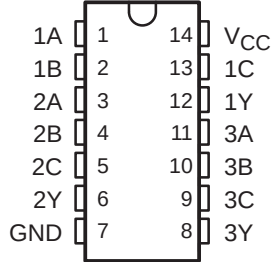


SN54ACT11, SN74ACT11 TRIPLE 3-INPUT POSITIVE-AND GATES

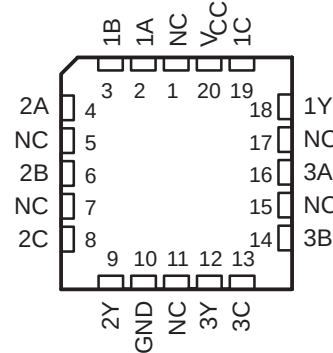
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- 4.5-V to 5.5-V V_{CC} Operation
- Inputs Accept Voltages to 5.5 V
- Max t_{pd} of 10.5 ns at 5 V
- Inputs Are TTL-Voltage Compatible

SN54ACT11 . . . J OR W PACKAGE
SN74ACT11 . . . D, DB, N, NS, OR PW PACKAGE
(TOP VIEW)



SN54ACT11 . . . FK PACKAGE
(TOP VIEW)



NC – No internal connection

description/ordering information

The 'ACT11 devices contain three independent 3-input AND gates. These devices perform the Boolean function $Y = A \bullet B \bullet C$ or $Y = \bar{A} + \bar{B} + \bar{C}$ in positive logic.

ORDERING INFORMATION

T_A	PACKAGE†		ORDERABLE PART NUMBER	TOP-SIDE MARKING
-40°C to 85°C	PDIP – N	Tube	SN74ACT11N	SN74ACT11N
	SOIC – D	Tube	SN74ACT11D	ACT11
		Tape and reel	SN74ACT11DR	
	SOP – NS	Tape and reel	SN74ACT11NSR	ACT11
	SSOP – DB	Tape and reel	SN74ACT11DBR	AD11
	TSSOP – PW	Tube	SN74ACT11PW	AD11
		Tape and reel	SN74ACT11PWR	
-55°C to 125°C	CDIP – J	Tube	SNJ54ACT11J	SNJ54ACT11J
	CFP – W	Tube	SNJ54ACT11W	SNJ54ACT11W
	LCCC – FK	Tube	SNJ54ACT11FK	SNJ54ACT11FK

† 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 Y
A	B	C	
H	H	H	H
L	X	X	L
X	L	X	L
X	X	L	L



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PRODUCTION DATA information is 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.

 **TEXAS
INSTRUMENTS**

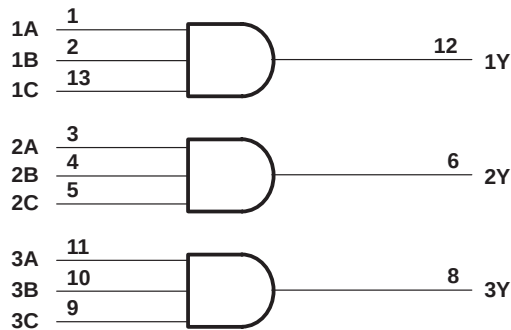
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On products compliant to MIL-PRF-38535, all parameters are tested unless otherwise noted. On all other products, production processing does not necessarily include testing of all parameters.

SN54ACT11, SN74ACT11
TRIPLE 3-INPUT POSITIVE-AND GATES

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logic diagram, each gate (positive logic)



Pin numbers shown are for the D, DB, J, N, NS, PW, and W packages.

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

Table with 2 columns: Parameter and Rating. Parameters include Supply voltage range, Input voltage range, Output voltage range, Input clamp current, Output clamp current, Continuous output current, Continuous current through VCC or GND, Package thermal impedance for various packages, and Storage temperature range.

† 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 6 columns: Parameter, MIN, MAX, 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), Δt/Δv (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.

SN54ACT11, SN74ACT11 TRIPLE 3-INPUT POSITIVE-AND GATES

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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			SN54ACT11		SN74ACT11		UNIT
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
V _{OH}	I _{OH} = -50 µA	4.5 V	4.4	4.49		4.4		4.4		V
		5.5 V	5.4	5.49		5.4		5.4		
	I _{OH} = -24 mA	4.5 V	3.86			3.7		3.76		
		5.5 V	4.86			4.7		4.76		
	I _{OH} = -50 mA [†]	5.5 V				3.85				
	I _{OH} = -75 mA [†]	5.5 V						3.85		
V _{OL}	I _{OL} = 50 µA	4.5 V		0.001	0.1		0.1		0.1	V
		5.5 V		0.001	0.1		0.1		0.1	
	I _{OL} = 24 mA	4.5 V			0.36		0.5		0.44	
		5.5 V			0.36		0.5		0.44	
	I _{OL} = 50 mA [†]	5.5 V					1.65			
	I _{OL} = 75 mA [†]	5.5 V							1.65	
I _I	V _I = V _{CC} or GND	5.5 V			±0.1		±1		±1	µA
I _{CC}	V _I = V _{CC} or GND, I _O = 0	5.5 V			2		40		20	µA
ΔI _{CC} [‡]	One input at 3.4 V, Other inputs at GND or V _{CC}	5.5 V		0.6			1.6		1.5	mA
C _i	V _I = V _{CC} or GND	5 V		2.6						pF

[†] Not more than one output should be tested at a time, and the duration of the test should not exceed 10 ms.

