The SN54125, SN54126, SN74125, SN74126, and SN54LS126A are obsolete and are no longer supplied.

SN54125, SN54126, SN54LS125A, SN54LS126A, SN74125, SN74126, SN74LS125A, SN74LS126A
QUADRUPLE BUS BUFFERS WITH 3-STATE OUTPUTS

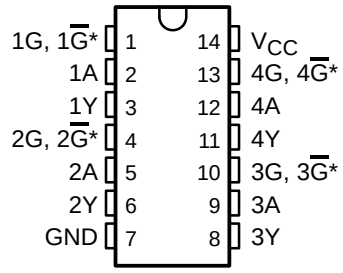
SDLS044A – DECEMBER 1983 – REVISED MARCH 2002

- **Quad Bus Buffers**
- **3-State Outputs**
- **Separate Control for Each Channel**

description

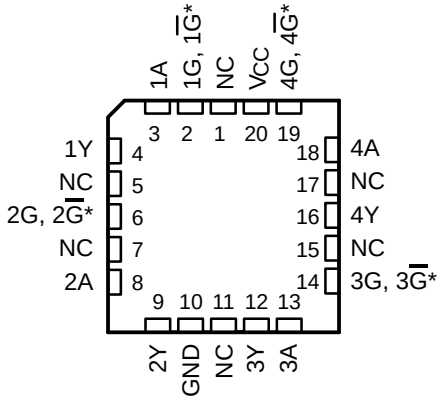
These bus buffers feature three-state outputs that, when enabled, have the low impedance characteristics of a TTL output with additional drive capability at high logic levels to permit driving heavily loaded bus lines without external pullup resistors. When disabled, both output transistors are turned off, presenting a high-impedance state to the bus so the output will act neither as a significant load nor as a driver. The ’125 and ’LS125A devices’ outputs are disabled when $\overline{G}$ is high. The ’126 and ’LS126A devices’ outputs are disabled when G is low.

SN54125, SN54126, SN54LS125A, SN54LS126A . . . J OR W PACKAGE
SN74125, SN74126 . . . N PACKAGE
SN74LS125A, SN74LS126A . . . D, N, OR NS PACKAGE
(TOP VIEW)



*$\overline{G}$ on ’125 and ’LS125A devices;
G on 126 and ’LS126A devices

SN54LS125A, SN54LS126A . . . FK PACKAGE
(TOP VIEW)



*$\overline{G}$ on ’125 and ’LS125A devices;
G on 126 and ’LS126A devices
NC – No internal connection

The SN54125, SN54126, SN74125, SN74126, and SN54LS126A are obsolete and are no longer supplied.

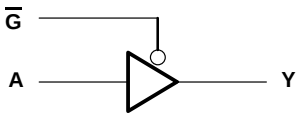
ORDERING INFORMATION

T_A	PACKAGE†		ORDERABLE PART NUMBER	TOP-SIDE MARKING
0°C to 70°C	PDIP – N	Tube	SN74LS125AN	SN74LS125AN
		Tube	SN74LS126AN	SN74LS126AN
	SOIC – D	Tube	SN74LS125AD	LS125A
		Tape and reel	SN74LS125ADR	
		Tube	SN74LS126AD	LS126A
		Tape and reel	SN74LS126ADR	
	SOP – NS	Tape and reel	SN74LS125ANSR	74LS125A
		Tape and reel	SN74LS126ANSR	74LS126A
–55°C to 125°C	CDIP – J	Tube	SN54LS125AJ	SN54LS125AJ
		Tube	SNJ54LS125AJ	SNJ54LS125AJ
	CFP – W	Tube	SNJ54LS125AW	SNJ54LS125AW
	LCCC – FK	Tube	SNJ54LS125AFK	SNJ54LS125AFK

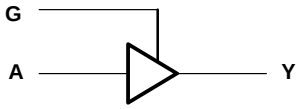
† Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at www.ti.com/sc/package.

logic diagram (each gate)

