

SN54HC244, SN74HC244 OCTAL BUFFERS AND LINE DRIVERS WITH 3-STATE OUTPUTS

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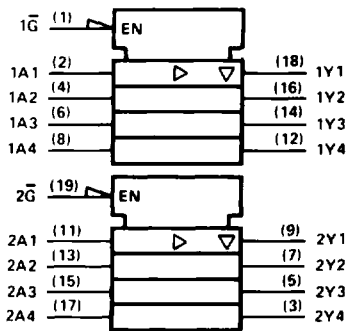
- 3-State Output Drive Bus Lines or Buffer Memory Address Registers
- High-Current Outputs Can Drive Up to 15 LSTTL Loads
- Package Options Include Plastic "Small Outline" Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs
- Dependable Texas Instruments Quality and Reliability

description

These octal buffers and line drivers are designed specifically to improve both the performance and density of the three-state memory address drivers, clock drivers, and bus-oriented receivers and transmitters. Taken together with the 'HC240 and 'HC241, these devices provide the choice of selected combinations of inverting outputs, symmetrical \overline{G} (active-low input control) inputs and complementary G and \overline{G} inputs.

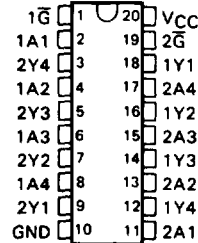
The SN54HC244 is characterized for operation over the full military temperature range of -55°C to 125°C . The SN74HC244 is characterized for operation from -40°C to 85°C .

logic symbol†

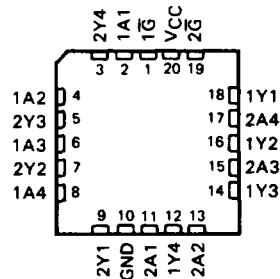


†This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

SN54HC244 . . . J PACKAGE
SN74HC244 . . . DW OR N PACKAGE
(TOP VIEW)



SN54HC244 . . . FK PACKAGE
(TOP VIEW)



PRODUCTION DATA documents contain information current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

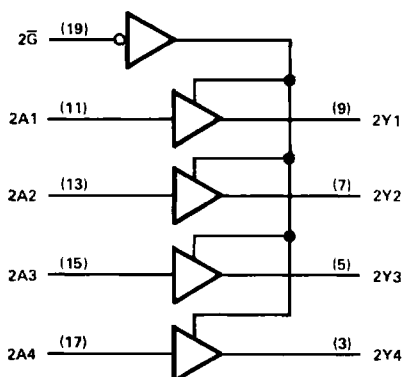
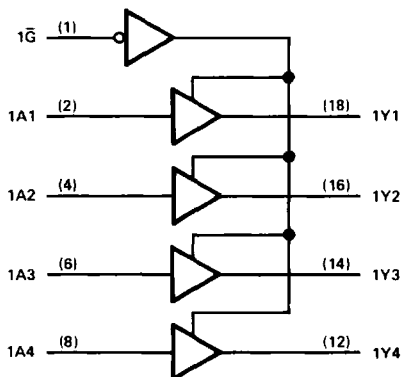


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logic diagram (positive logic)



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HC MOS Devices

absolute maximum ratings over operating free-air temperature†

Supply voltage, V_{CC}	-0.5 V to 7 V
Input clamp current, I_{IK} ($V_I < 0$ or $V_I > V_{CC}$)	± 20 mA
Output clamp current, I_{OK} ($V_O < 0$ or $V_O > V_{CC}$)	± 20 mA
Continuous output current, I_O ($V_O = 0$ to V_{CC})	± 35 mA
Continuous current through V_{CC} or GND pins	± 70 mA
Lead temperature 1,6 mm (1/16 in) from case for 60 s: FK or J package	300 °C
Lead temperature 1,6 mm (1/16 in) from case for 10 s: DW or N package	260 °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.

