

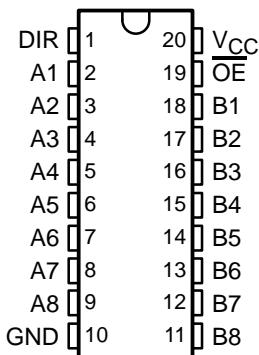
SN54ALS245A, SN54AS245, SN74ALS245A, SN74AS245 OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

SDAS272A – NOVEMBER 1994 – REVISED JANUARY 2003

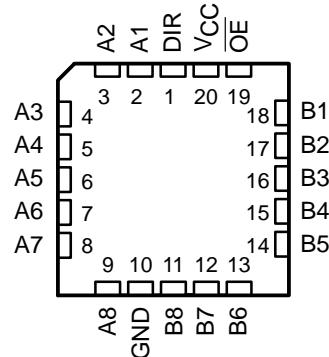
- 4.5-V to 5.5-V V_{CC} Operation
- Max t_{pd} of 5.5 ns at 5 V
- 3-State Outputs Drive Bus Lines Directly
- pnp Inputs Reduce dc Loading

SN54ALS245A . . . J OR W PACKAGE
SN54AS245 . . . J PACKAGE

SN74ALS245A . . . DB, DW, N, OR NS PACKAGE
SN74AS245 . . . DW, N, OR NS PACKAGE
(TOP VIEW)



SN54ALS245A, SN54AS245 . . . FK PACKAGE
(TOP VIEW)



description/ordering information

ORDERING INFORMATION

TA	PACKAGE [†]	ORDERABLE PART NUMBER	TOP-SIDE MARKING
0°C to 70°C	PDIP – N	Tube	SN74ALS245A-1N
			SN74ALS245AN
			SN74AS245N
	SOIC – DW	Tube	SN74ALS245ADW
		Tape and reel	SN74ALS245ADWR
		Tube	SN74ALS245A-1DW
		Tape and reel	SN74ALS245A-1DWR
		Tube	SN74AS245DW
		Tape and reel	SN74AS245DWR
	SOP – NS	Tape and reel	SN74ALS245ANSR
		Tape and reel	SN74ALS245A-1NSR
		Tape and reel	SN74AS245NSR
-55°C to 125°C	SSOP – DB	Tape and reel	SN74ALS245ADBR
		Tube	SNJ54ALS245AJ
	CDIP – J	Tube	SNJ54ALS245J
		Tube	SNJ54ALS245AW
	CFP – W	Tube	SNJ54ALS245AFK
	LCCC – FK	Tube	SNJ54AS245FK
		Tube	SNJ54AS245AFK



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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.



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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.

SN54ALS245A, SN54AS245, SN74ALS245A, SN74AS245 OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

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description/ordering information(continued)

These octal bus transceivers are designed for asynchronous two-way communication between data buses. The control-function implementation minimizes external timing requirements.

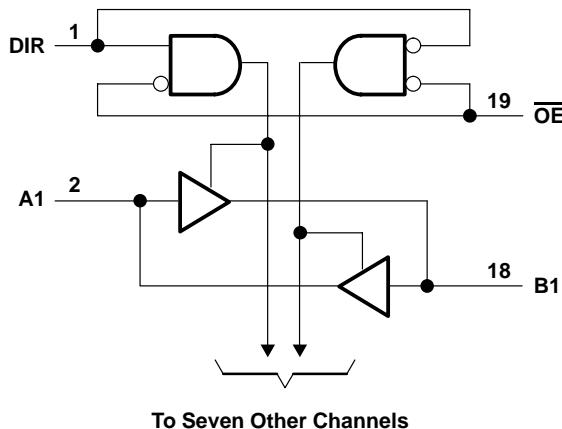
The devices allow data transmission from the A bus to the B bus or from the B bus to the A bus, depending upon the logic level at the direction-control (DIR) input. The output-enable (\overline{OE}) input can be used to disable the device so that the buses are effectively isolated.

The -1 version of the SN74ALS245A is identical to the standard version, except that the recommended maximum I_{OL} is increased to 48 mA. There is no -1 version of the SN54ALS245A.

FUNCTION TABLE

INPUTS		OPERATION
OE	DIR	
L	L	B data to A bus
L	H	A data to B bus
H	X	Isolation

logic diagram, each gate (positive logic)



absolute maximum ratings over operating free-air temperature range (SN54ALS245A, SN74ALS245A) (unless otherwise noted)[†]

Supply voltage, V_{CC}	7 V
Input voltage, V_I : All inputs	7 V
I/O ports	5.5 V
Package thermal impedance, θ_{JA} (see Note 1): DB package	70°C/W
DW package	58°C/W
N package	69°C/W
NS package	60°C/W
Storage temperature range	-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 package thermal impedance is calculated in accordance with JESD 51-7.



**SN54ALS245A, SN54AS245, SN74ALS245A, SN74AS245
OCTAL BUS TRANSCEIVERS
WITH 3-STATE OUTPUTS**

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recommended operating conditions (see Note 2)

		SN54ALS245A			SN74ALS245A			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V _{CC}	Supply voltage	4.5	5	5.5	4.5	5	5.5	V
V _{IH}	High-level input voltage	2			2			V
V _{IL}	Low-level input voltage			0.7			0.8	V
I _{OH}	High-level output current			-12			-15	mA
I _{OL}	Low-level output current			12			24	mA
							48 [†]	
T _A	Operating free-air temperature	-55		125	0		70	°C

[†] Applies only to the -1 version and only if V_{CC} is between 4.75 V and 5.25 V

NOTE 2: 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	SN54ALS245A			SN74ALS245A			UNIT
		MIN	TYP [‡]	MAX	MIN	TYP [‡]	MAX	
V _{IK}	V _{CC} = 4.5 V, I _I = -18 mA			-1.5			-1.5	V
V _{OH}	V _{CC} = 4.5 V to 5.5 V, I _{OH} = -0.4 mA	V _{CC} - 2			V _{CC} - 2			V
	V _{CC} = 4.5 V	I _{OH} = -3 mA	2.4	3.2	2.4	3.2		
		I _{OH} = -12 mA	2					
		I _{OH} = -15 mA			2			
V _{OL}	V _{CC} = 4.5 V	I _{OL} = 12 mA	0.25	0.4	0.25	0.4		V
		I _{OL} = 24 mA			0.35	0.5		
		I _{OL} = 48 mA [†]			0.35	0.5		
I _I	Control inputs	V _{CC} = 5.5 V	V _I = 7 V		0.1		0.1	mA
	A or B ports		V _I = 5.5 V		0.1		0.1	
I _{IH}	Control inputs	V _{CC} = 5.5 V, V _I = 2.7 V		20		20		μA
	A or B ports [§]			20		20		
I _{IL}	Control inputs	V _{CC} = 5.5 V, V _I = 0.4 V		-0.1		-0.1		mA
	A or B ports [§]			-0.1		-0.1		
I _{O[¶]}	V _{CC} = 5.5 V, V _O = 2.25 V	-20	-112	-30	-112			mA
I _{CC}	V _{CC} = 5.5 V	Outputs high	30	48	30	45		mA
		Outputs low	36	60	36	55		
		Outputs disabled	38	63	38	58		

[†] Applies only to the -1 version and only if V_{CC} is between 4.75 V and 5.25 V

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

[§] For I/O ports, the parameters I_{IH} and I_{IL} include the off-state output current.

