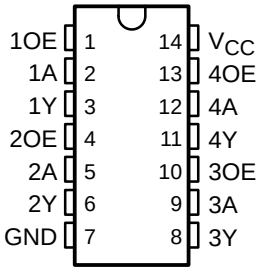
- **4.5-V to 5.5-V V_{CC} Operation**
- **Max t_{pd} of 6.5 ns at 5 V**
- **3-State Outputs Drive Bus Lines or Buffer Memory Address Registers**

D, N, OR NS PACKAGE
(TOP VIEW)



description/ordering information

The SN74F126 bus buffer features independent line drivers with 3-state outputs. Each output is disabled when the associated output-enable (OE) input is low.

To ensure the high-impedance state during power up or power down, OE should be tied to GND through a pulldown resistor; the minimum value of the resistor is determined by the current-sourcing capability of the driver.

ORDERING INFORMATION

T_A	PACKAGE†		ORDERABLE PART NUMBER	TOP-SIDE MARKING
0°C to 70°C	PDIP – N	Tube	SN74F126N	SN74F126N
	SOIC – D	Tube	SN74F126D	F126
		Tape and reel	SN74F126DR	
	SOP – NS	Tape and reel	SN74F126NSR	74F126

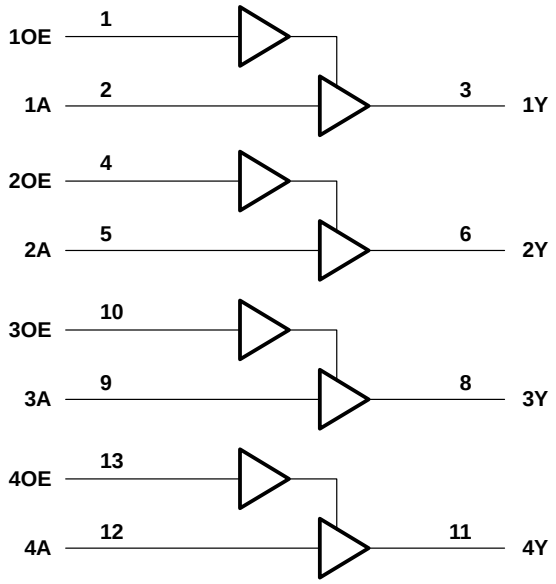
† Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at www.ti.com/sc/package.

FUNCTION TABLE
(each buffer)

INPUTS		OUTPUT
OE	A	Y
H	H	H
H	L	L
L	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 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 . . . . . –30 mA to 5 mA
Voltage range applied to any output in the disabled or power-off state . . . . . –0.5 V to 5.5 V
Voltage range applied to any output in the high state . . . . . –0.5 V to V_{CC}
Current into any output in the low state . . . . . 128 mA
Package thermal impedance, θ_{JA} (see Note 2): D package . . . . . 86°C/W
N package . . . . . 80°C/W
NS package . . . . . 76°C/W
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.

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

recommended operating conditions (see Note 3)

		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			64	mA
T_A	Operating free-air temperature	0		70	°C

NOTE 3: 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 free-air temperature range (unless otherwise noted)

PARAMETER	TEST CONDITIONS	V_{CC}	MIN	TYP†	MAX	UNIT
V_{IK}	I_I = –18 mA	4.5 V			–1.2	V
V_{OH}	I_{OH} = –3 mA	4.5 V	2.4	3.3		V
	I_{OH} = –15 mA		2	3.1		
	I_{OH} = –3 mA	4.75 V	2.7			
V_{OL}	I_{OL} = 64 mA	4.5 V		0.4	0.55	V
I_I	V_I = 7 V	0			0.1	mA
I_{IH}	V_I = 2.7 V	5.5 V			20	µA
I_{IL}	V_I = 0.5 V	5.5 V			–20	µA
I_{OZH}	V_O = 2.7 V	5.5V			50	µA
I_{OZL}	V_O = 0.5 V	5.5 V			–50	µA
I_{OS}‡	V_O = 0	5.5 V	–100		–225	mA
I_{CCH}	Outputs open	5.5 V		20	30	mA
I_{CCL}	Outputs open	5.5 V		32	48	mA
I_{CCZ}	Outputs open	5.5 V		26	39	mA

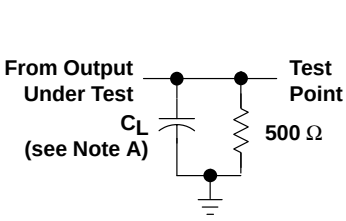
† All typical values are at V_{CC} = 5 V, T_A = 25°C.
‡ Not more than one output should be shorted at a time, and the duration of the short circuit should not exceed one second.

