- **3-State Outputs Drive Bus Lines or Buffer Memory Address Registers**
- **Package Options Include Plastic Small-Outline (SOIC) and Shrink Small-Outline (SSOP) Packages, Ceramic Chip Carriers, and Plastic and Ceramic DIPs**

SN54F244 . . . J PACKAGE
SN74F244 . . . DB, DW, OR N PACKAGE
(TOP VIEW)

```
         ┌────┴────┐
1OE  [ 1      20 ] V_CC
1A1  [ 2      19 ] 2OE
2Y4  [ 3      18 ] 1Y1
1A2  [ 4      17 ] 2A4
2Y3  [ 5      16 ] 1Y2
1A3  [ 6      15 ] 2A3
2Y2  [ 7      14 ] 1Y3
1A4  [ 8      13 ] 2A2
2Y1  [ 9      12 ] 1Y4
GND  [ 10     11 ] 2A1
         └─────────┘
```

SN54F244 . . . FK PACKAGE
(TOP VIEW)

```
        2Y4 1A1 1OE V_CC 2OE
         ┌───────────────┐
          3  2  1  20 19
1A2 [ 4              18 ] 1Y1
2Y3 [ 5              17 ] 2A4
1A3 [ 6              16 ] 1Y2
2Y2 [ 7              15 ] 2A3
1A4 [ 8              14 ] 1Y3
          9 10 11 12 13
         └───────────────┘
        2Y1 GND 2A1 1Y4 2A2
```
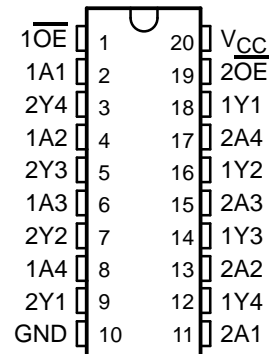
description

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 ′F240 and ′F241, these devices provide the choice of selected combinations of inverting and noninverting outputs, symmetrical $\overline{OE}$ (active-low output-enable) inputs, and complementary OE and $\overline{OE}$ inputs.

The ′F244 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.
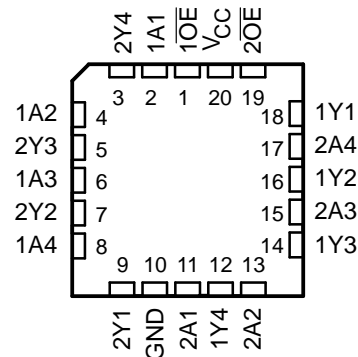
The SN74F244 is available in TI's shrink small-outline package (DB), which provides the same I/O pin count and functionality of standard small-outline packages in less than half the printed-circuit-board area.

The SN54F244 is characterized for operation over the full military temperature range of −55°C to 125°C. The SN74F244 is characterized for operation from 0°C to 70°C.

FUNCTION TABLE
(each buffer)

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

TEXAS INSTRUMENTS

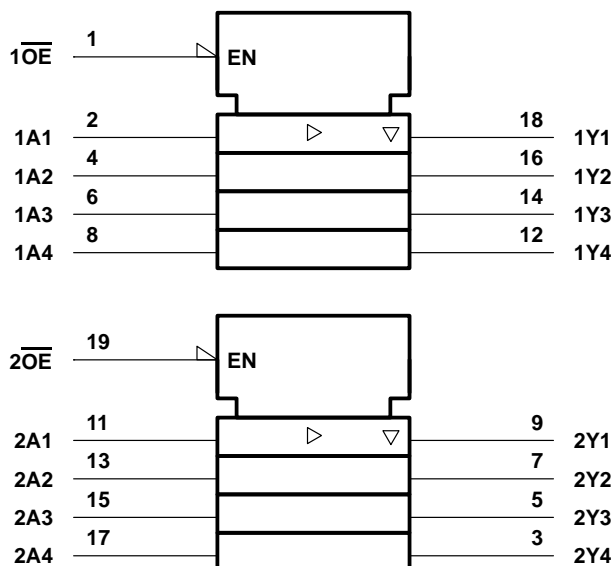POST OFFICE BOX 655303 ● DALLAS, TEXAS 75265