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

SN54ALS245A, SN54AS245, SN74ALS245A, SN74AS245 OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

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switching characteristics (see Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 4.5\text{ V to }5.5\text{ V}$, $C_L = 50\text{ pF}$, $R1 = 500\text{ }\Omega$, $R2 = 500\text{ }\Omega$, $T_A = \text{MIN to MAX}$				UNIT	
			SN54ALS245A		SN74ALS245A			
			MIN	MAX	MIN	MAX		
t_{PLH}	A or B	B or A	1	19	3	10	ns	
t_{PHL}			1	14	3	10		
t_{PZH}	\overline{OE}	A or B	2	30	5	20	ns	
t_{PZL}			2	29	5	20		
t_{PHZ}	\overline{OE}	A or B	2	14	2	10	ns	
t_{PLZ}			2	30	4	15		

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

**absolute maximum ratings over operating free-air temperature range (SN54AS245, SN74AS245)
(unless otherwise noted)†**

Supply voltage, V_{CC}	7 V
Input voltage, V_I : All inputs	7 V
I/O ports	5.5 V
Package thermal impedance, θ_{JA} (see Note 1): DW package	58°C/W
N package	69°C/W
NS package	60°C/W
Storage temperature range	-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 package thermal impedance is calculated in accordance with JESD 51-7.

recommended operating conditions (see Note 2)

		SN54AS245			SN74AS245			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V _{CC}	Supply voltage	4.5	5	5.5	4.5	5	5.5	V
V _{IH}	High-level input voltage		2		2			V
V _{IL}	Low-level input voltage			0.8			0.8	V
I _{OH}	High-level output current			-12			-15	mA
I _{OL}	Low-level output current			48			64	mA
T _A	Operating free-air temperature	-55		125	0		70	°C

NOTE 2: 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.

**SN54ALS245A, SN54AS245, SN74ALS245A, SN74AS245
OCTAL BUS TRANSCEIVERS
WITH 3-STATE OUTPUTS**

SDAS272A – NOVEMBER 1994 – REVISED JANUARY 2003

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER	TEST CONDITIONS	SN54AS245			SN74AS245			UNIT
		MIN	TYP [†]	MAX	MIN	TYP [†]	MAX	
V_{IK}	$V_{CC} = 4.5 \text{ V}$, $I_I = -18 \text{ mA}$			-1.2			-1.2	V
V_{OH}	$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$, $I_{OH} = -2 \text{ mA}$	$V_{CC} - 2$			$V_{CC} - 2$			V
	$V_{CC} = 4.5 \text{ V}$	$I_{OH} = -3 \text{ mA}$	2.4	3.2	2.4	3.2		
		$I_{OH} = -12 \text{ mA}$	2					
		$I_{OH} = -15 \text{ mA}$				2		
V_{OL}	$V_{CC} = 4.5 \text{ V}$	$I_{OL} = 48 \text{ mA}$	0.3	0.55				V
		$I_{OL} = 64 \text{ mA}$			0.35	0.55		
I_I	$V_{CC} = 5.5 \text{ V}$	$V_I = 7 \text{ V}$		0.1		0.1		mA
		$V_I = 5.5 \text{ V}$		0.1		0.1		
I_{IH}	$V_{CC} = 5.5 \text{ V}$	$V_I = 2.7 \text{ V}$		50		20		μA
				70		70		
I_{IL}	$V_{CC} = 5.5 \text{ V}$	$V_I = 0.4 \text{ V}$		-0.5		-0.5		mA
				-0.75		-0.75		
$I_O^{\$}$	$V_{CC} = 5.5 \text{ V}$	$V_O = 2.25 \text{ V}$	-50	-150	-50	-150		mA
I_{CC}	$V_{CC} = 5.5 \text{ V}$	Outputs high	62	97	62	97		mA
		Outputs low	95	143	95	143		
		Outputs disabled	79	123	79	123		

[†] All typical values are $V_{CC} = 5 \text{ V}$, $T_A = 25^\circ\text{C}$.

[‡] For I/O ports, the parameters I_{IH} and I_{IL} include the off-state output current.

[§] 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 (see Figure 1)

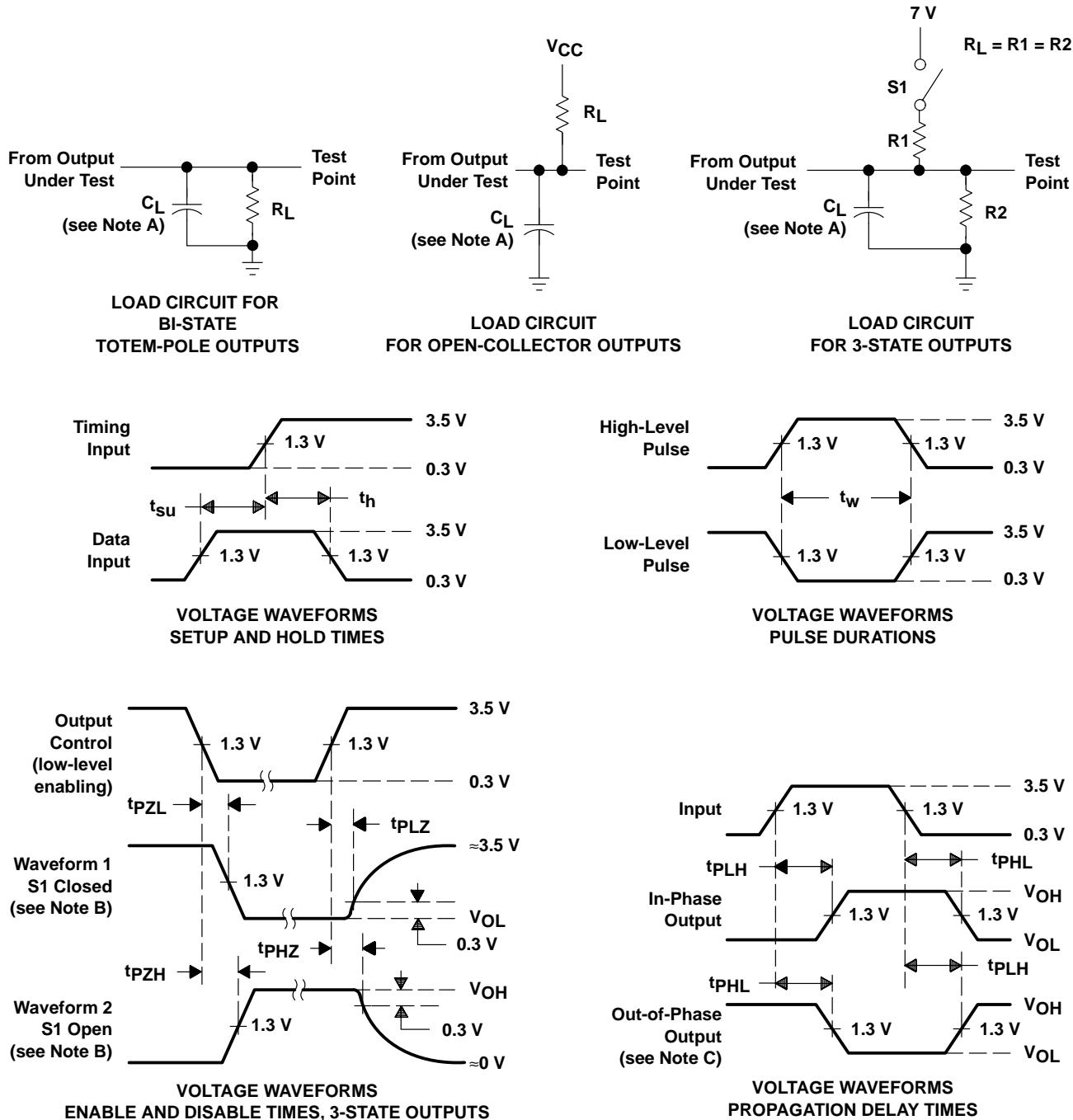
PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$, $C_L = 50 \text{ pF}$, $R1 = 500 \Omega$, $R2 = 500 \Omega$, $T_A = \text{MIN to MAX}^{\dagger}$				UNIT	
			SN54AS245		SN74AS245			
			MIN	MAX	MIN	MAX		
t_{PLH}	A or B	B or A	2	9.5	2	7.5	ns	
			2	9	2	7		
t_{PHL}	\overline{OE}	A or B	2	11	2	9	ns	
			2	10.5	2	8.5		
t_{PZH}	\overline{OE}	A or B	2	7.5	2	5.5	ns	
			2	12	2	9.5		