switching characteristics over recommended operating free-air temperature range (unless otherwise noted) (see Figure 1)

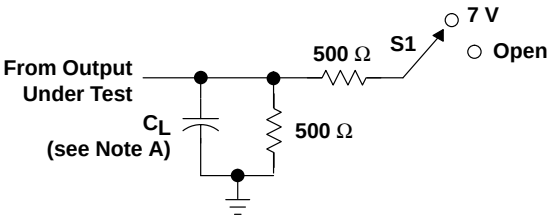
PARAMETER	FROM (INPUT)	TO (OUTPUT)	V_{CC} = 5 V, C_L = 50 pF, R_L = 500 Ω, T_A = 25°C			V_{CC} = 4.5 V to 5.5 V, C_L = 50 pF, R_L = 500 Ω, T_A = MIN to MAX§		UNIT
			MIN	TYP	MAX	MIN	MAX	
t_{PLH}	A	Y	2	4	6.5	2	7	ns
t_{PHL}			3	5.5	8	2.8	8.5	
t_{PZH}	OE	Y	3.8	6	7.5	3.3	8.5	ns
t_{PZL}			3.8	6	8	3.5	8.5	
t_{PHZ}	OE	Y	2	4.5	6.5	2	7.5	ns
t_{PLZ}			3	5.5	7.5	3	8	

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

PARAMETER MEASUREMENT INFORMATION

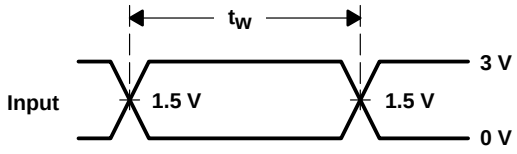


LOAD CIRCUIT FOR
TOTEM-POLE OUTPUTS

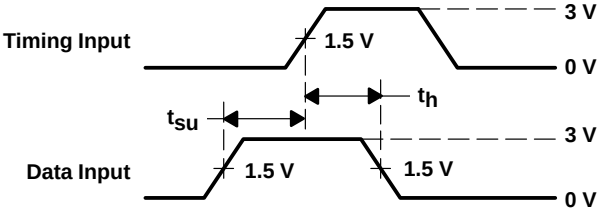


LOAD CIRCUIT FOR
3-STATE AND OPEN-DRAIN OUTPUTS

TEST	S1
t_{PLH}/t_{PHL}	Open
t_{PLZ}/t_{PZL}	7 V
t_{PHZ}/t_{PZH}	Open
Open Collector	7 V