[‡] This is the increase in supply current for each input that is 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)	T _A = 25°C			SN54ACT11		SN74ACT11		UNIT
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t _{PLH}	A, B, or C	Y	1.5	6	9.5	1	10.5	1	10.5	ns
t _{PHL}			1.5	6	9.5	1	10.5	1	10.5	

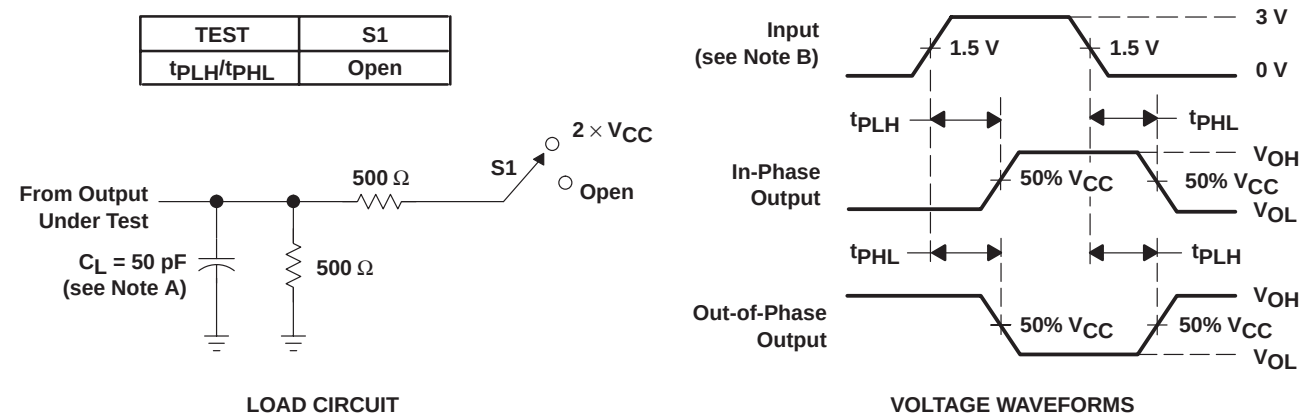
operating characteristics, V_{CC} = 5 V, T_A = 25°C

PARAMETER		TEST CONDITIONS		TYP	UNIT
C _{pd}	Power dissipation capacitance	C _L = 50 pF,	f = 1 MHz	20	pF

SN54ACT11, SN74ACT11 TRIPLE 3-INPUT POSITIVE-AND GATES

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PARAMETER MEASUREMENT INFORMATION



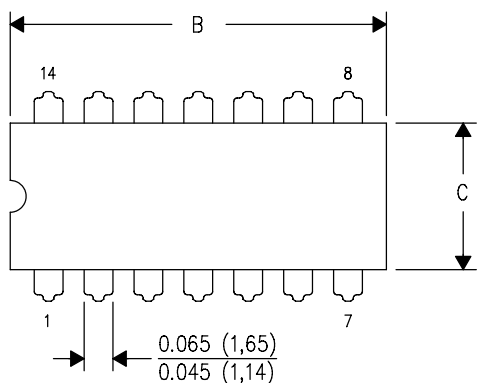
- NOTES:
- A. C_L includes probe and jig capacitance.
 - B. All input pulses are supplied by generators having the following characteristics: $PRR \leq 1\text{ MHz}$, $Z_O = 50\ \Omega$, $t_r \leq 2.5\text{ ns}$, $t_f \leq 2.5\text{ ns}$.
 - C. The outputs are measured one at a time with one input transition per measurement.

Figure 1. Load Circuit and Voltage Waveforms

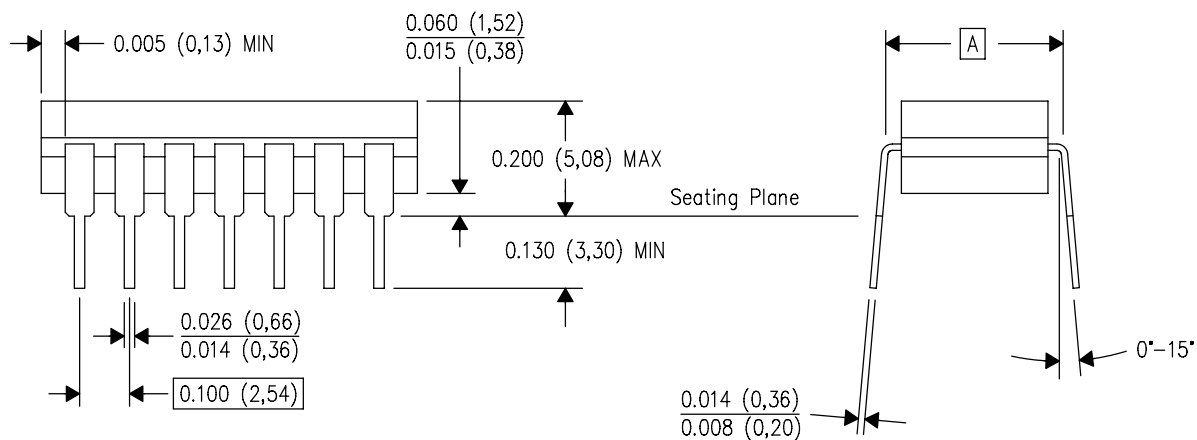
J (R-GDIP-T**)

