

SN54F244, SN74F244 OCTAL BUFFERS AND LINE DRIVERS WITH 3-STATE OUTPUTS

D2932, MARCH 1987

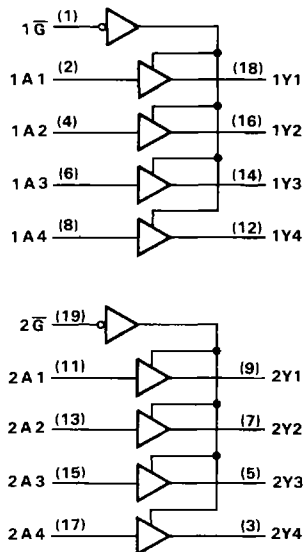
- 3-State Outputs Drive Bus Lines or Buffer Memory Address Registers
- Package Options Include Plastic "Small Outline" Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs
- Dependable Texas Instruments Quality and Reliability

description

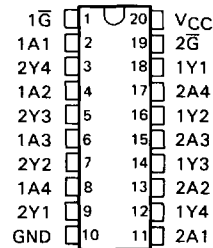
These octal buffers and line drivers are designed specifically to improve both the performance and density of three-state memory address drivers, clock drivers, and bus-oriented receivers and transmitters. Taken together with the 'F240 and 'F241, these devices provide the choice of selected combinations of inverting and noninverting outputs, symmetrical \overline{G} (active-low output control inputs, and complementary G and \overline{G} inputs.

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 .

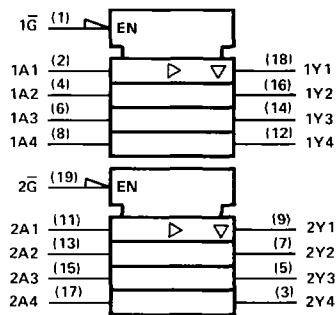
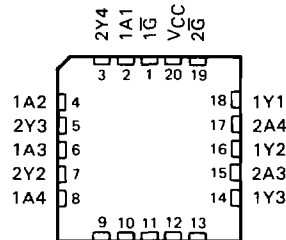
logic diagram (positive logic)



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



SN54F244 . . . FK PACKAGE
(TOP VIEW)



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

2

Data Sheets

SN54F244, SN74F244

OCTAL BUFFERS AND LINE DRIVERS WITH 3-STATE OUTPUTS

FUNCTION TABLE

OUTPUT CONTROL	DATA INPUT	OUTPUT Y
1G, 2G	A	
H	X	Z
L	L	L
L	H	H

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

Supply voltage, V_{CC}	-0.5 V to 7 V
Input voltage [†]	-1.2 V to 7 V
Input current	-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: 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

[†] The input voltage ratings may be exceeded provided the input current ratings are observed.

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

2

Data Sheets

SN54F244, SN74F244 OCTAL BUFFERS AND LINE DRIVERS WITH 3-STATE OUTPUTS

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}^{\dagger}	$V_{CC} = 4.5\text{ V}$, $I_{OH} = -3\text{ mA}$	2.4	3.3		2.4	3.3		V	
	$V_{CC} = 4.5\text{ V}$, $I_{OH} = -12\text{ mA}$	2	3.2						
	$V_{CC} = 4.5\text{ V}$, $I_{OH} = -15\text{ mA}$				2	3.1			
V_{OL}	$V_{CC} = 4.5\text{ V}$, $I_{OL} = 48\text{ mA}$		0.38	0.55				V	
	$V_{CC} = 4.5\text{ V}$, $I_{OL} = 64\text{ mA}$				0.42	0.55			
I_I	$V_{CC} = 5.5\text{ V}$, $V_I = 7\text{ V}$			0.1			0.1	mA	
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_{IH}	$V_{CC} = 5.5\text{ V}$, $V_I = 2.7\text{ V}$			20			20	μA	
I_{IL}	$V_{CC} = 5.5\text{ V}$, $V_I = 0.5\text{ V}$	Any \bar{G} input			-1		-1	mA	
		Any A input			-1.6		-1.6		
I_{OS}^{\S}	$V_{CC} = 5.5\text{ V}$, $V_O = 0$	-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	

switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 5\text{ V}$, $C_L = 50\text{ pF}$, $R_1 = 500\ \Omega$, $R_2 = 500\ \Omega$, $T_A = 25^\circ\text{C}$			$V_{CC} = 4.5\text{ V to } 5.5\text{ V}$, $C_L = 50\text{ pF}$, $R_1 = 500\ \Omega$, $R_2 = 500\ \Omega$, $T_A = \text{MIN to MAX}^{\dagger}$			UNIT	
			'F244			SN54F244		SN74F244		
			MIN	TYP	MAX	MIN	MAX	MIN		MAX
t_{PLH}	A	Y	1.7	3.6	5.2	1.2	6.5	1.7	6.2	ns
t_{PHL}			1.7	3.6	5.2	1.2	7	1.7	6.5	
t_{PZH}	$1\bar{G}$ or $2\bar{G}$	Y	1.2	3.9	5.7	1.2	7	1.2	6.7	ns
t_{PZL}			1.2	5	7	1.2	8.5	1.2	8	
t_{PHZ}	$1\bar{G}$ or $2\bar{G}$	Y	1.2	4.1	6	1.2	7	1.2	7	ns
t_{PLZ}			1.2	4.1	6	1.2	7.5	1.2	7	

[†] For conditions shown as MIN or MAX, use the appropriate value specified under Recommended Operating Conditions.

[‡] 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.

[¶] For the SN74F244 at $V_{CC} = 4.75\text{ V}$ and $I_{OH} = -3\text{ mA}$, $V_{OH\text{ min}} = 2.7\text{ V}$.

NOTE 1: See General Information for load circuits and waveforms.

2

Data Sheets