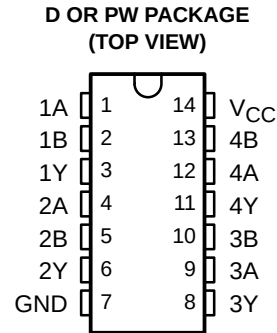


- **Controlled Baseline**
 - One Assembly/Test Site, One Fabrication Site
- **Extended Temperature Performance of –55°C to 125°C**
- **Enhanced Diminishing Manufacturing Sources (DMS) Support**
- **Enhanced Product-Change Notification**
- **Qualification Pedigree[†]**
- **EPIC™ (Enhanced-Performance Implanted CMOS) Process**
- **Inputs Are TTL-Voltage Compatible**
- **Latch-Up Performance Exceeds 250 mA Per JESD 17**
- **ESD Protection Exceeds 1000 V Per MIL-STD-883, Method 3015; Exceeds 200 V Using Machine Model (C = 200 pF, R = 0)**



[†] Component qualification in accordance with JEDEC and industry standards to ensure reliable operation over an extended temperature range. This includes, but is not limited to, Highly Accelerated Stress Test (HAST) or biased 85/85, temperature cycle, autoclave or unbiased HAST, electromigration, bond intermetallic life, and mold compound life. Such qualification testing should not be viewed as justifying use of this component beyond specified performance and environmental limits.

description/ordering information

The SN74AHCT32 is a quadruple 2-input positive-OR gate. This device performs the Boolean function $Y = \overline{A} \bullet \overline{B}$ or $Y = A + B$ in positive logic.

ORDERING INFORMATION

T _A	PACKAGE [‡]		ORDERABLE PART NUMBER	TOP-SIDE MARKING
–55°C to 125°C	SOIC – D	Tape and reel	SN74AHCT32MDREP	AHCT32MEP
	TSSOP – PW	Tape and reel	SN74AHCT32MPWREP	AHT32EP

[‡] Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at www.ti.com/sc/package.

**FUNCTION TABLE
(each gate)**

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



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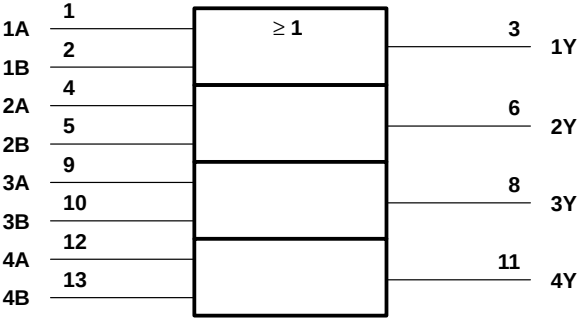
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SN74AHCT32-EP
QUADRUPLE 2-INPUT POSITIVE-OR GATE

SCLS494 – JUNE 2003

logic symbol†



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

logic diagram, each gate (positive logic)



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

Table with 2 columns: Parameter and Rating. Parameters include Supply voltage range (VCC), Input voltage range (VI), Output voltage range (VO), Input clamp current (IiK), Output clamp current (IOK), Continuous output current (IO), Continuous current through VCC or GND, Package thermal impedance (thetaJA), and Storage temperature range (Tstg).

‡ 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.

- NOTES: 1. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.
- 2. The package thermal impedance is calculated in accordance with JESD 51-7.

recommended operating conditions (see Note 3)

Table with 4 columns: Parameter, Description, MIN, MAX, UNIT. Parameters include VCC (Supply voltage), VIH (High-level input voltage), VIL (Low-level input voltage), VI (Input voltage), VO (Output voltage), IOH (High-level output current), IOL (Low-level output current), dt/dv (Input transition rise or fall rate), and TA (Operating free-air temperature).

NOTE 3: All unused inputs of the device must be held at VCC 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 free-air temperature range (unless otherwise noted)

PARAMETER	TEST CONDITIONS	V _{CC}	T _A = 25°C			MIN	MAX	UNIT
			MIN	TYP	MAX			
V _{OH}	I _{OH} = –50 µA	4.5 V	4.4	4.5		4.4		V
	I _{OH} = –8 mA		3.94			3.8		
V _{OL}	I _{OL} = 50 µA	4.5 V			0.1		0.1	V
	I _{OL} = 8 mA				0.36		0.44	
I _I	V _I = 5.5 V or GND	0 V to 5.5 V			±0.1		±1	µA
I _{CC}	V _I = V _{CC} or GND, I _O = 0	5.5 V			2		20	µA
ΔI _{CC} [†]	One input at 3.4 V, Other inputs at V _{CC} or GND	5.5 V			1.35		1.5	mA
C _i	V _I = V _{CC} or GND	5 V		2	10			pF

[†] This is the increase in supply current for each input at one of the specified TTL voltage levels, rather than 0 V or V_{CC}.