14 LEADS SHOWN

CERAMIC DUAL IN-LINE PACKAGE



PINS ** DIM	14	16	18	20
A	0.300 (7,62) BSC	0.300 (7,62) BSC	0.300 (7,62) BSC	0.300 (7,62) BSC
B MAX	0.785 (19,94)	.840 (21,34)	0.960 (24,38)	1.060 (26,92)
B MIN	—	—	—	—
C MAX	0.300 (7,62)	0.300 (7,62)	0.310 (7,87)	0.300 (7,62)
C MIN	0.245 (6,22)	0.245 (6,22)	0.220 (5,59)	0.245 (6,22)

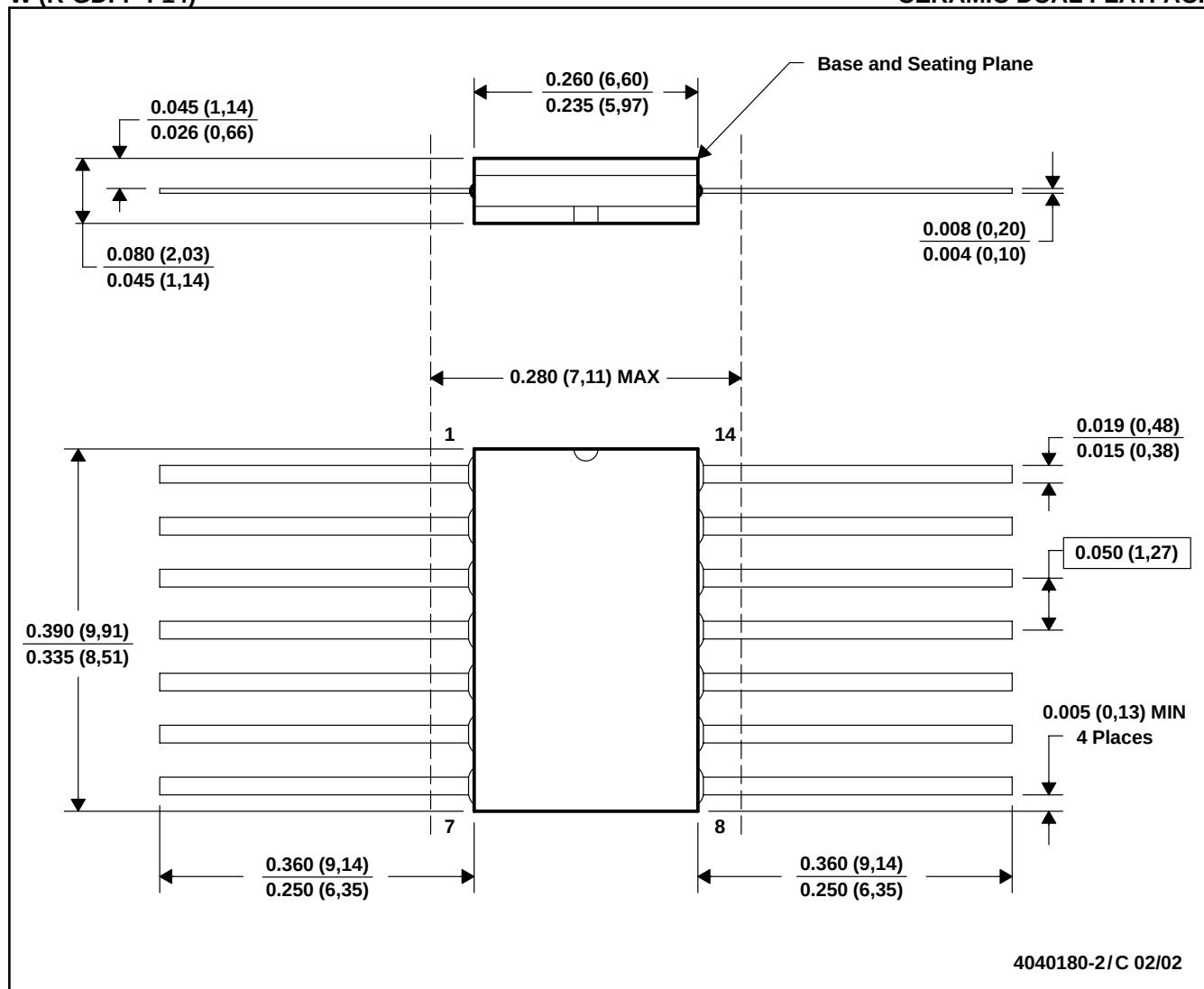


4040083/F 03/03

- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. This package is hermetically sealed with a ceramic lid using glass frit.
 - D. Index point is provided on cap for terminal identification only on press ceramic glass frit seal only.
 - E. Falls within MIL STD 1835 GDIP1-T14, GDIP1-T16, GDIP1-T18 and GDIP1-T20.