’125, ’LS125A

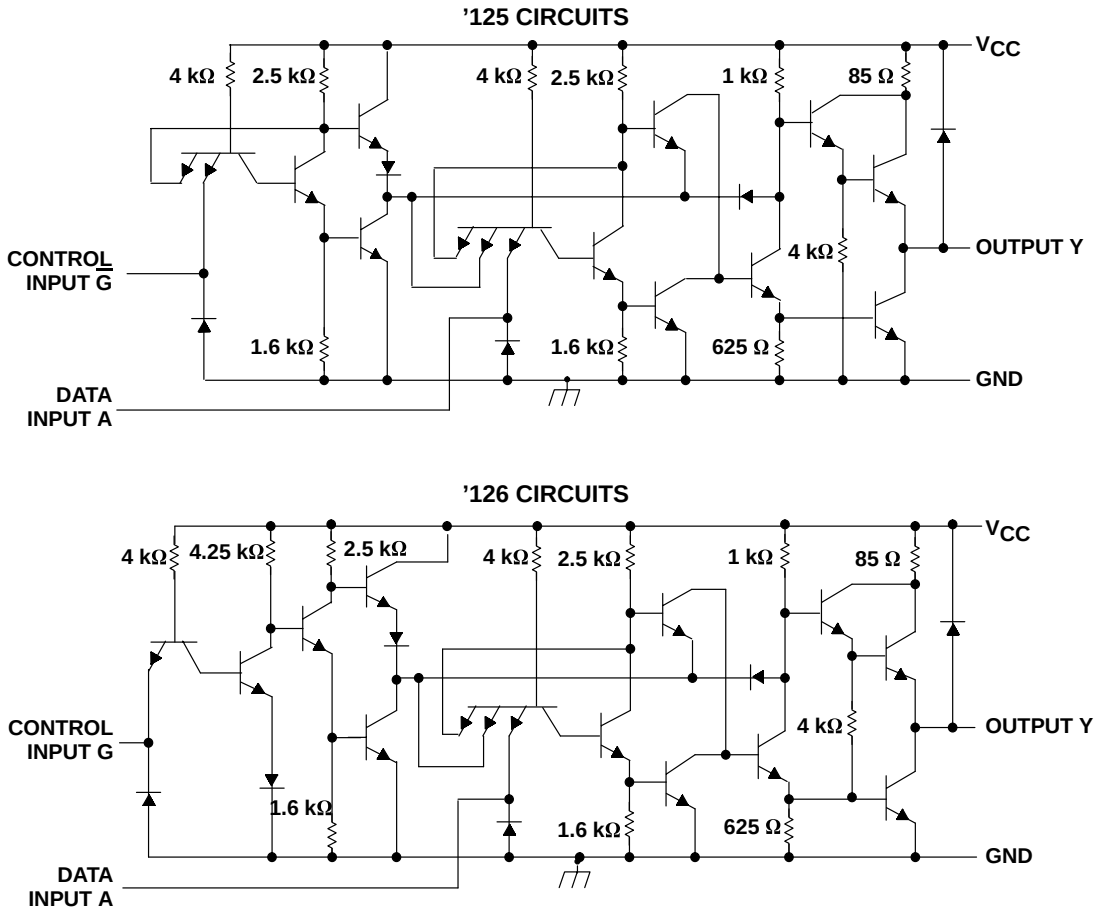


’126, ’LS126A



Y = A

schematics (each gate)



absolute maximum ratings over operating free-air temperature (unless otherwise noted)† ('125 and '126)

Supply voltage, V_{CC} (see Note 1) . . . . . 7 V
Input voltage, V_I . . . . . 5.5 V
Package thermal impedance, θ_{JA} (see Note 2): N package . . . . . 80°C/W
Storage temperature range, T_{stg} . . . . . –65°C to 150°C