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

**SN54ALS245A, SN54AS245, SN74ALS245A, SN74AS245
OCTAL BUS TRANSCEIVERS
WITH 3-STATE OUTPUTS**

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**PARAMETER MEASUREMENT INFORMATION
SERIES 54ALS/74ALS AND 54AS/74AS DEVICES**



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

Figure 1. Load Circuits and Voltage Waveforms

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
84030012A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	84030012A SNJ54ALS 245AFK	Samples
8403001RA	ACTIVE	CDIP	J	20	1	TBD	A42	N / A for Pkg Type	-55 to 125	8403001RA SNJ54ALS245AJ	Samples
8403001SA	ACTIVE	CFP	W	20	1	TBD	A42	N / A for Pkg Type	-55 to 125	8403001SA SNJ54ALS245AW	Samples
SN54ALS245AJ	ACTIVE	CDIP	J	20	1	TBD	A42	N / A for Pkg Type	-55 to 125	SN54ALS245AJ	Samples
SN54AS245J	ACTIVE	CDIP	J	20	1	TBD	A42	N / A for Pkg Type	-55 to 125	SN54AS245J	Samples
SN74ALS245A-1DW	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	ALS245A-1	Samples
SN74ALS245A-1DWG4	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	ALS245A-1	Samples
SN74ALS245A-1DWR	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	ALS245A-1	Samples
SN74ALS245A-1DWRG4	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	ALS245A-1	Samples
SN74ALS245A-1N	ACTIVE	PDIP	N	20	20	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type	0 to 70	SN74ALS245A-1N	Samples
SN74ALS245A-1NE4	ACTIVE	PDIP	N	20	20	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type	0 to 70	SN74ALS245A-1N	Samples
SN74ALS245A-1NSR	ACTIVE	SO	NS	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	ALS245A-1	Samples
SN74ALS245ADBLE	OBsolete	SSOP	DB	20		TBD	Call TI	Call TI	0 to 70		
SN74ALS245ADBR	ACTIVE	SSOP	DB	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	G245A	Samples
SN74ALS245ADBRG4	ACTIVE	SSOP	DB	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	G245A	Samples
SN74ALS245ADW	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	ALS245A	Samples
SN74ALS245ADWG4	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	ALS245A	Samples

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
SN74ALS245ADWR	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	ALS245A	Samples
SN74ALS245ADWRE4	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	ALS245A	Samples
SN74ALS245ADWRG4	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	ALS245A	Samples
SN74ALS245AN	ACTIVE	PDIP	N	20	20	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type	0 to 70	SN74ALS245AN	Samples
SN74ALS245AN3	OBsolete	PDIP	N	20		TBD	Call TI	Call TI	0 to 70		
SN74ALS245ANE4	ACTIVE	PDIP	N	20	20	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type	0 to 70	SN74ALS245AN	Samples
SN74ALS245ANSR	ACTIVE	SO	NS	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	ALS245A	Samples
SN74ALS245ANSRG4	ACTIVE	SO	NS	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	ALS245A	Samples
SN74AS245DW	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	AS245	Samples
SN74AS245DWR	OBsolete	SOIC	DW	20		TBD	Call TI	Call TI	0 to 70	AS245	
SN74AS245DWRE4	OBsolete	SOIC	DW	20		TBD	Call TI	Call TI	0 to 70		
SN74AS245DWRG4	OBsolete	SOIC	DW	20		TBD	Call TI	Call TI	0 to 70		
SN74AS245N	ACTIVE	PDIP	N	20	20	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type	0 to 70	SN74AS245N	Samples
SN74AS245NSR	ACTIVE	SO	NS	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	74AS245	Samples
SNJ54ALS245AFK	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	84030012A SNJ54ALS 245AFK	Samples
SNJ54ALS245AJ	ACTIVE	CDIP	J	20	1	TBD	A42	N / A for Pkg Type	-55 to 125	8403001RA SNJ54ALS245AJ	Samples
SNJ54ALS245AW	ACTIVE	CFP	W	20	1	TBD	A42	N / A for Pkg Type	-55 to 125	8403001SA SNJ54ALS245AW	Samples
SNJ54AS245FK	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	SNJ54AS 245FK	Samples
SNJ54AS245J	ACTIVE	CDIP	J	20	1	TBD	A42	N / A for Pkg Type	-55 to 125	SNJ54AS245J	Samples

(1) The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

TBD: The Pb-Free/Green conversion plan has not been defined.