W (R-GDFP-F14)

CERAMIC DUAL FLATPACK

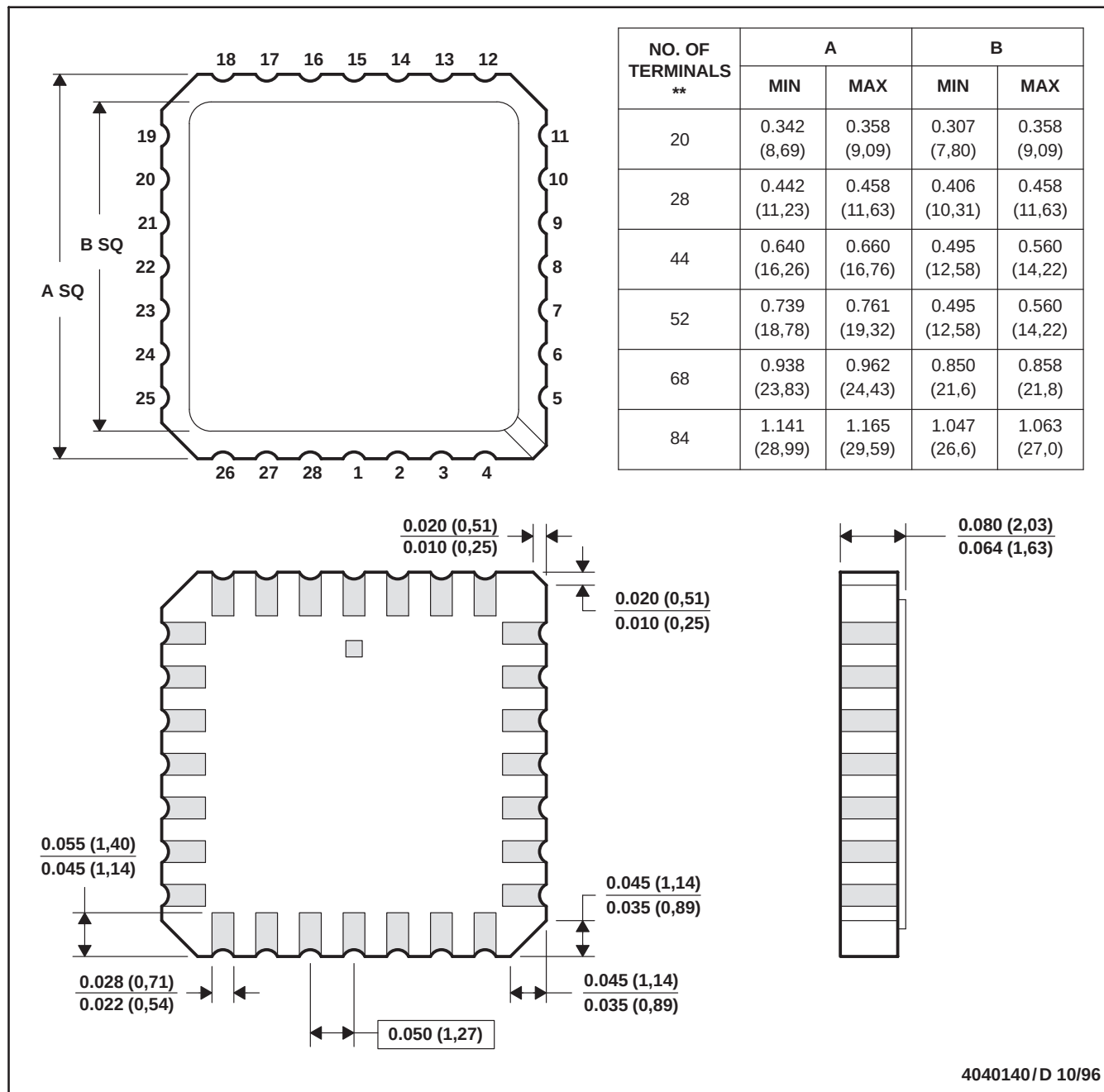


- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. This package can be hermetically sealed with a ceramic lid using glass frit.
 - D. Index point is provided on cap for terminal identification only.
 - E. Falls within MIL STD 1835 GDFP1-F14 and JEDEC MO-092AB

FK (S-CQCC-N**)

