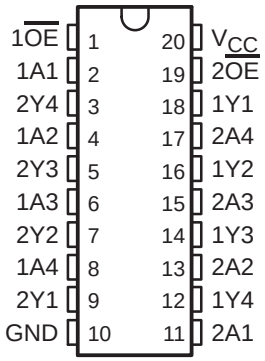
- **3-State Outputs Drive Bus Lines or Buffer-Memory Address Registers**
- **Package Options Include Plastic Small-Outline (DW) Packages and Standard Plastic (N) 300-mil DIPs**

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 25-Ω resistors in the lower output circuit reduce ringing and eliminate the need for external resistors.

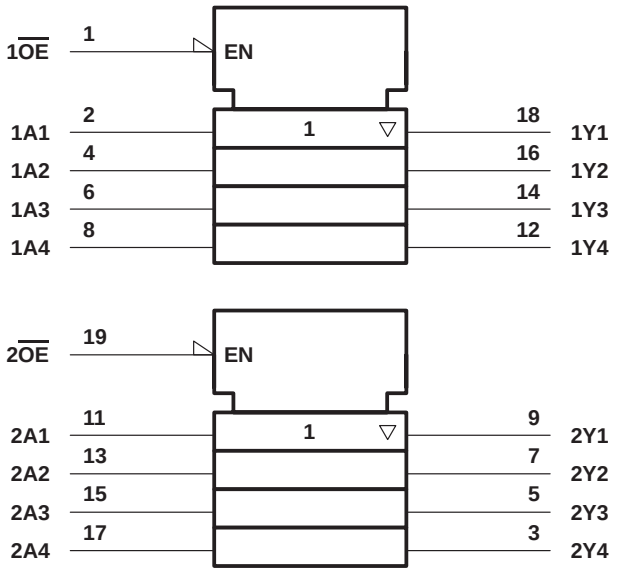
The SN74F2244 is characterized for operation from 0°C to 70°C.

FUNCTION TABLE
(each buffer)

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

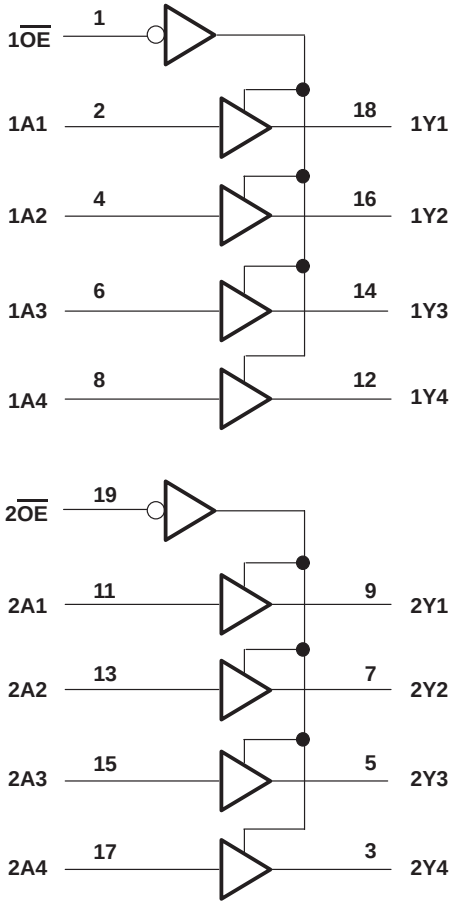
Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

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, I_I . . . . . –30 mA to 5 mA
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}
Current into any output in the low state, I_O . . . . . 30 mA
Operating free-air temperature range, T_A . . . . . 0°C to 70°C
Storage temperature range, T_{stg} . . . . . –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 if the input current ratings are observed.

recommended operating conditions

		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
I_{IK}	Input clamp current			–18	mA
I_{OH}	High-level output current			– 15	mA
I_{OL}	Low-level output current			12	mA
T_A	Operating free-air temperature	0		70	°C

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 V,	I_I = –18 mA			–1.2	V
V_{OH}		V_{CC} = 4.5 V,	I_{OH} = – 3 mA	2.4	2.8		V
		V_{CC} = 4.5 V	I_{OH} = – 15 mA	2	2.3		
		V_{CC} = 4.75 V,	I_{OH} = – 3 mA	2.7			
V_{OL}		V_{CC} = 4.5 V,	I_{OL} = 1 mA		0.2	0.5	V
		V_{CC} = 4.5 V,	I_{OL} = 12 mA		0.5	0.75	
I_I		V_{CC} = 5.5 V,	V_I = 0.5 V			0.1	mA
I_{OZH}		V_{CC} = 5.5 V,	V_O = 7 V			50	µA
I_{OZL}		V_{CC} = 5.5 V,	V_O = 2.7 V			–50	µA
I_{IH}		V_{CC} = 5.5 V,	V_I = 2.7 V			20	µA
I_{IL}	Any $\overline{OE}$ input	V_{CC} = 5.5 V,	V_I = 0.5 V			– 1	mA
	Any A input					– 1.6	
I_{OS}‡		V_{CC} = 5.5 V,	V_O = 0	–100		–225	mA
I_{CC}		V_{CC} = 5.5 V, Outputs open	Outputs high		40	60	mA
			Outputs low		60	90	
			Outputs disabled		60	90	