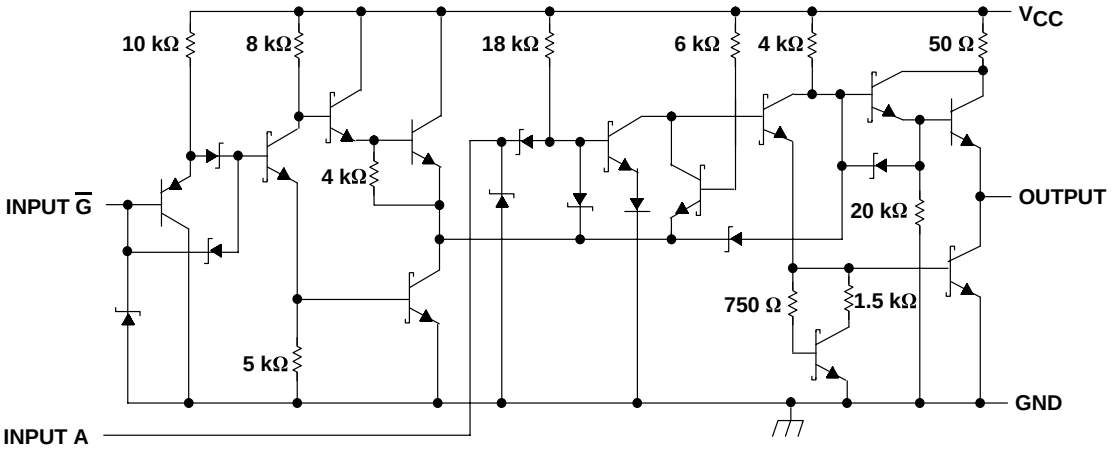
† Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

NOTES: 1. Voltage values are with respect to network ground terminal.
2. The package termal impedance is calculated in accordance with JESD 51-7.

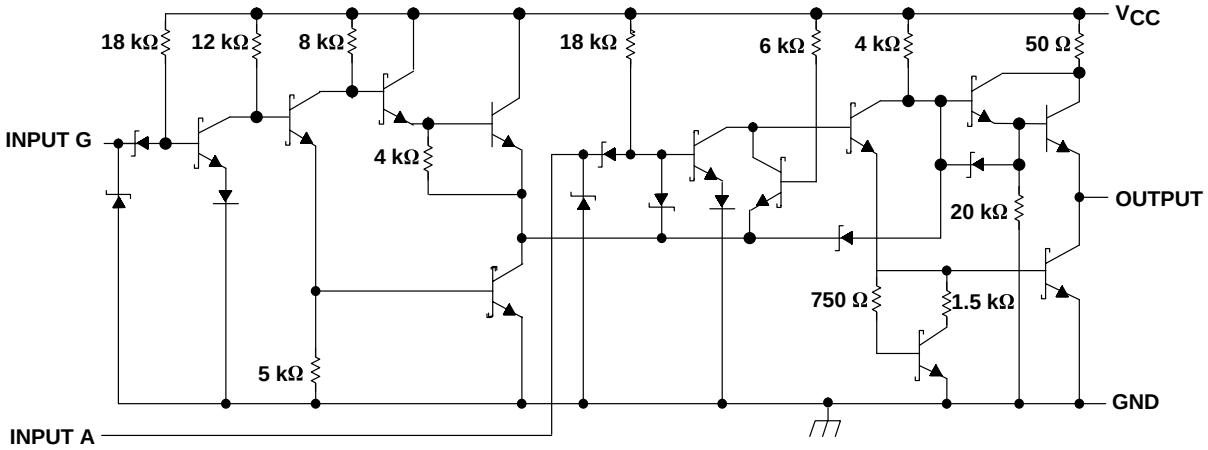
The SN54125, SN54126, SN74125, SN74126, and SN54LS126A are obsolete and are no longer supplied.

schematics (each gate)

'LS125A CIRCUITS



'LS126A CIRCUITS



Resistor values shown are nominal.

absolute maximum ratings over operating free-air temperature (unless otherwise noted)† ('LS125A and 'LS126A)

Supply voltage, V_{CC} (see Note 1) . . . . . 7 V
Input voltage, V_I . . . . . 7 V
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. Voltage values are with respect to network ground terminal.
2. The package termal impedance is calculated in accordance with JESD 51-7.

recommended operating conditions

		SN54125 SN54126			SN74125 SN74126			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V_{CC}	Supply voltage	4.5	5	5.5	4.75	5	5.25	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			–2			–5.2	mA
I_{OL}	Low-level output current			16			16	mA
T_A	Operating free-air temperature	–55		125	0		70	°C

