = 5.5\text{ V}$ ,                       | Outputs open  | Outputs high                      |      | 34   | mA            |
|           |   |   | Outputs low                       |      | 77   |               |
|           |   |   | $OE$ and $\overline{OE}$ inactive |      | 10   |               |
| $C_i$     | $V_{CC} = 5\text{ V}$ ,                         | $V_I = 2.5\text{ V}$ or $0.5\text{ V}$  |                                   | 6    |      | pF            |
| $C_o$     | $V_{CC} = 5\text{ V}$ ,                         | $V_O = 2.5\text{ V}$ or $0.5\text{ V}$  |                                   | 4    |      | pF            |

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

**switching characteristics over recommended range of supply voltage,  $C_L = 50\text{ pF}$  (unless otherwise noted) (see Note 3)**

| PARAMETER | FROM (INPUT)     | TO (OUTPUT) | $V_{CC} = 5\text{ V}$ ,<br>$T_A = 25^{\circ}\text{C}$ |      |      | $T_A = -40^{\circ}\text{C}$<br>to $85^{\circ}\text{C}$ |      | $T_A = 0^{\circ}\text{C}$<br>to $70^{\circ}\text{C}$ |      | UNIT |
|-----------|------------------|-------------|---|------|------|--|------|--|------|------|
|           |                  |             | MIN   | TYP  | MAX  | MIN  | MAX  | MIN  | MAX  |      |
| $t_{PLH}$ | A                | Y           | 6.9   | 8.3  | 9.6  | 6.5  | 11.2 | 6.6  | 10.1 | ns   |
| $t_{PHL}$ |                  |             | 2.4   | 4.2  | 6    | 1.9  | 7    | 2  | 6.6  |      |
| $t_{PLH}$ | 2OE              | Y           | 11  | 14.8 | 17.9 | 10.4   | 21.3 | 10.8   | 19.7 | ns   |
| $t_{PHL}$ |                  |             | 2.9   | 4.6  | 6.2  | 2.6  | 7.5  | 2.6  | 6.9  |      |
| $t_{PLH}$ | $1\overline{OE}$ | Y           | 11.4  | 13.9 | 16.1 | 8.9  | 19.9 | 10   | 18   | ns   |
| $t_{PHL}$ |                  |             | 4.4   | 6.1  | 7.8  | 4  | 9.2  | 4  | 8.5  |      |

NOTE 3: Load circuits and voltage waveforms are shown in Section 1.



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