recommended operating conditions

		SN54HC244			SN74HC244			UNIT	
		MIN	NOM	MAX	MIN	NOM	MAX		
V_{CC}	Supply voltage	2	5	6	2	5	6	V	
V_{IH}	High-level input voltage	$V_{CC} = 2$ V		1.5	$V_{CC} = 2$ V		1.5	V	
		$V_{CC} = 4.5$ V		3.15	$V_{CC} = 4.5$ V		3.15		
		$V_{CC} = 6$ V		4.2	$V_{CC} = 6$ V		4.2		
V_{IL}	Low-level input voltage	$V_{CC} = 2$ V		0	0.3	$V_{CC} = 2$ V		V	
		$V_{CC} = 4.5$ V		0	0.9	$V_{CC} = 4.5$ V			
		$V_{CC} = 6$ V		0	1.2	$V_{CC} = 6$ V			
V_I	Input voltage	0			V_{CC}	0			V
V_O	Output voltage	0			V_{CC}	0			V
t_t	Input transition (rise and fall) times	$V_{CC} = 2$ V		0	1000	$V_{CC} = 2$ V		ns	
		$V_{CC} = 4.5$ V		0	500	$V_{CC} = 4.5$ V			
		$V_{CC} = 6$ V		0	400	$V_{CC} = 6$ V			
T_A	Operating free-air temperature	-55			125	40			°C

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

PARAMETER	TEST CONDITIONS	V _{CC}	T _A = 25°C			SN54HC244		SN74HC244		UNIT
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
V _{OH}	V _I = V _{IH} or V _{IL} , I _{OH} = -20 μA	2 V	1.9	1.998		1.9		1.9	V	
		4.5 V	4.4	4.499		4.4		4.4		
		6 V	5.9	5.999		5.9		5.9		
	4.5 V	3.98	4.30		3.7		3.84			
V _{OL}	V _I = V _{IH} or V _{IL} , I _{OL} = 20 μA	2 V		0.002	0.1		0.1		V	
		4.5 V		0.001	0.1		0.1			
		6 V		0.001	0.1		0.1			
	4.5 V		0.17	0.26		0.4		0.33		
V _I = V _{IH} or V _{IL} , I _{OL} = 7.8 mA	6 V		0.15	0.26		0.4		0.33		
	6 V		±0.1	±100		±1000		±1000	nA	
I _{OZ}	V _O = V _{CC} or 0, V _I = V _{IH} or V _{IL}	6 V		±0.01	±0.5		±10		±5	μA
I _{CC}	V _I = V _{CC} or 0, I _O = 0	6 V			8		160		80	μA
C _i		2 to 6 V		3	10		10		10	pF

switching characteristics over recommended operating free-air temperature range (unless otherwise noted), C_L = 50 pF (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V _{CC}	T _A = 25°C			SN54HC244		SN74HC244		UNIT
				MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t _{pd}	A	Y	2 V		40	115		170		145	ns
			4.5 V		13	23		34		29	
			6 V		11	20		29		25	
t _{en}	̄	Y	2 V		75	150		225		190	ns
			4.5 V		15	30		45		38	
			6 V		13	26		38		32	
t _{dis}	̄	Y	2 V		75	150		225		190	ns
			4.5 V		15	30		45		38	
			6 V		13	26		38		32	
t _t		Y	2 V		28	60		90		75	ns
			4.5 V		8	12		18		15	
			6 V		6	10		15		13	

C _{pd}	Power dissipation capacitance per gate	No load, T _A = 25°C	35 pF typ
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NOTE 1: Load circuit and voltage waveforms are shown in Section 1.

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switching characteristics over recommended operating free-air temperature range (unless otherwise noted), $C_L = 150 \text{ pF}$ (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V_{CC}	$T_A = 25^\circ\text{C}$			SN54HC244		SN74HC244		UNIT
				MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t_{pd}	A	Y	2 V		56	165		245		210	ns
			4.5 V		18	33		49		42	
			6 V		15	28		42		35	
t_{en}	\bar{G}	Y	2 V		100	200		300		250	ns
			4.5 V		20	40		60		50	
			6 V		17	34		51		43	
t_t		Y	2 V		45	210		315		265	ns
			4.5 V		17	42		63		53	
			6 V		13	36		53		45	

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

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