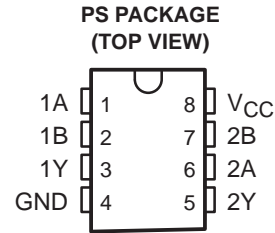


- Packaged in Plastic Small-Outline Package

description

The SN74AS8003 device contains two independent 2-input positive-NAND gates. It performs the Boolean functions $Y = \overline{A \cdot B}$ or $Y = \overline{A} + \overline{B}$ in positive logic.

The SN74AS8003 is characterized for operation from 0°C to 70°C.



**FUNCTION TABLE
(each gate)**

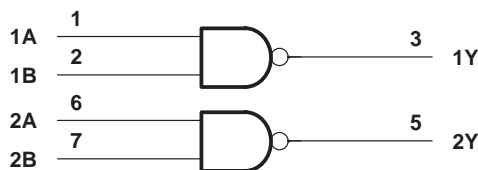
INPUTS		OUTPUT
A	B	Y
H	H	L
L	X	H
X	L	H

logic symbol†



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

logic diagram (positive logic)



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SN74AS8003

DUAL 2-INPUT POSITIVE-NAND GATE

SDAS305 – OCTOBER 1999

absolute maximum ratings over operating free-air temperature†

Supply voltage range, V_{CC}	–0.5 V to 7 V
Input voltage range, V_I	–0.5 V to 7 V
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 can affect device reliability.

recommended operating conditions (see Note 1)

	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_{OH} High-level output current			–2	mA
I_{OL} Low-level output current			20	mA
T_A Operating free-air temperature	0		70	°C

NOTE 1: All unused inputs of the device must be held at V_{CC} or GND to ensure proper device operation. Refer to the TI application report, *Implications of Slow or Floating CMOS Inputs*, literature number SCBA004.

electrical characteristics over recommended operating conditions (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 to 5.5 V,	$I_{OH} = -2$ mA	$V_{CC}-2$			V
V_{OL}	$V_{CC} = 4.5$ V,	$I_{OL} = 20$ mA		0.35	0.5	V
I_I	$V_{CC} = 5.5$ V,	$V_I = 7$ V			0.1	mA
I_{IH}	$V_{CC} = 5.5$ V,	$V_I = 2.7$ V			20	µA
I_{IL}	$V_{CC} = 5.5$ V,	$V_I = 0.4$ V			–0.5	mA
$I_{O§}$	$V_{CC} = 5.5$ V,	$V_O = 2.25$ V	–30		–112	mA
I_{CCH}	$V_{CC} = 5.5$ V,	$V_I = 0$ V		1	1.6	mA
I_{CCL}	$V_{CC} = 5.5$ V,	$V_I = 4.5$ V		3.5	8.7	mA

‡ All typical values are at $V_{CC} = 5$ V, $T_A = 25$ °C.

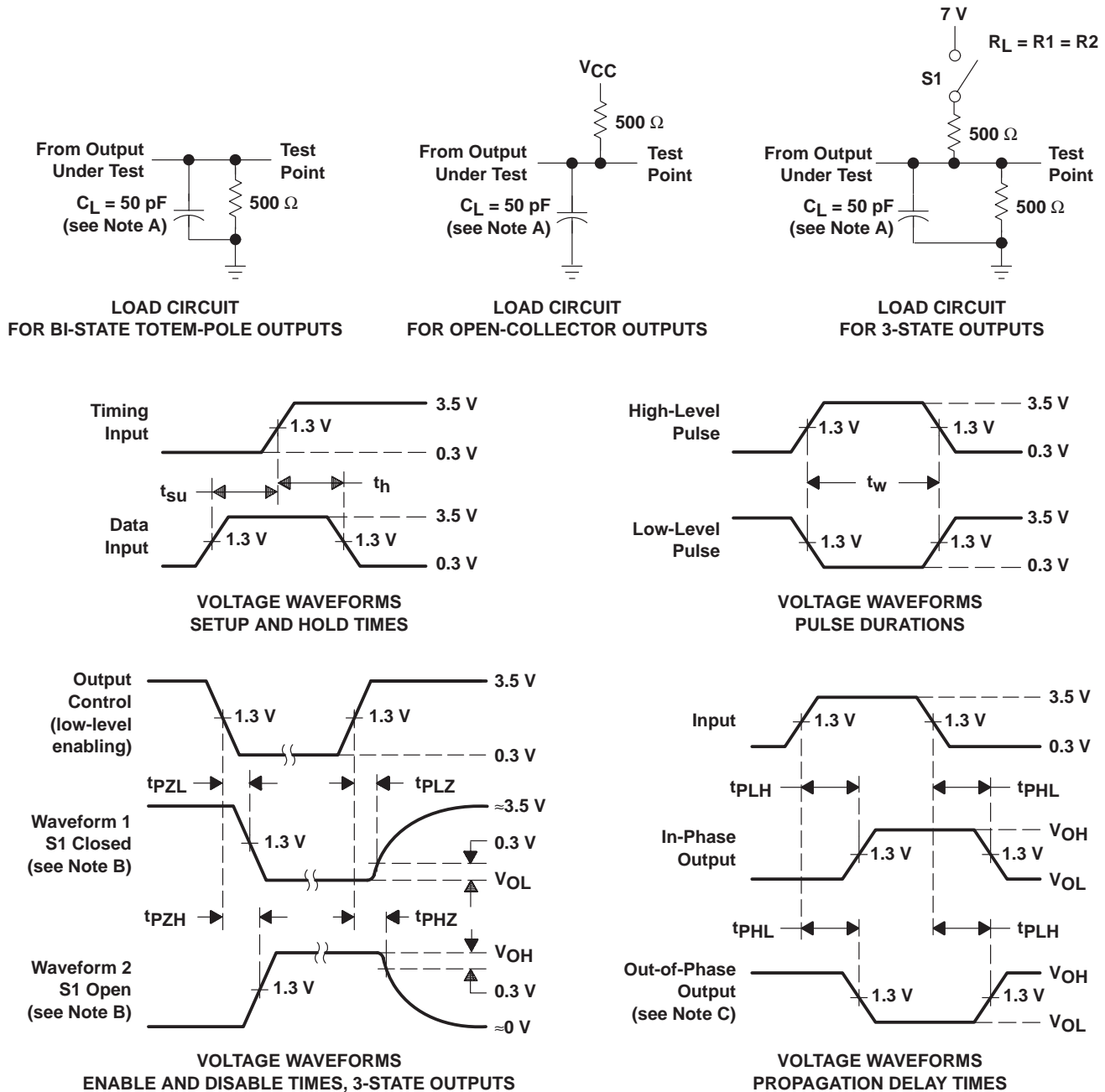
§ The output conditions have been chosen to produce a current that closely approximates one half of the true short-circuit output current, I_{OS} .

switching characteristics over recommended operating conditions (unless otherwise noted) (see Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	MIN	MAX	UNIT
t_{PLH}	A or B	Y	1	4.5	ns
t_{PHL}			1	4	



PARAMETER MEASUREMENT INFORMATION



- 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. When measuring propagation delay of 3-state outputs, switch S1 is open.
 D. All input pulses have the following characteristics: $PRR \leq 1$ MHz, $t_r = t_f = 2$ ns, duty cycle = 50%.
 E. The outputs are measured one at a time with one transition per measurement.

Figure 1. Load Circuits and Voltage Waveforms

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