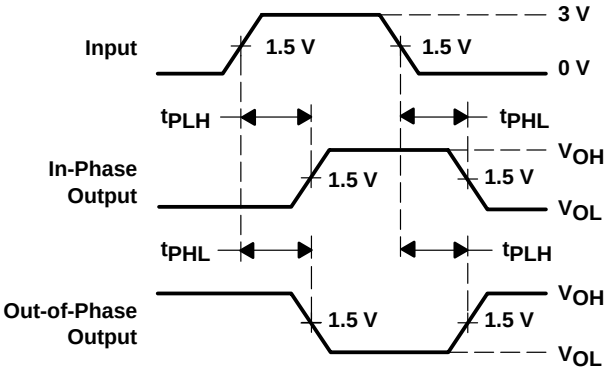


VOLTAGE WAVEFORMS
PULSE DURATION

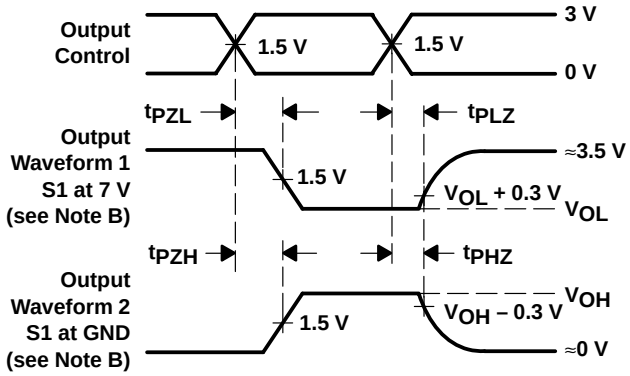


VOLTAGE WAVEFORMS
SETUP AND HOLD TIMES

1.5 V



VOLTAGE WAVEFORMS
PROPAGATION DELAY TIMES
INVERTING AND NONINVERTING OUTPUTS



VOLTAGE WAVEFORMS
ENABLE AND DISABLE TIMES
LOW- AND HIGH-LEVEL ENABLING

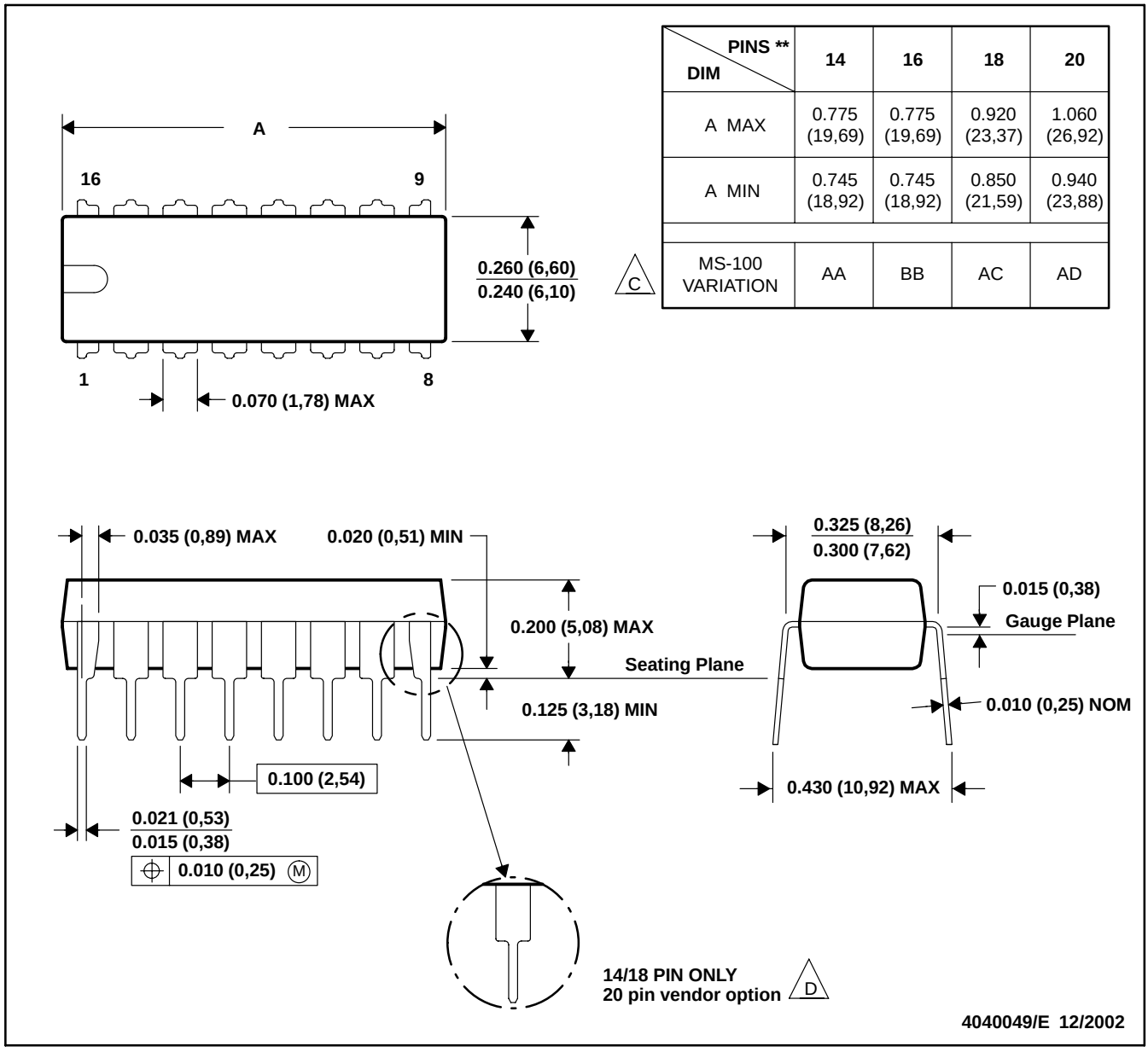
NOTES: A. C_L includes probe and jig capacitance.
B. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.
C. All input pulses are supplied by generators having the following characteristics: PRR ≤ 1 MHz, Z_O = 50 Ω, t_r ≤ 2.5 ns, t_f ≤ 2.5 ns, duty cycle = 50%.
D. The outputs are measured one at a time with one input transition per measurement.

Figure 1. Load Circuit and Voltage Waveforms

N (R-PDIP-T**)

PLASTIC DUAL-IN-LINE PACKAGE

16 PINS SHOWN



DIM \ PINS **	14	16	18	20
A MAX	0.775 (19,69)	0.775 (19,69)	0.920 (23,37)	1.060 (26,92)
A MIN	0.745 (18,92)	0.745 (18,92)	0.850 (21,59)	0.940 (23,88)
MS-100 VARIATION	AA	BB	AC	AD

NOTES: A. All linear dimensions are in inches (millimeters).