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

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OTHER QUALIFIED VERSIONS OF SN54ALS245A, SN54AS245, SN74ALS245A, SN74AS245 :

• Catalog: [SN74ALS245A](#), [SN74AS245](#)

• Military: [SN54ALS245A](#), [SN54AS245](#)



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PACKAGE OPTION ADDENDUM

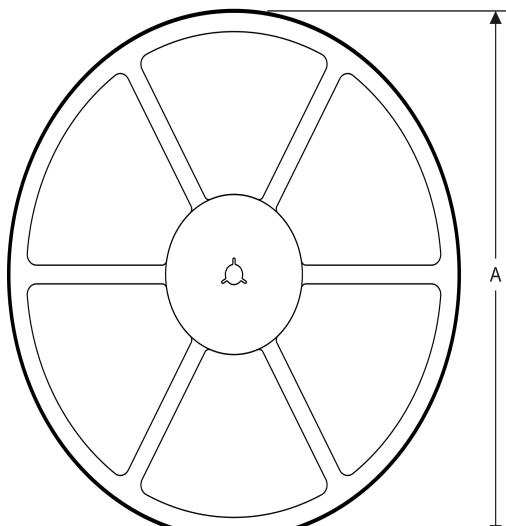
10-Jun-2014

NOTE: Qualified Version Definitions:

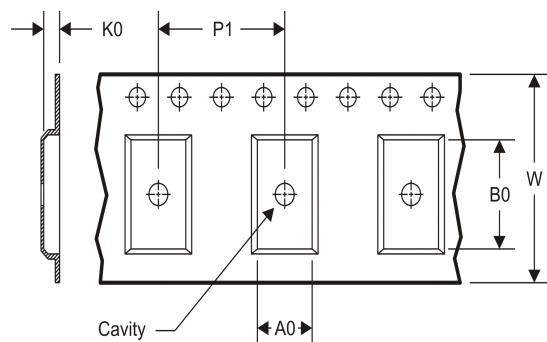
- Catalog - TI's standard catalog product
- Military - QML certified for Military and Defense Applications

TAPE AND REEL INFORMATION

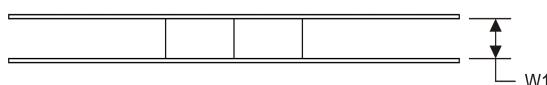
REEL DIMENSIONS



TAPE DIMENSIONS



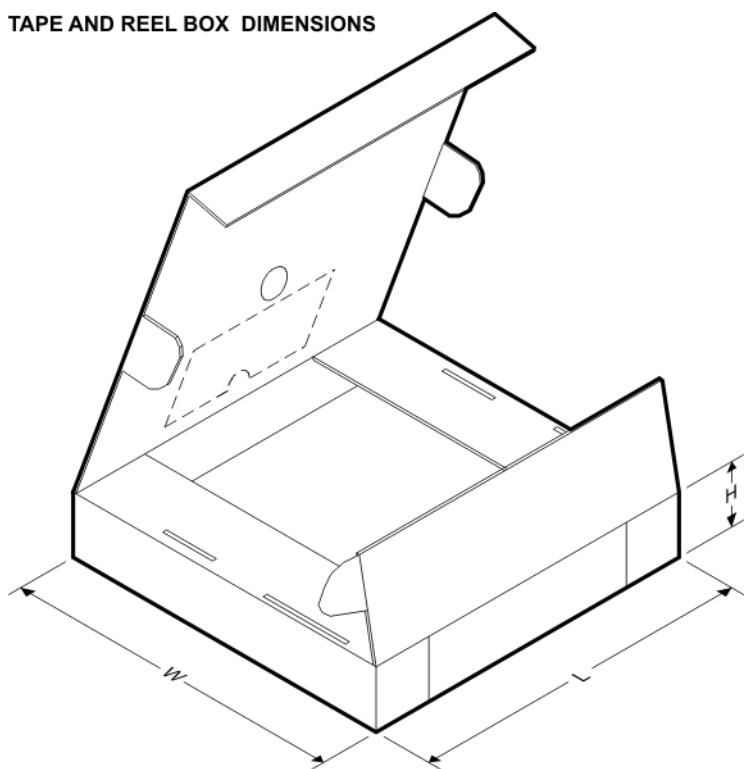
A0	Dimension designed to accommodate the component width
B0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers



TAPE AND REEL INFORMATION

*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SN74ALS245A-1DWR	SOIC	DW	20	2000	330.0	24.4	10.8	13.0	2.7	12.0	24.0	Q1
SN74ALS245A-1NSR	SO	NS	20	2000	330.0	24.4	8.2	13.0	2.5	12.0	24.0	Q1
SN74ALS245ADBR	SSOP	DB	20	2000	330.0	16.4	8.2	7.5	2.5	12.0	16.0	Q1
SN74ALS245ADWR	SOIC	DW	20	2000	330.0	24.4	10.8	13.0	2.7	12.0	24.0	Q1
SN74ALS245ANSR	SO	NS	20	2000	330.0	24.4	8.2	13.0	2.5	12.0	24.0	Q1
SN74AS245NSR	SO	NS	20	2000	330.0	24.4	8.2	13.0	2.5	12.0	24.0	Q1

TAPE AND REEL BOX DIMENSIONS


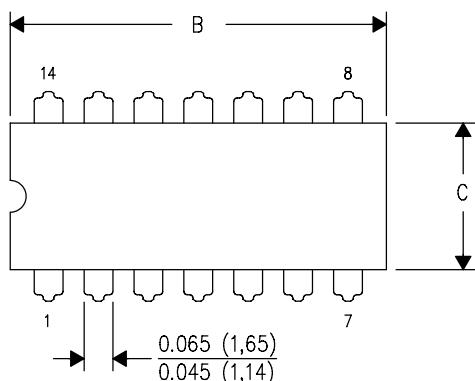
*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74ALS245A-1DWR	SOIC	DW	20	2000	367.0	367.0	45.0
SN74ALS245A-1NSR	SO	NS	20	2000	367.0	367.0	45.0
SN74ALS245ADBR	SSOP	DB	20	2000	367.0	367.0	38.0
SN74ALS245ADWR	SOIC	DW	20	2000	367.0	367.0	45.0
SN74ALS245ANSR	SO	NS	20	2000	367.0	367.0	45.0
SN74AS245NSR	SO	NS	20	2000	367.0	367.0	45.0

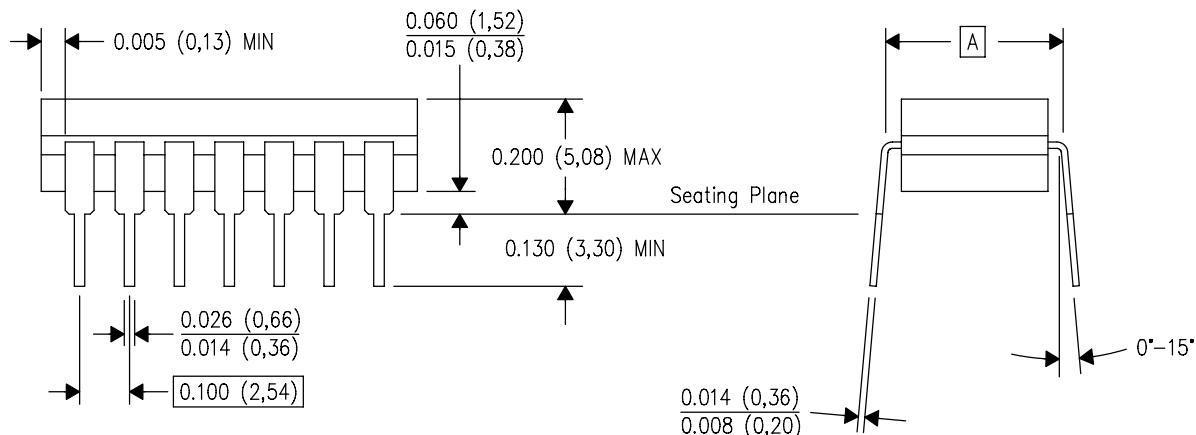
J (R-GDIP-T**)