SN54F244, SN74F244
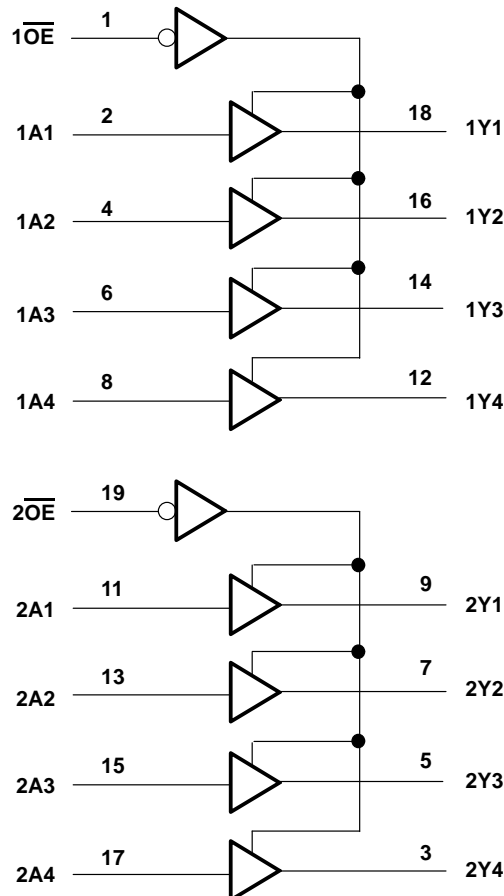# OCTAL BUFFERS/DRIVERS
WITH 3-STATE OUTPUTS

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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) .... −1.2 V to 7 V
Input current range .... −30 mA to 5 mA
Voltage range applied to any output in the disabled or power-off state .... −0.5 V to 5.5 V
Voltage range applied to any output in the high state .... −0.5 V to V_{CC}
Current into any output in the low state: SN54F244 .... 96 mA
                                         SN74F244 .... 128 mA
Operating free-air temperature range: SN54F244 .... −55°C to 125°C
                                             SN74F244 .... 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 input voltage ratings may be exceeded provided the input current ratings are observed.

TEXAS INSTRUMENTS
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recommended operating conditions

		SN54F244			SN74F244			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
I_{OH}	High-level output current			−12			−15	mA
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		SN54F244			SN74F244			UNIT
				MIN	TYP[†]	MAX	MIN	TYP[†]	MAX	
V_{IK}		V_{CC} = 4.5 V,	I_I = −18 mA			−1.2			−1.2	V
V_{OH}		V_{CC} = 4.5 V	I_{OH} = −3 mA	2.4	3.3		2.4	3.3		V
			I_{OH} = −12 mA	2	3.2					
			I_{OH} = −15 mA				2	3.1		
		V_{CC} = 4.75 V,	I_{OH} = −3 mA				2.7			
V_{OL}		V_{CC} = 4.5 V	I_{OL} = 48 mA		0.38	0.55				V
			I_{OL} = 64 mA					0.42	0.55	
I_{OZH}		V_{CC} = 5.5 V,	V_O = 2.7 V			50			50	µA
I_{OZL}		V_{CC} = 5.5 V,	V_O = 0.5 V			−50			−50	µA
I_I		V_{CC} = 5.5 V,	V_I = 7 V			0.1			0.1	mA
I_{IH}		V_{CC} = 5.5 V,	V_I = 2.7 V			20			20	µA
I_{IL}	$\overline{OE}$	V_{CC} = 5.5 V,	V_I = 0.5 v			−1			−1	mA
	Any A					−1.6			−1.6	
I_{OS}[‡]		V_{CC} = 5.5 V,	V_O = 0	−100		−225	−100		−225	mA
I_{CC}		V_{CC} = 5.5 V, Outputs open	Outputs high		40	60		40	60	mA
			Outputs low		60	90		60	90	
			Outputs disabled		60	90		60	90	

† All typical values are at V_{CC} = 5 V, T_A = 25°C.
‡ Not more than one output should be shorted at a time, and the duration of the short circuit should not exceed one second.

SN54F244, SN74F244
OCTAL BUFFERS/DRIVERS
WITH 3-STATE OUTPUTS

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switching characteristics (see Note 2)

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
			'F244			SN54F244		SN74F244		
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t_{PLH}	A	Y	1.7	3.6	5.2	2	6.5	1.7	6.2	ns
t_{PHL}			1.7	3.6	5.2	2	7	1.7	6.5	
t_{PZH}	$\overline{OE}$	Y	1.2	3.9	5.7	2	7	1.2	6.7	ns
t_{PZL}			1.2	5	7	2	8.5	1.2	8	
t_{PHZ}	$\overline{OE}$	Y	1.2	4.1	6	2	7	1.2	7	ns
t_{PLZ}			1.2	4.1	6	2	7.5	1.2	7	

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.
NOTE 2: Load circuits and waveforms are shown in Section 1.

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