B. This drawing is subject to change without notice.

C. Falls within JEDEC MS-001, except 18 and 20 pin minimum body lrngth (Dim A).

D. The 20 pin end lead shoulder width is a vendor option, either half or full width.

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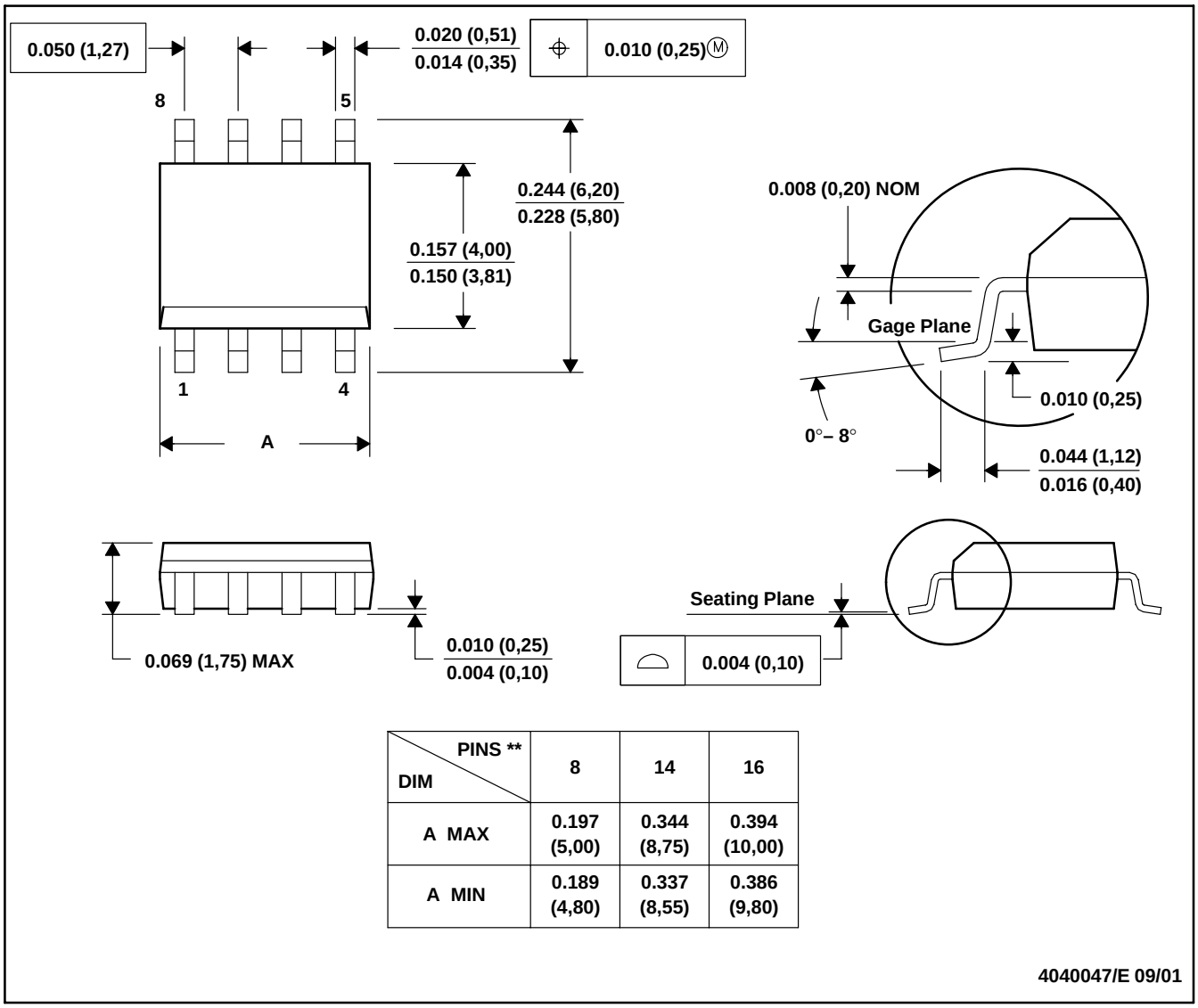
D (R-PDSO-G**)