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)

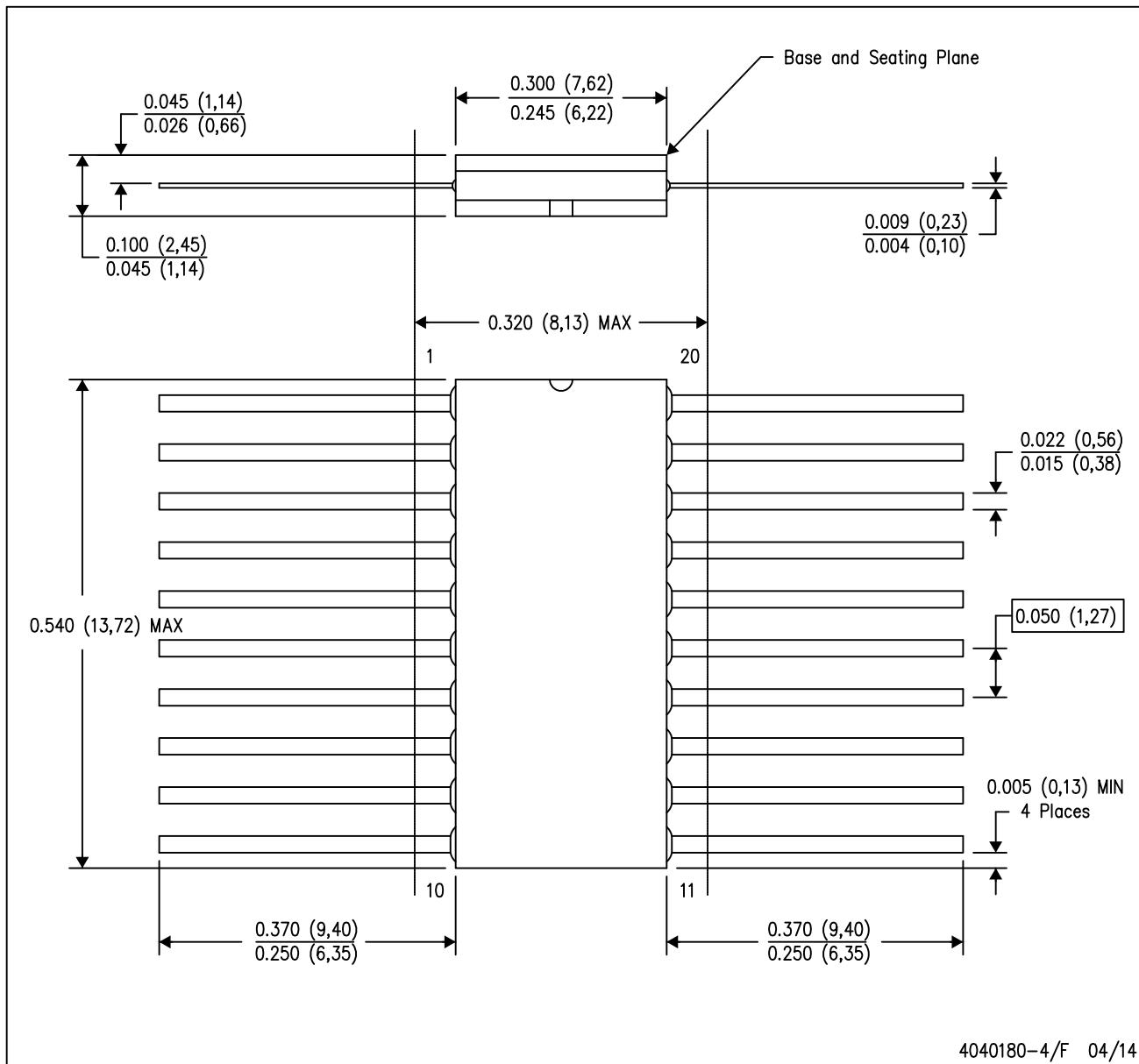


4040083/F 03/03

- 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-F20)