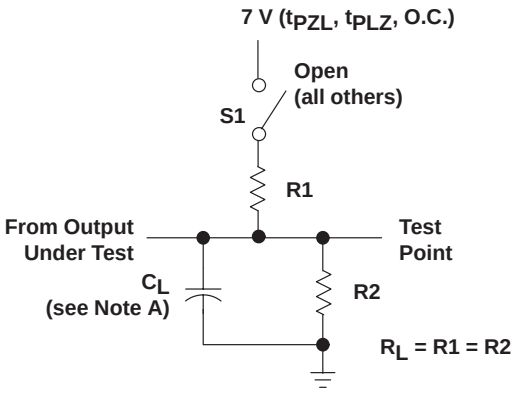
† All typical values are at V_{CC} = 5 V, T_A = 25°C.
‡ Not more than one output should be shorted at a time, and the duration of the short circuit should not exceed one second.

switching characteristics (see Figure 1)

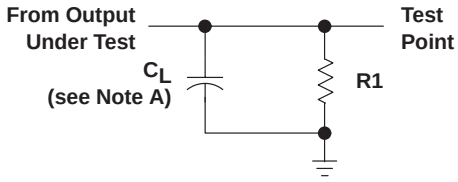
PARAMETER	FROM (INPUT)	TO (OUTPUT)	V_{CC} = 5 V, C_L = 50 PF, R_1 = 500 Ω, R_2 = 500 Ω, T_A = 25°C		V_{CC} = 4.5 V TO 5.5 V, C_L = 50 PF, R_1 = 500 Ω, R_2 = 500 Ω, T_A = MIN TO MAX§		UNIT
			MIN	MAX	MIN	MAX	
t_{PLH}	A	Y	1.5	7	1.5	7	ns
t_{PHL}			2.5	8	2	8	
t_{PZH}	$\overline{OE}$	Y	1.5	9	1	9.5	ns
t_{PZL}			2.5	11.5	2.5	12	
t_{PHZ}	OE	Y	1.5	9	1	9.5	ns
t_{PLZ}			1.5	8.5	1.5	9.5	

§ For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

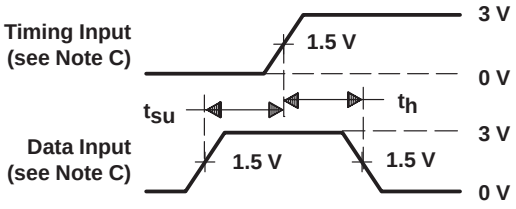
PARAMETER MEASUREMENT INFORMATION



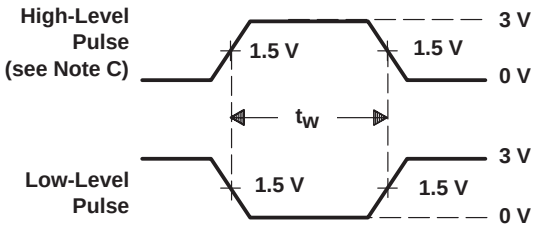
LOAD CIRCUIT FOR
3-STATE AND OPEN-COLLECTOR OUTPUTS



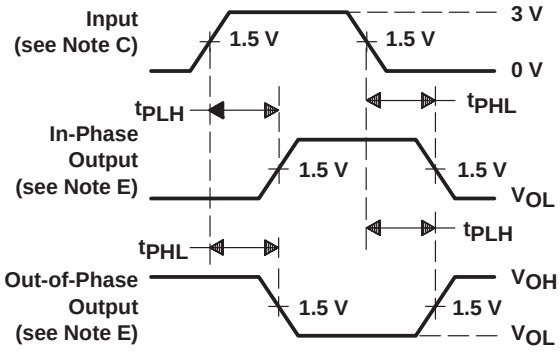
LOAD CIRCUIT FOR
TOTEM-POLE OUTPUTS



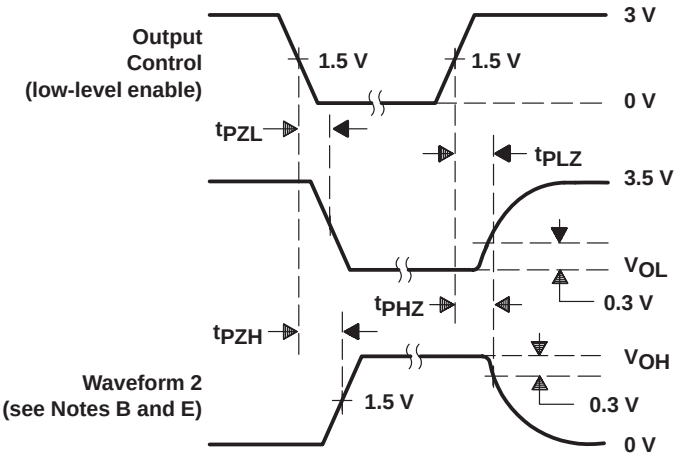
VOLTAGE WAVEFORMS
SETUP AND HOLD TIMES



VOLTAGE WAVEFORMS
PULSE DURATION



VOLTAGE WAVEFORMS
PROPAGATION DELAY TIMES (see Note D)



VOLTAGE WAVEFORMS
ENABLE AND DISABLE TIMES, 3-STATE OUTPUTS

NOTES: A. C_L includes probe and jig capacitance.
B. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control.
Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.
C. All input pulses are supplied by generators having the following characteristics: PRR ≤ 1 MHz, $t_r = t_f \leq 2.5$ ns, duty cycle = 50%.
D. When measuring propagation delay times of 3-state outputs, switch S1 is open.
E. The outputs are measured one at a time with one transition per measurement.

Figure 1. Load Circuit and Voltage Waveforms

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