LEADLESS CERAMIC CHIP CARRIER

28 TERMINAL SHOWN

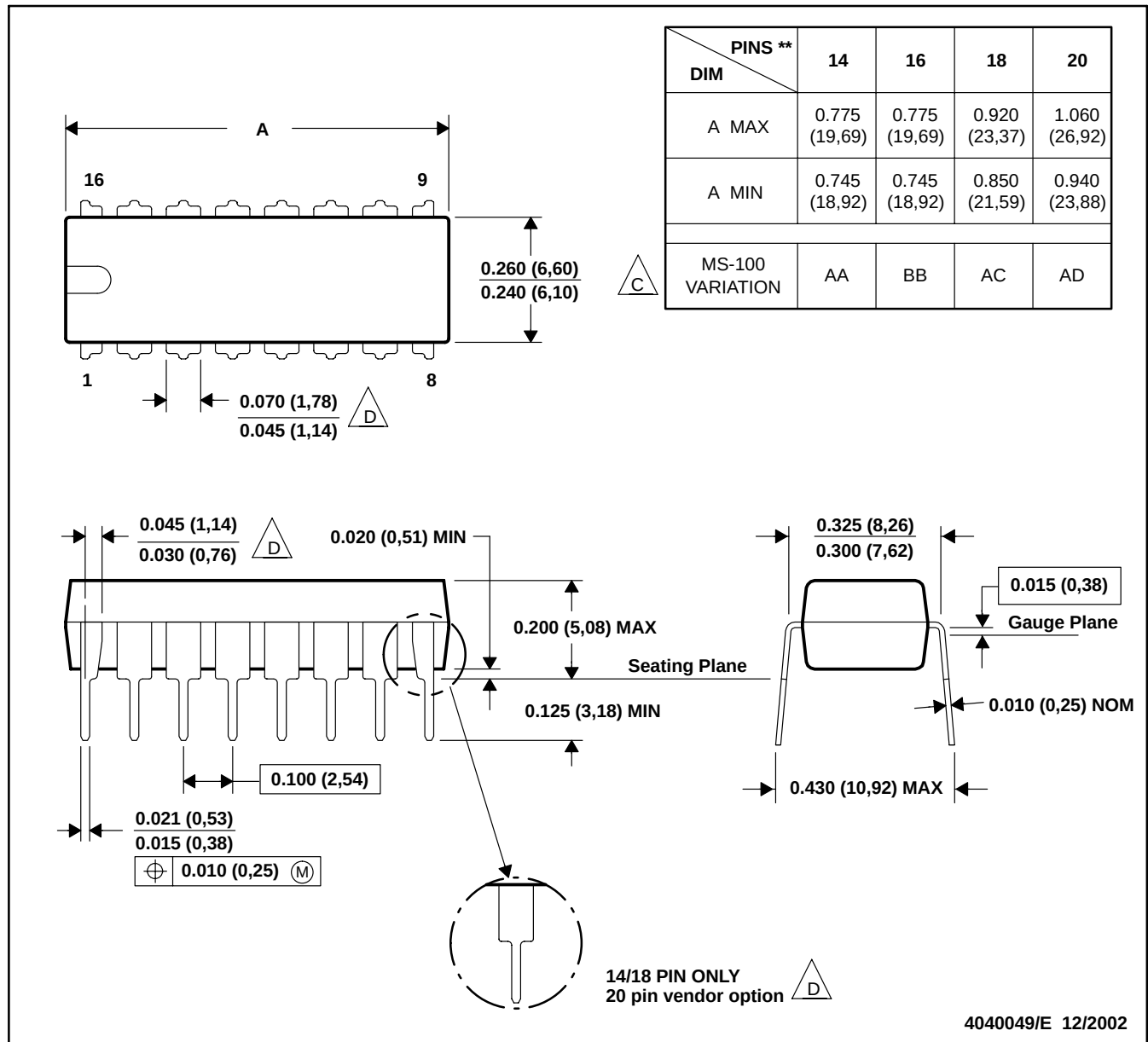


- NOTES:
- All linear dimensions are in inches (millimeters).
 - This drawing is subject to change without notice.
 - This package can be hermetically sealed with a metal lid.
 - The terminals are gold plated.
 - Falls within JEDEC MS-004

N (R-PDIP-T**)