CERAMIC DUAL FLATPACK

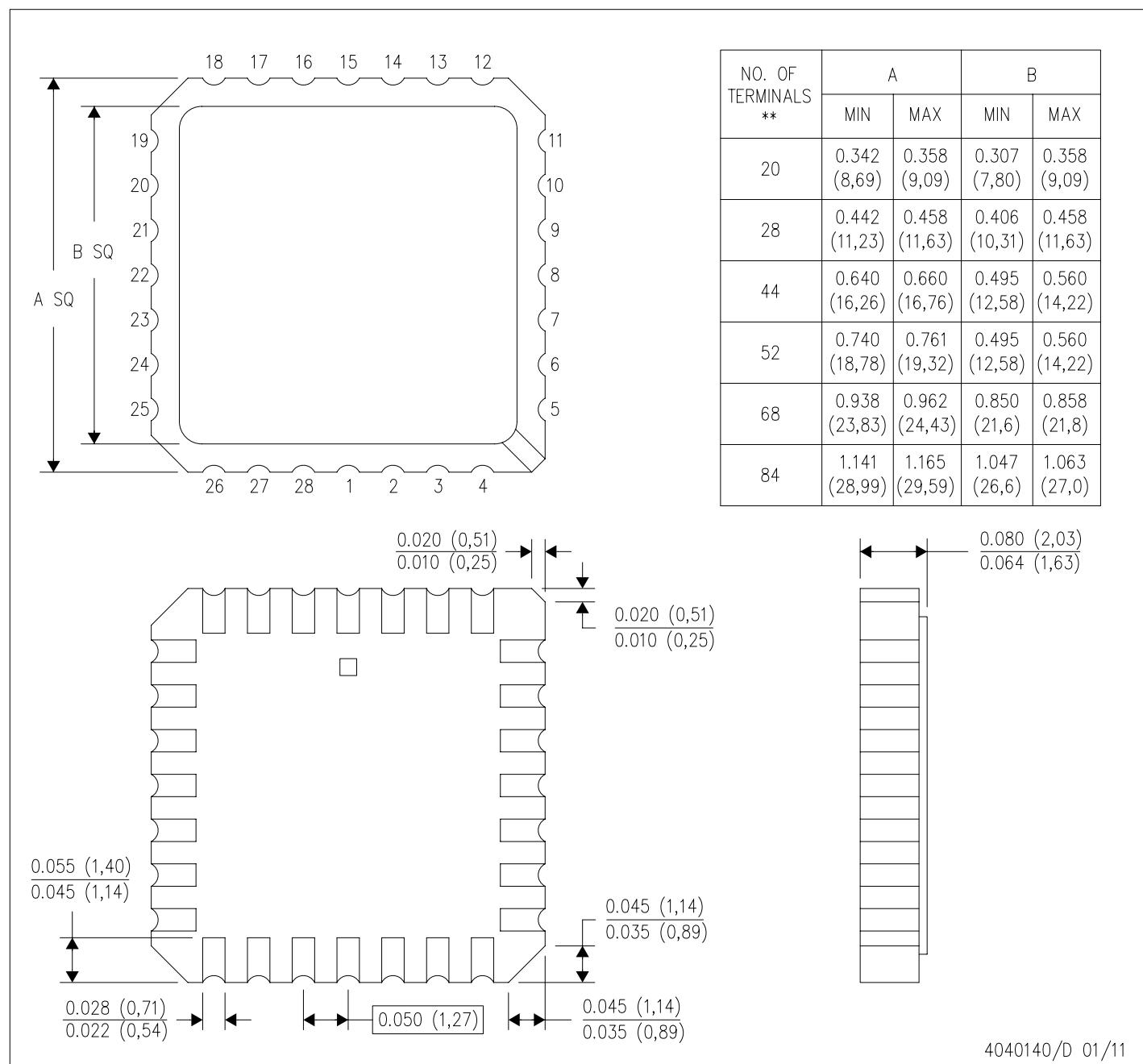


- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. This package can be hermetically sealed with a ceramic lid using glass frit.
 - D. Index point is provided on cap for terminal identification only.
 - E. Falls within Mil-Std 1835 GDFP2-F20

FK (S-CQCC-N**)

28 TERMINAL SHOWN

LEADLESS CERAMIC CHIP CARRIER



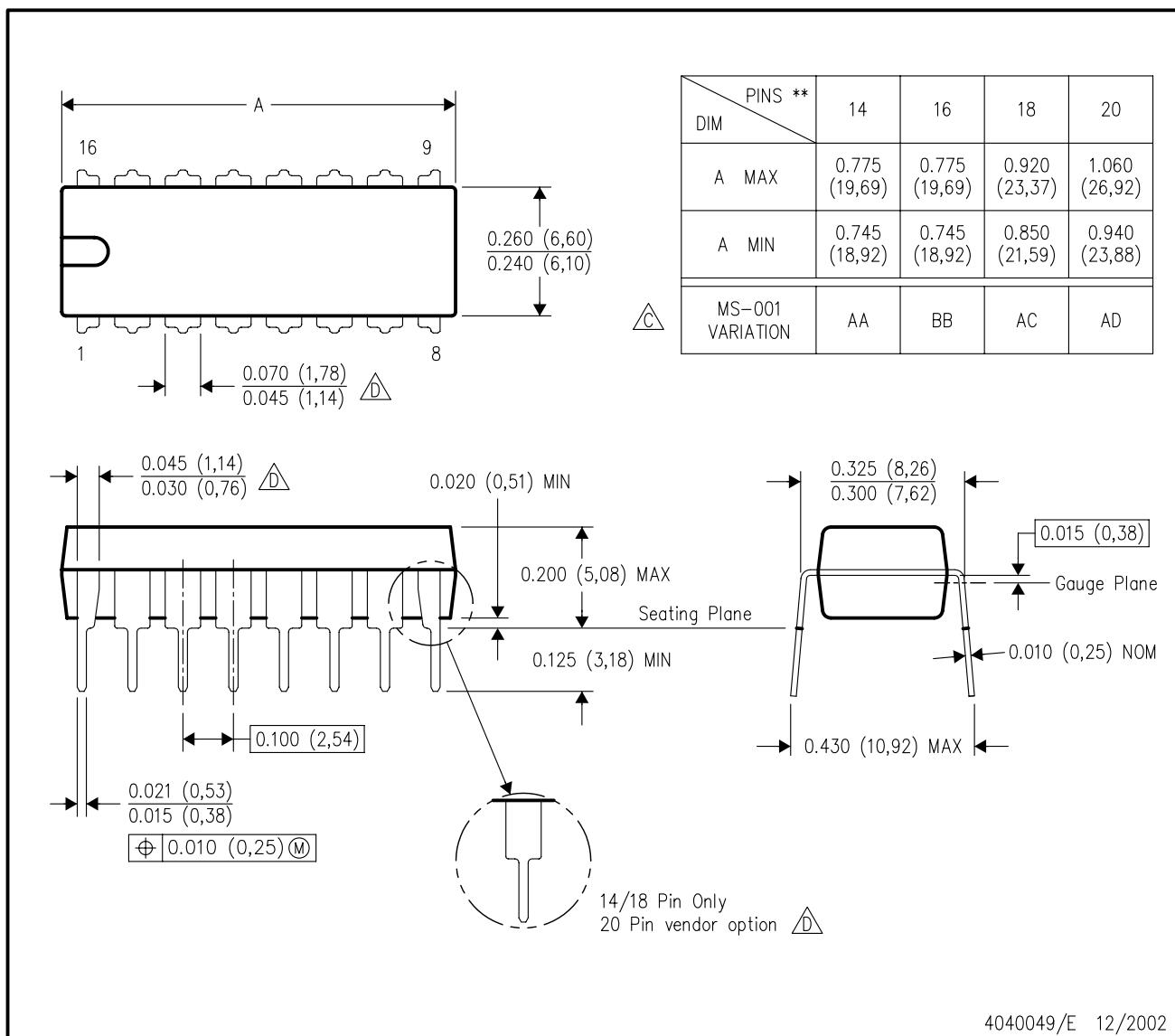
- NOTES: A. All linear dimensions are in inches (millimeters).
 B. This drawing is subject to change without notice.
 C. This package can be hermetically sealed with a metal lid.
 D. Falls within JEDEC MS-004

4040140/D 01/11

N (R-PDIP-T**)