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

PARAMETER	TEST CONDITIONS†		SN54125 SN54126			SN74125 SN74126			UNIT
			MIN	TYP‡	MAX	MIN	TYP‡	MAX	
V_{IK}	V_{CC} = MIN, I_I = –12 mA				–1.5			–1.5	V
V_{OH}	V_{CC} = MIN, V_{IH} = 2 V, V_{IL} = 0.8 V	I_{OH} = –2 mA	2.4	3.3					V
		I_{OH} = –5.2 mA				2.4	3.1		
V_{OL}	V_{CC} = MIN, V_{IH} = 2 V, I_{OL} = 16 mA	V_{IL} = 0.8 V,			0.4			0.4	V
I_{OZ}	V_{CC} = MAX V_{IH} = 2 V, V_{IL} = 0.8 V	V_O = 2.4 V			40			40	µA
		V_O = 0.4 V			–40			–40	
I_I	V_{CC} = MAX, V_I = 6.5 V				1			1	mA
I_{IH}	V_{CC} = MAX, V_I = 2.4 V				40			40	µA
I_{IL}	V_{CC} = MAX, V_I = 0.4 V				–1.6			–1.6	mA
I_{OS}§	V_{CC} = MAX		–30		–70	–28		–70	mA
I_{CC}	V_{CC} = MAX (see Note 3)	’125		32	54		32	54	mA
		’126		36	62		36	62	

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.
‡ All typical values are at V_{CC} = 5 V, T_A = 25°C.
§ Not more than one output should be shorted at a time.
NOTE 3: Data inputs = 0 V; output control = 4.5 V for ’125 and 0 V for ’126.

switching characteristics, V_{CC} = 5 V, T_A = 25°C (see Figure 1)

PARAMETER	TEST CONDITIONS		SN54125 SN74125			SN54126 SN74126			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
t_{PLH}	R_L = 400 Ω,	C_L = 50 pF		8	13		8	13	ns
t_{PHL}				12	18		12	18	
t_{PZH}	R_L = 400 Ω,	C_L = 50 pF		11	17		11	18	ns
t_{PZL}				16	25		16	25	
t_{PHZ}	R_L = 400 Ω,	C_L = 5 pF		5	8		10	16	ns
t_{PLZ}				7	12		12	18	

The SN54125, SN54126, SN74125, SN74126, and SN54LS126A are obsolete and are no longer supplied.

recommended operating conditions

		SN54LS125A SN54LS126A			SN74LS125A SN74LS126A			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V_{CC}	Supply voltage	4.5	5	5.5	4.75	5	5.25	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			–1			–2.6	mA
I_{OL}	Low-level output current			12			24	mA
T_A	Operating free-air temperature	–55		125	0		70	°C

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

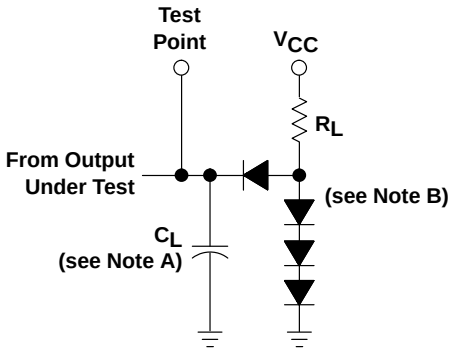
PARAMETER	TEST CONDITIONS†			SN54LS125A SN54LS126A			SN74LS125A SN74LS126A			UNIT
				MIN	TYP‡	MAX	MIN	TYP‡	MAX	
V_{IK}	V_{CC} = MIN,	I_I = –18 mA				–1.5			–1.5	V
V_{OH}	V_{CC} = MIN, V_{IH} = 2 V	V_{IL} = 0.7 V,	I_{OH} = –1 mA	2.4						V
		V_{IL} = 0.8 V	I_{OH} = –2.6 mA				2.4			
V_{OL}	V_{CC} = MIN, V_{IH} = 2 V	V_{IL} = 0.7 V,	I_{OL} = 12 mA		0.25	0.4				V
		V_{IL} = 0.8 V,	I_{OL} = 12 mA					0.25	0.4	
		V_{IL} = 0.8 V,	I_{OL} = 24 mA					0.35	0.5	
I_{OZ}	V_{CC} = MAX, V_{IH} = 2 V,	V_{IL} = 0.7 V	V_O = 2.4 V			20				μA
			V_O = 0.4 V			–20				
		V_{IL} = 0.8 V	V_O = 2.4 V						20	
			V_O = 0.4 V						–20	
I_I	V_{CC} = MAX,	V_I = 7 V				0.1			0.1	mA
I_{IH}	V_{CC} = MAX,	V_I = 2.7 V				20			20	μA
I_{IL}	V_{CC} = MAX, V_I = 0.4 V	’LS125A-$\overline{G}$ inputs				–0.2			–0.2	mA
		’LS125A-A inputs; ’LS126A All inputs				–0.4			–0.4	mA
I_{OS}§	V_{CC} = MAX			–40		–225	–40		–225	mA
I_{CC}	V_{CC} = MAX (see Note 4)		’LS125A		11	20		11	20	mA
			’LS126A		12	22		12	22	