PLASTIC SMALL-OUTLINE PACKAGE

8 PINS SHOWN



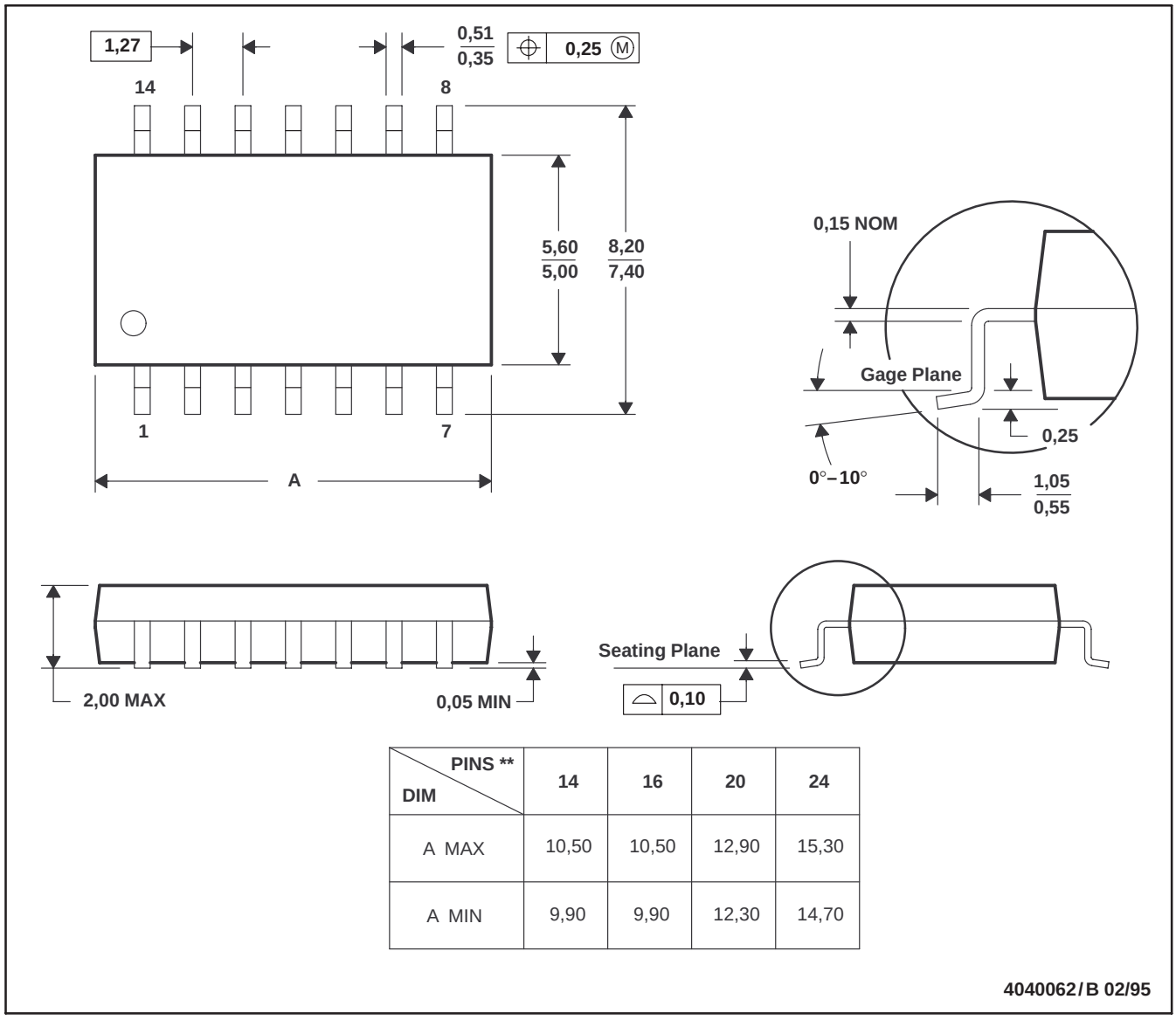
DIM \ PINS **	8	14	16
A MAX	0.197 (5,00)	0.344 (8,75)	0.394 (10,00)
A MIN	0.189 (4,80)	0.337 (8,55)	0.386 (9,80)

4040047/E 09/01

NOTES: A. All linear dimensions are in inches (millimeters).
B. This drawing is subject to change without notice.
C. Body dimensions do not include mold flash or protrusion, not to exceed 0.006 (0,15).
D. Falls within JEDEC MS-012

NS (R-PDSO-G)** **PLASTIC SMALL-OUTLINE PACKAGE**

14 PINS SHOWN



DIM \ PINS **	14	16	20	24
A MAX	10,50	10,50	12,90	15,30
A MIN	9,90	9,90	12,30	14,70

4040062/B 02/95

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.

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