

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

SDFS063A – D2932, MARCH 1987 – REVISED OCTOBER 1993

- 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

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.

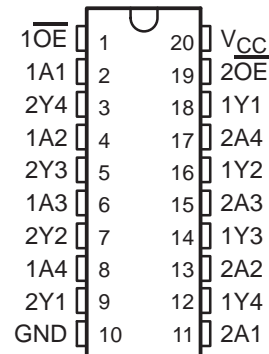
The SN74F244 is available in TI's shrink small-outline package (DB), which provides the same I/O pin count and functionality of standard small-outline packages in less than half the printed-circuit-board area.

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 .

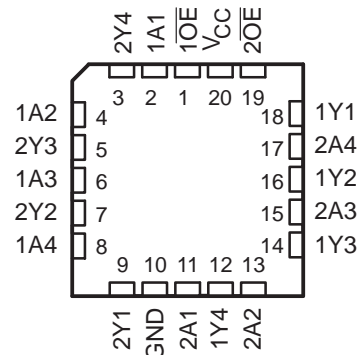
FUNCTION TABLE
(each buffer)

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

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



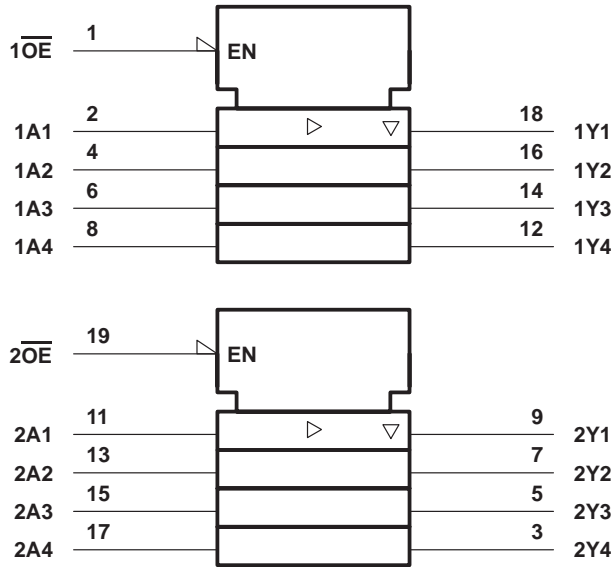
SN54F244 . . . FK PACKAGE
(TOP VIEW)



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

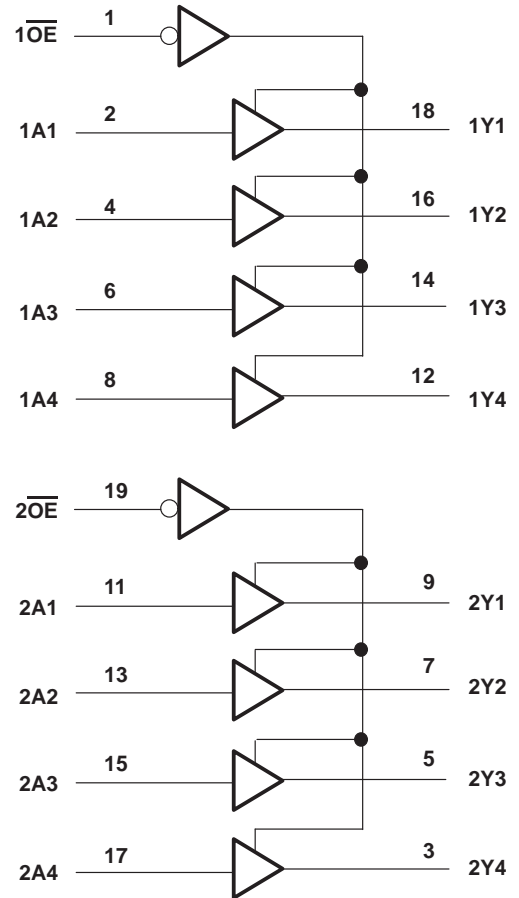
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logic symbol†



† 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.