**switching characteristics over recommended operating free-air temperature range,
V_{CC} = 5 V ± 0.5 V (unless otherwise noted) (see Figure 1)**

PARAMETER	FROM (INPUT)	TO (OUTPUT)	LOAD CAPACITANCE	T _A = 25°C			MIN	MAX	UNIT
				MIN	TYP	MAX			
t _{PLH}	A or B	Y	C _L = 15 pF		5	6.9	1	8	ns
t _{PHL}					5	6.9	1	8	
t _{PLH}	A or B	Y	C _L = 50 pF		5.5	7.9	1	9	ns
t _{PHL}					5.5	7.9	1	9	

noise characteristics, V_{CC} = 5 V, C_L = 50 pF, T_A = 25°C (see Note 4)

PARAMETER		MIN	TYP	MAX	UNIT
V _{OL(P)}	Quiet output, maximum dynamic V _{OL}		0.4	0.8	V
V _{OL(V)}	Quiet output, minimum dynamic V _{OL}		–0.4	–0.8	V
V _{OH(V)}	Quiet output, minimum dynamic V _{OH}		4.5		V
V _{IH(D)}	High-level dynamic input voltage	2			V
V _{IL(D)}	Low-level dynamic input voltage			0.8	V

NOTE 4: Characteristics are for surface-mount packages only.

operating characteristics, V_{CC} = 5 V, T_A = 25°C

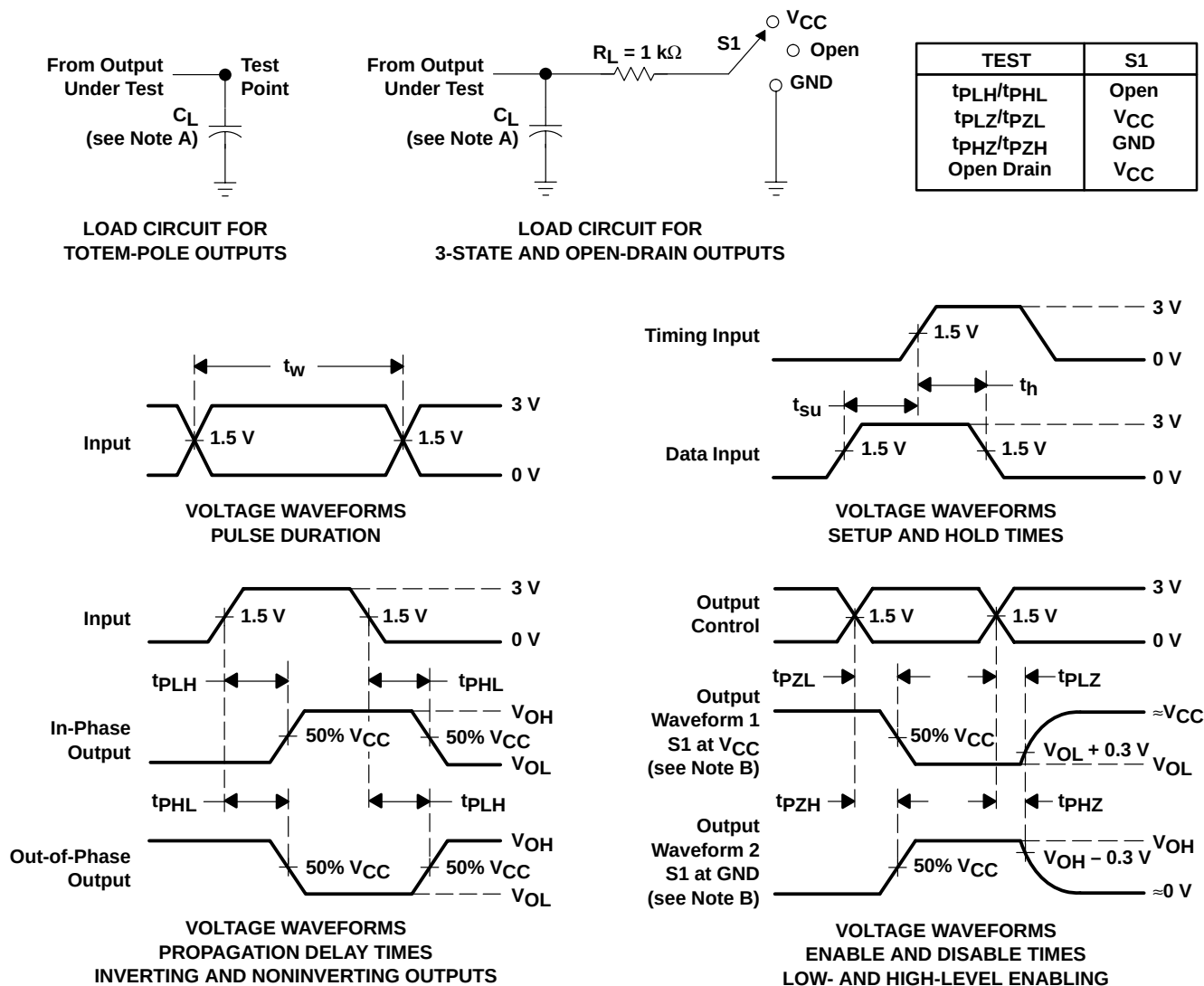
PARAMETER		TEST CONDITIONS	TYP	UNIT
C _{pd}	Power dissipation capacitance	No load, f = 1 MHz	11.5	pF