16 PINS SHOWN

PLASTIC DUAL-IN-LINE PACKAGE

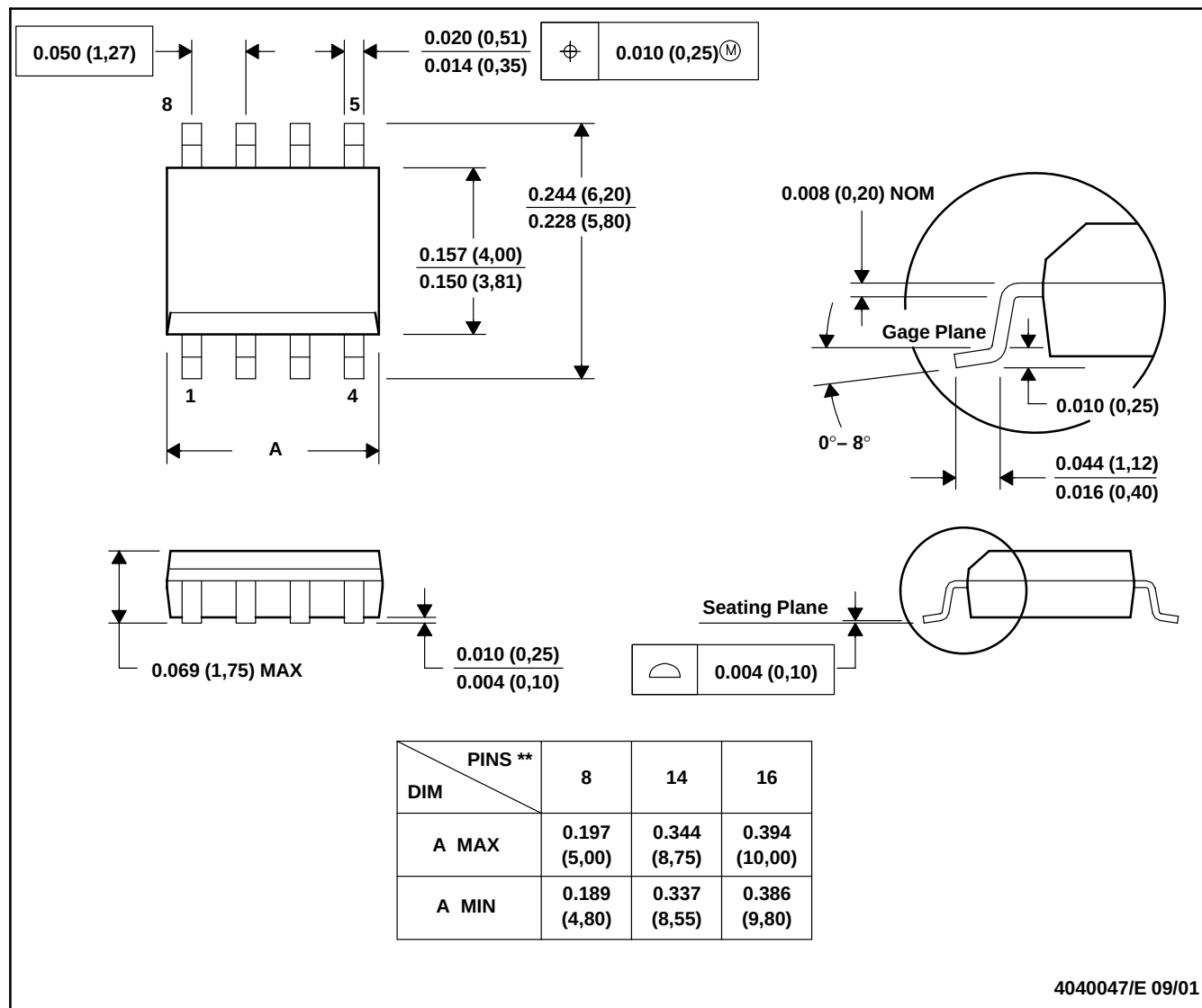


NOTES: A. All linear dimensions are in inches (millimeters).

B. This drawing is subject to change without notice.

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

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

D (R-PDSO-G)****PLASTIC SMALL-OUTLINE PACKAGE****8 PINS SHOWN**

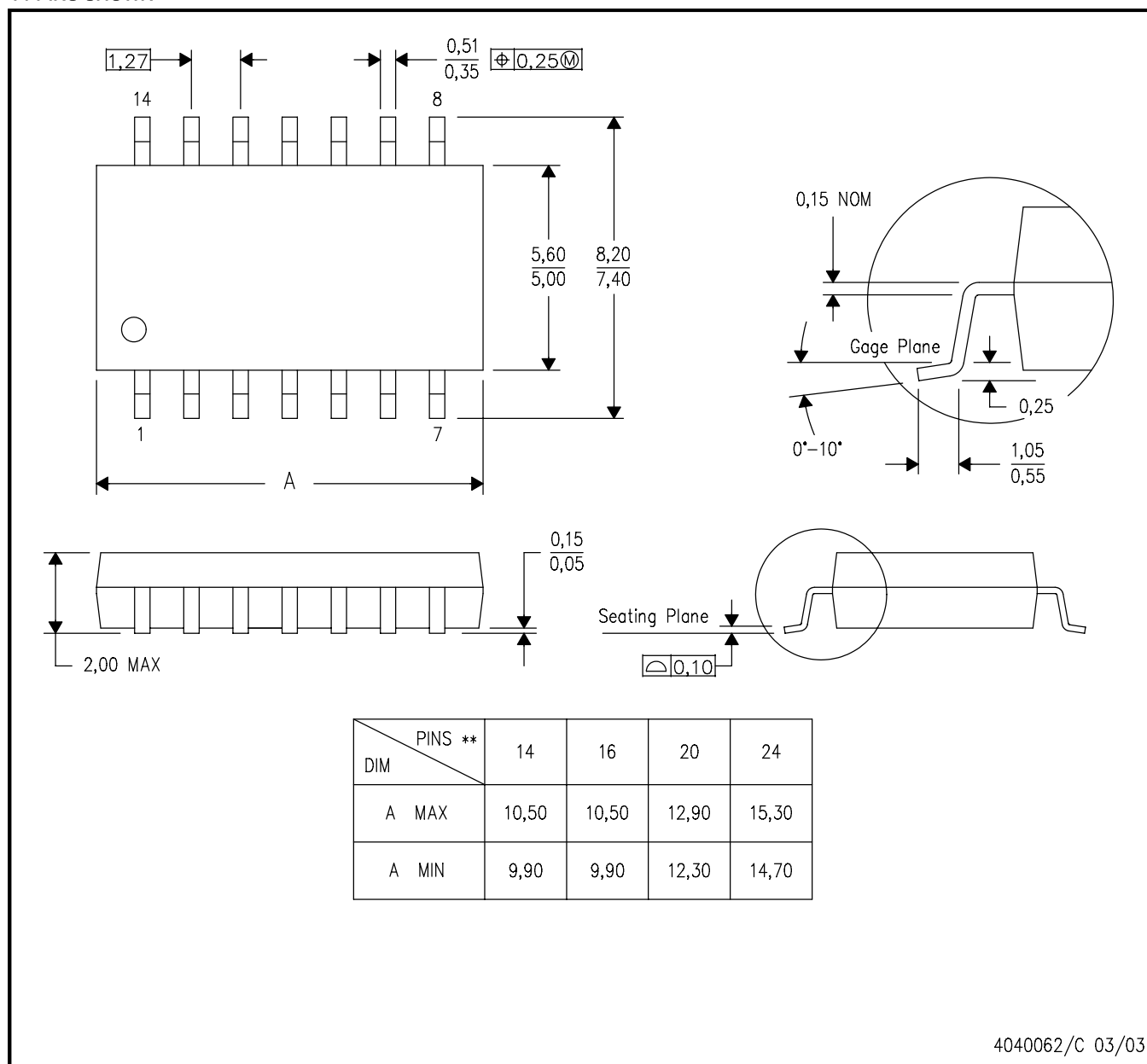
- NOTES: A. All linear dimensions are in inches (millimeters).
 B. This drawing is subject to change without notice.
 C. Body dimensions do not include mold flash or protrusion, not to exceed 0.006 (0,15).
 D. Falls within JEDEC MS-012