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SDFS063A – D2932, MARCH 1987 – REVISED OCTOBER 1993

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}	$V_{CC} = 4.5\text{ V}$, $I_I = -18\text{ mA}$			-1.2			-1.2	V
V_{OH}	$V_{CC} = 4.5\text{ V}$	$I_{OH} = -3\text{ mA}$	2.4	3.3	2.4	3.3		V
		$I_{OH} = -12\text{ mA}$	2	3.2				
		$I_{OH} = -15\text{ mA}$			2	3.1		
	$V_{CC} = 4.75\text{ V}$, $I_{OH} = -3\text{ mA}$				2.7			
V_{OL}	$V_{CC} = 4.5\text{ V}$	$I_{OL} = 48\text{ mA}$	0.38	0.55				V
		$I_{OL} = 64\text{ mA}$				0.42	0.55	
I_{OZH}	$V_{CC} = 5.5\text{ V}$, $V_O = 2.7\text{ V}$			50			50	μA
I_{OZL}	$V_{CC} = 5.5\text{ V}$, $V_O = 0.5\text{ V}$			-50			-50	μA
I_I	$V_{CC} = 5.5\text{ V}$, $V_I = 7\text{ V}$			0.1			0.1	mA
I_{IH}	$V_{CC} = 5.5\text{ V}$, $V_I = 2.7\text{ V}$			20			20	μA
I_{IL}	$V_{CC} = 5.5\text{ V}$, $V_I = 0.5\text{ V}$	\overline{OE}			-1		-1	mA
		Any A			-1.6		-1.6	
$I_{OS}‡$	$V_{CC} = 5.5\text{ V}$, $V_O = 0$	-100		-225	-100		-225	mA
I_{CC}	$V_{CC} = 5.5\text{ V}$, 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 $V_{CC} = 5\text{ V}$, $T_A = 25^\circ\text{C}$.

‡ 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

SDFS063A – D2932, MARCH 1987 – REVISED OCTOBER 1993

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}	$\overline{\text{OE}}$	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}	$\overline{\text{OE}}$	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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SN54F244, Octal Buffers/Drivers With 3-State Outputs

Device Status: Active

- > [Description](#)
- > [Features](#)
- > [Datasheets](#)
- > [Pricing/Samples/Availability](#)
- > [Application Notes](#)
- > [Related Documents](#)
- > [Training](#)

Parameter Name	SN54F244
Voltage Nodes (V)	5
Vcc range (V)	4.5 to 5.5
Input Level	TTL
Output Level	TTL
No. of Outputs	8
Logic	True

Description

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To view the following documents, [Acrobat Reader 3.x](#) is required.

To download a document to your hard drive, right-click on the link and choose 'Save'.

Datasheets

Full datasheet in Acrobat PDF: [sdfs063a.pdf](#) (73 KB)

Full datasheet in Zipped PostScript: [sdfs063a.psz](#) (72 KB)

Pricing/Samples/Availability

<u>Orderable Device</u>	<u>Package</u>	<u>Pins</u>	<u>Temp (°C)</u>	<u>Status</u>	<u>Price/unit USD (100-999)</u>	<u>Pack Qty</u>	<u>DSCC Number</u>	<u>Availability / Samples</u>
5962-9758601Q2A	FK	20	-55 TO 125	ACTIVE	5.85	1		Check stock or order
JM38510/33203B2A	FK	20	-55 TO 125	ACTIVE	6.53	1		Check stock or order
JM38510/33203BRA	J	20	-55 TO 125	ACTIVE	4.19	1		Check stock or order
JM38510/33203BSA	W	20	-55 TO 125	ACTIVE	9.34	1		Check stock or order
SN54F244J	J	20	-55 TO 125	ACTIVE	3.19	1		Check stock or order
SNJ54F244FK	FK	20	-55 TO 125	ACTIVE	5.85	1	5962-9758601Q2A	Check stock or order
SNJ54F244J	J	20	-55 TO 125	ACTIVE	3.76	1	5962-9758601QRA	Check stock or order
SNJ54F244W	W	20	-55 TO 125	ACTIVE	8.35	1	5962-9758601QSA	Check stock or order

Application Reports

View Application Reports for [Digital Logic](#)

- [Bus-Interface Devices With Output-Damping Resistors Or Reduced-Drive Outputs \(SCBA012A - Updated: 08/01/1997\)](#)
- [Designing With Logic \(SDYA009C - Updated: 06/01/1997\)](#)
- [Input And Output Characteristics Of Digital Integrated Circuits \(SDYA010 - Updated: 10/01/1996\)](#)

Related Documents

- [Documentation Rules \(SAP\) And Ordering Information \(SZZU001B, 4 KB - Updated: 05/06/1999\)](#)
- [Logic Selection Guide Second Half 2000 \(SDYU001N, 5035 KB - Updated: 04/17/2000\)](#)
- [MicroStar Junior BGA Design Summary \(SCET004, 284 KB - Updated: 07/28/2000\)](#)
- [More Power In Less Space - Technical Article \(SCAU001A, 850 KB - Updated: 03/01/1996\)](#)

Table Data Updated on: 9/7/2000