SN74AHCT32-EP

QUADRUPLE 2-INPUT POSITIVE-OR GATE

SCLS494 – JUNE 2003

PARAMETER MEASUREMENT INFORMATION

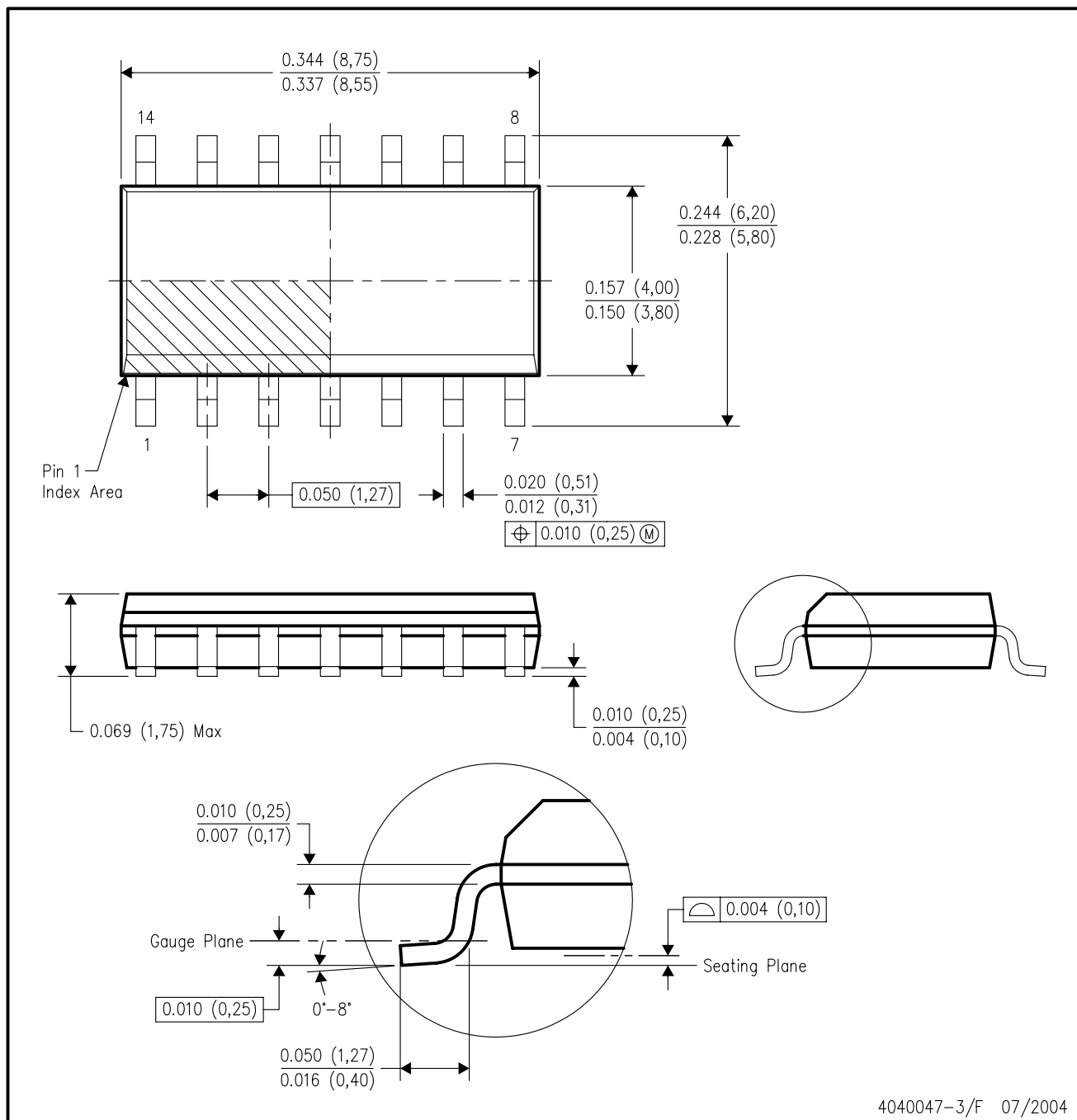


- NOTES:
- C_L includes probe and jig capacitance.
 - Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.
 - All input pulses are supplied by generators having the following characteristics: $PRR \leq 1\text{ MHz}$, $Z_O = 50\ \Omega$, $t_r \leq 3\text{ ns}$, $t_f \leq 3\text{ ns}$.
 - The outputs are measured one at a time with one input transition per measurement.