MECHANICAL DATA

NS (R-PDSO-G**)

PLASTIC SMALL-OUTLINE PACKAGE

14-PINS SHOWN

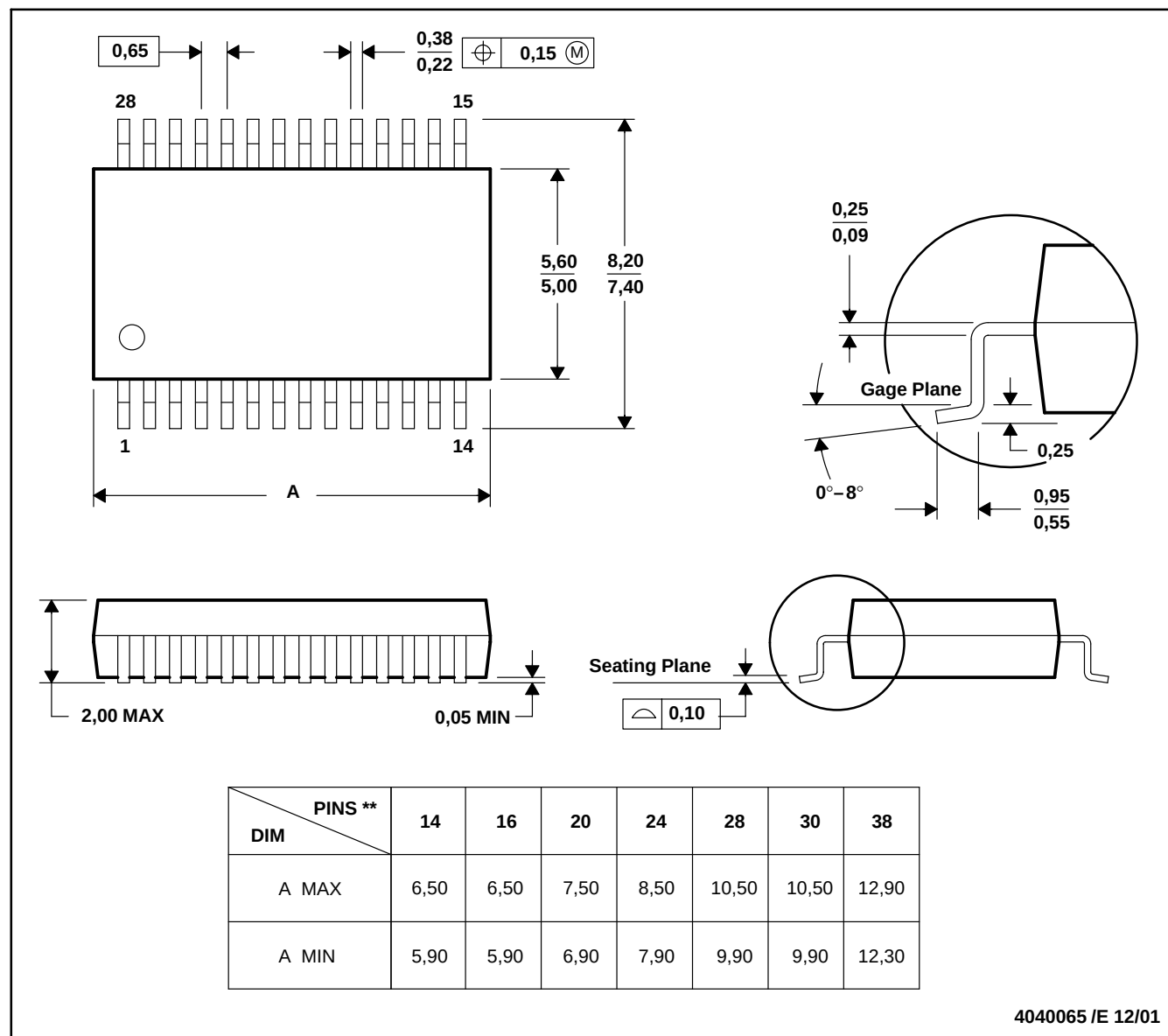


- NOTES:
- A. All linear dimensions are in millimeters.
 - B. This drawing is subject to change without notice.
 - C. Body dimensions do not include mold flash or protrusion, not to exceed 0,15.

DB (R-PDSO-G**)

PLASTIC SMALL-OUTLINE

28 PINS SHOWN