16 PINS SHOWN

PLASTIC DUAL-IN-LINE PACKAGE



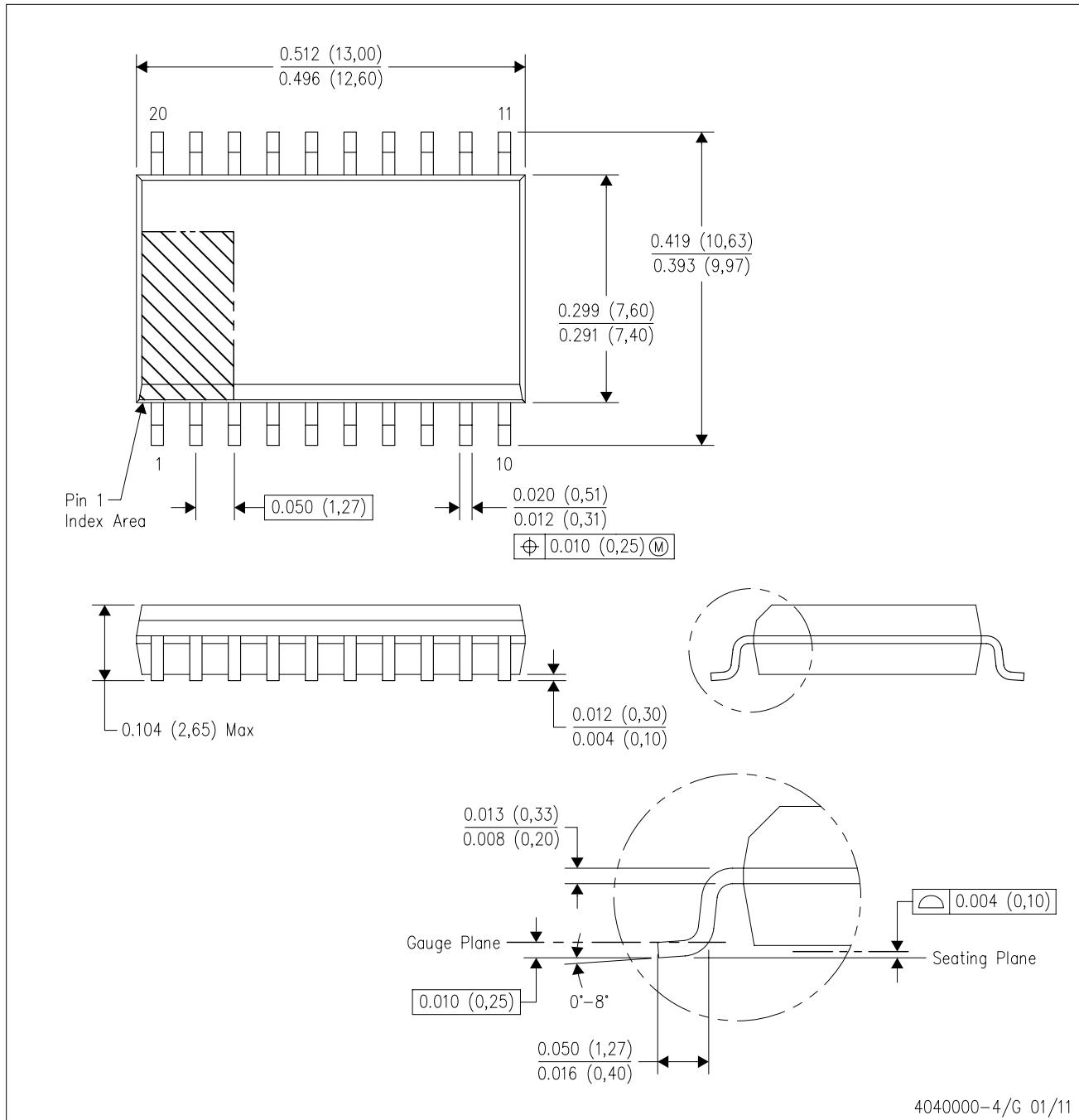
NOTES: A. All linear dimensions are in inches (millimeters).
B. This drawing is subject to change without notice.

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

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

DW (R-PDSO-G20)

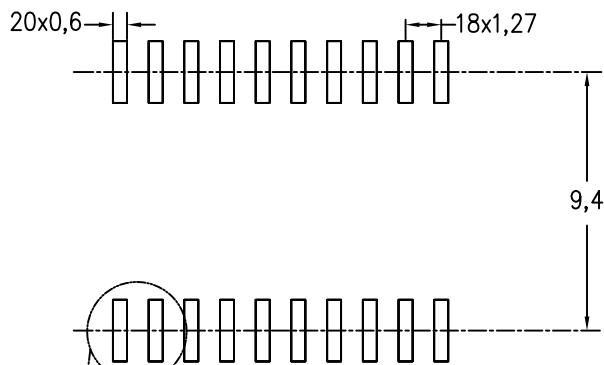
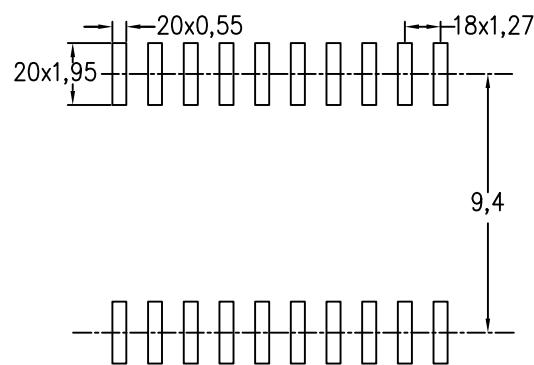
PLASTIC SMALL OUTLINE



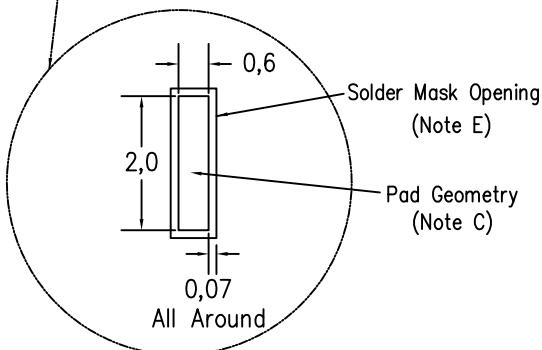
- NOTES:
- All linear dimensions are in inches (millimeters). Dimensioning and tolerancing per ASME Y14.5M-1994.
 - This drawing is subject to change without notice.
 - Body dimensions do not include mold flash or protrusion not to exceed 0.006 (0.15).
 - Falls within JEDEC MS-013 variation AC.

DW (R-PDSO-G20)

PLASTIC SMALL OUTLINE

Example Board Layout
(Note C)Stencil Openings
(Note D)