Figure 1. Load Circuit and Voltage Waveforms

D (R-PDSO-G14)

PLASTIC SMALL-OUTLINE PACKAGE

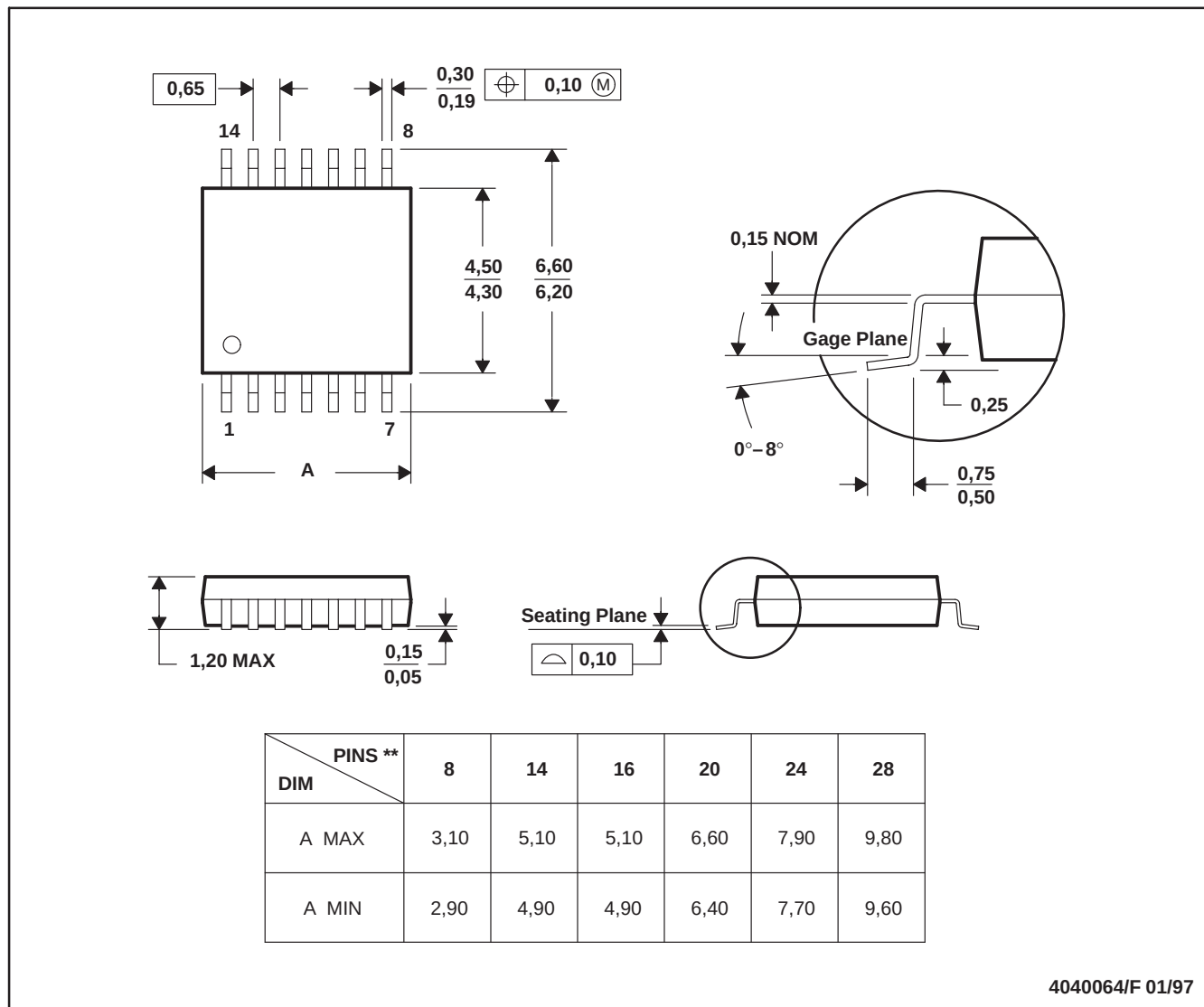


4040047-3/F 07/2004

PW (R-PDSO-G**)

PLASTIC SMALL-OUTLINE PACKAGE

14 PINS SHOWN



- NOTES: A. All linear dimensions are in millimeters.
 B. This drawing is subject to change without notice.
 C. Body dimensions do not include mold flash or protrusion not to exceed 0,15.
 D. Falls within JEDEC MO-153

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