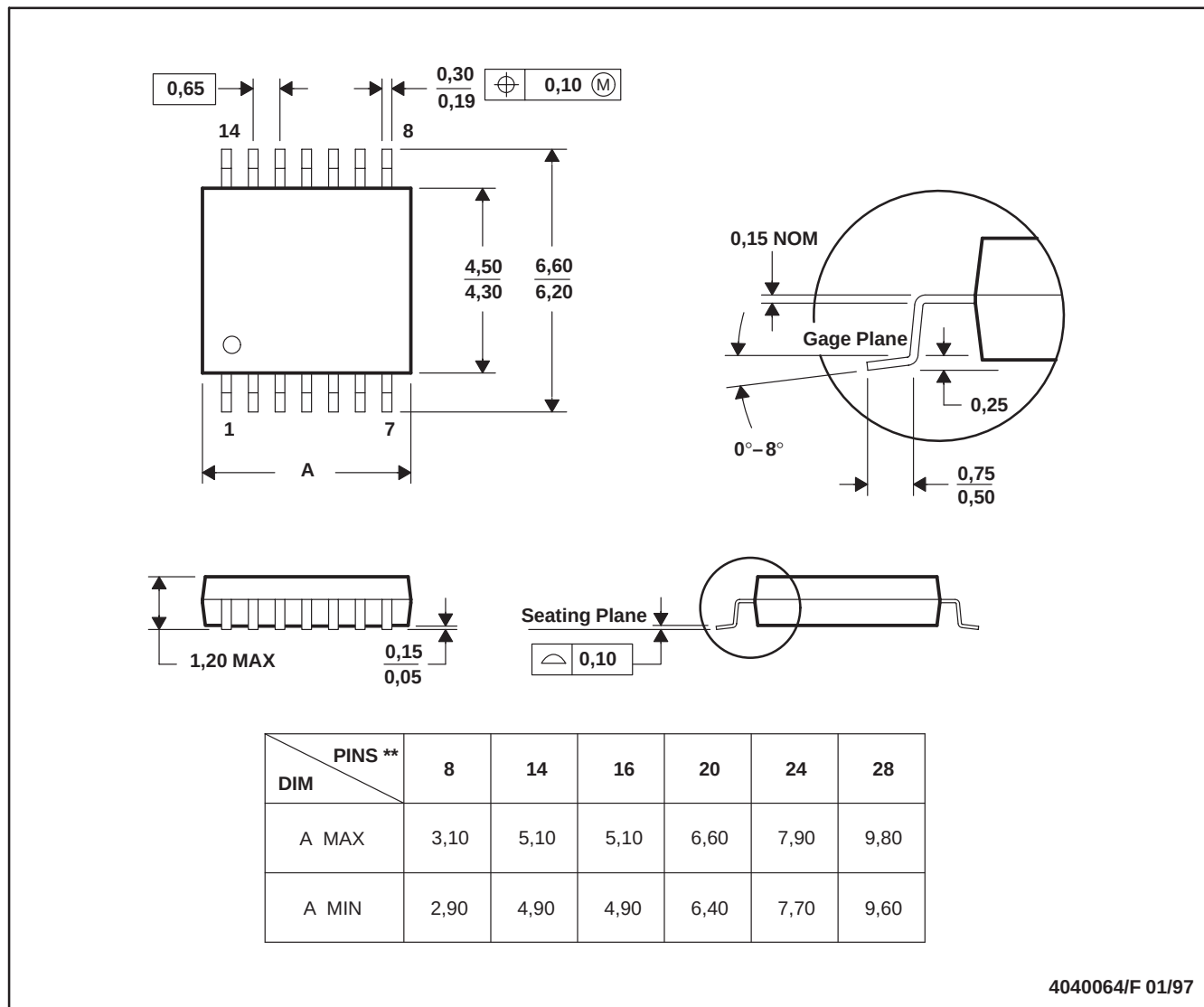


- NOTES:
- All linear dimensions are in millimeters.
 - This drawing is subject to change without notice.
 - Body dimensions do not include mold flash or protrusion not to exceed 0,15.
 - Falls within JEDEC MO-150

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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