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.
‡ 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.
NOTE 4: Data inputs = 0 V; output control = 4.5 V for ’LS125A and 0 V for ’LS126A.

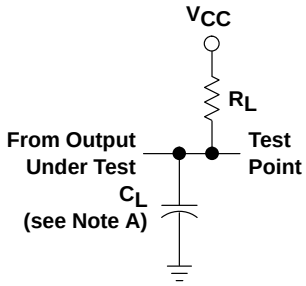
switching characteristics, V_{CC} = 5 V, T_A = 25°C (see Figure 1)

PARAMETER	TEST CONDITIONS		SN54LS125A SN74LS125A			SN54LS126A SN74LS126A			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
t_{PLH}	R_L = 667 Ω,	C_L = 45 pF		9	15		9	15	ns
t_{PHL}				7	18		8	18	
t_{PZH}	R_L = 667 Ω,	C_L = 45 pF		12	20		16	25	ns
t_{PZL}				15	25		21	35	
t_{PHZ}	R_L = 667 Ω,	C_L = 5 pF			20			25	ns
t_{PLZ}					20			25	

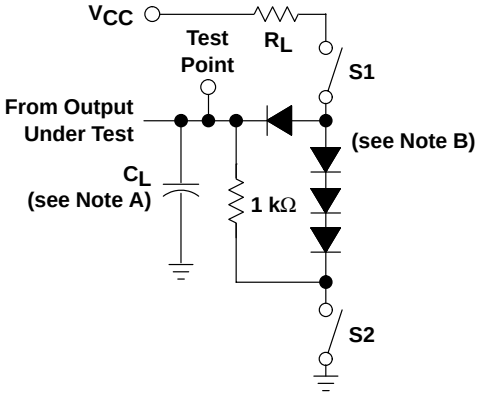
PARAMETER MEASUREMENT INFORMATION
SERIES 54/74 DEVICES



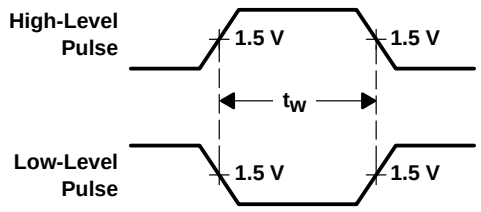
LOAD CIRCUIT
FOR 2-STATE TOTEM-POLE OUTPUTS



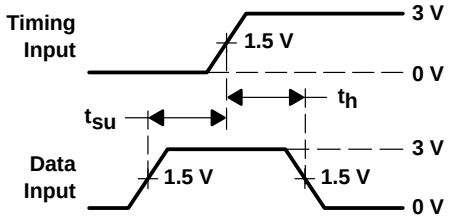
LOAD CIRCUIT
FOR OPEN-COLLECTOR OUTPUTS



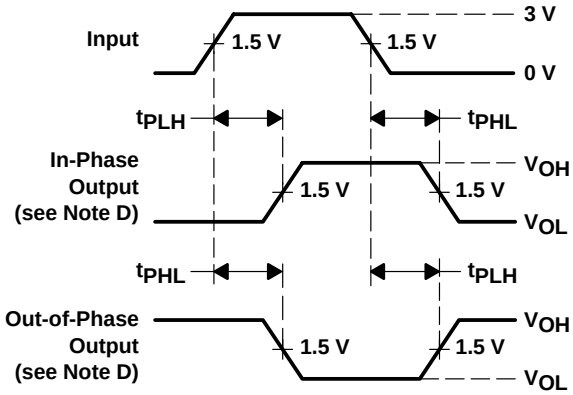
LOAD CIRCUIT
FOR 3-STATE OUTPUTS



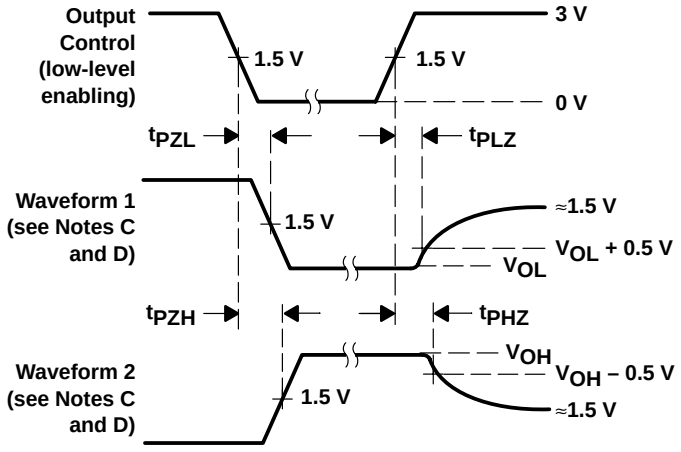
VOLTAGE WAVEFORMS
PULSE DURATIONS