Non Solder Mask Define Pad



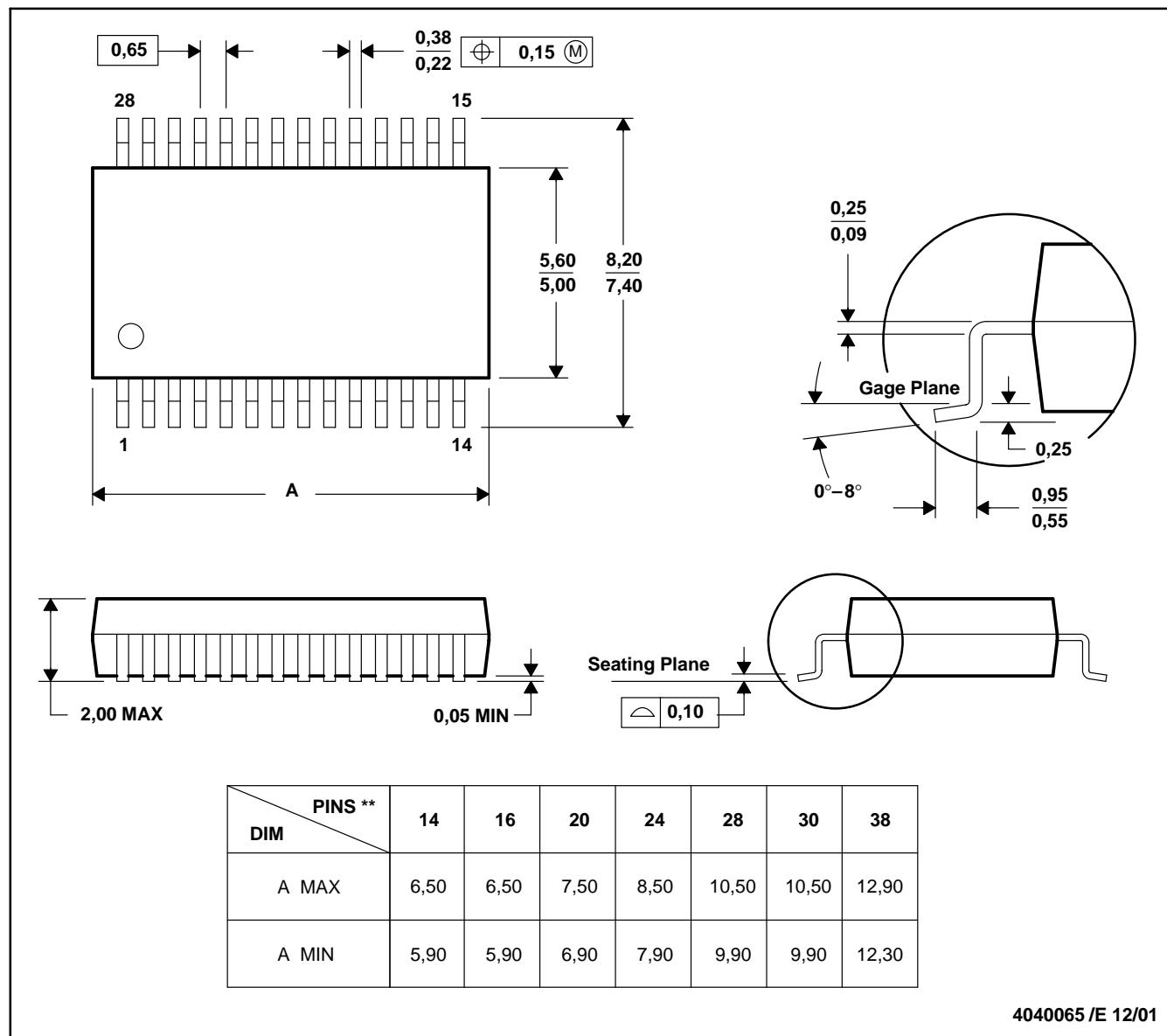
4209202-4/F 08/13

- NOTES:
- All linear dimensions are in millimeters.
 - This drawing is subject to change without notice.
 - Refer to IPC7351 for alternate board design.
 - Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525
 - Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

DB (R-PDSO-G**)

PLASTIC SMALL-OUTLINE

28 PINS SHOWN



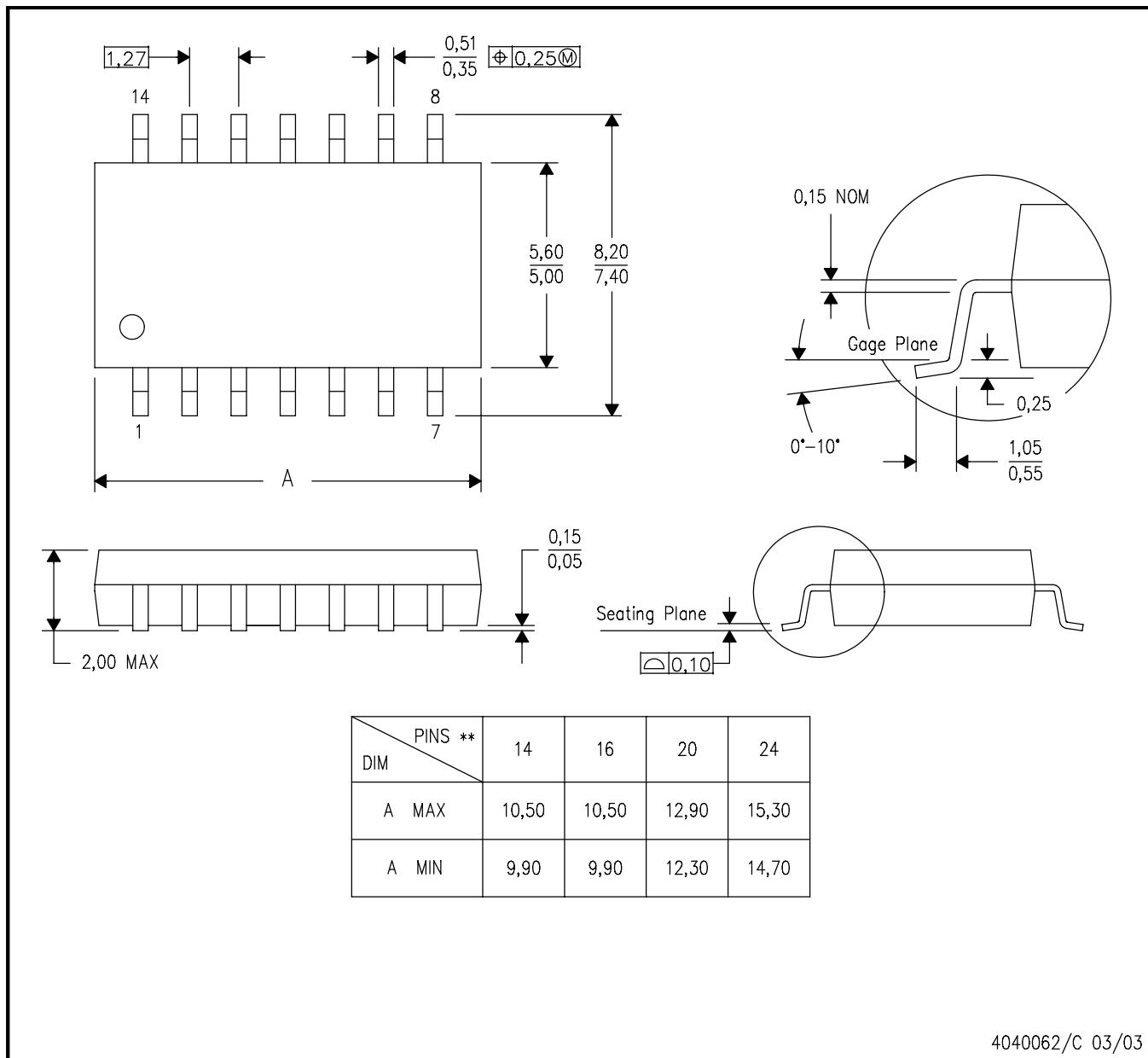
- NOTES: A. All linear dimensions are in millimeters.
 B. This drawing is subject to change without notice.
 C. Body dimensions do not include mold flash or protrusion not to exceed 0,15.
 D. Falls within JEDEC MO-150

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.

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