VOLTAGE WAVEFORMS
SETUP AND HOLD TIMES



VOLTAGE WAVEFORMS
PROPAGATION DELAY TIMES



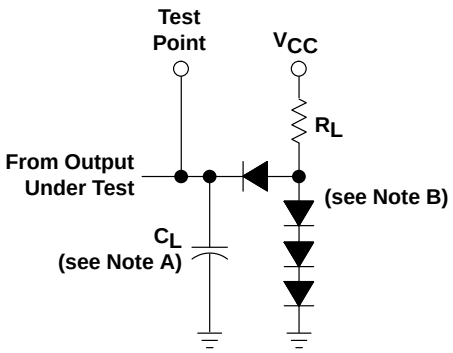
VOLTAGE WAVEFORMS
ENABLE AND DISABLE TIMES, 3-STATE OUTPUTS

NOTES: A. C_L includes probe and jig capacitance.
B. All diodes are 1N3064 or equivalent.
C. 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.
D. S1 and S2 are closed for t_{PLH}, t_{PHL}, t_{PHZ}, and t_{PLZ}; S1 is open and S2 is closed for t_{PZH}; S1 is closed and S2 is open for t_{PZL}.
E. All input pulses are supplied by generators having the following characteristics: PRR ≤ 1 MHz, Z_O ≈ 50 Ω; t_r and t_f ≤ 7 ns for Series 54/74 devices and t_r and t_f ≤ 2.5 ns for Series 54S/74S devices.
F. The outputs are measured one at a time with one input transition per measurement.

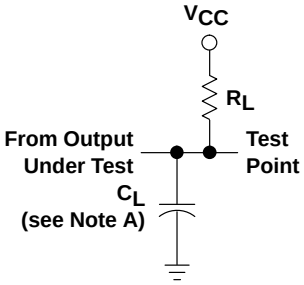
Figure 1. Load Circuits and Voltage Waveforms

The SN54125, SN54126, SN74125, SN74126, and SN54LS126A are obsolete and are no longer supplied.

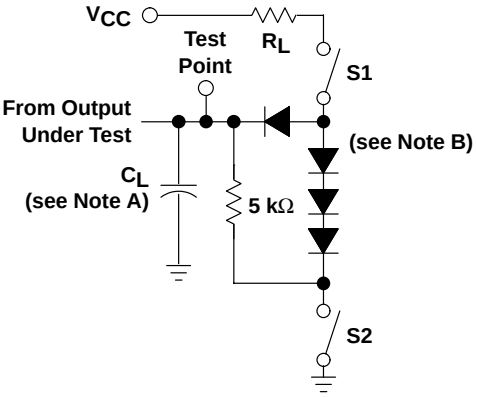
PARAMETER MEASUREMENT INFORMATION
SERIES 54LS/74LS DEVICES



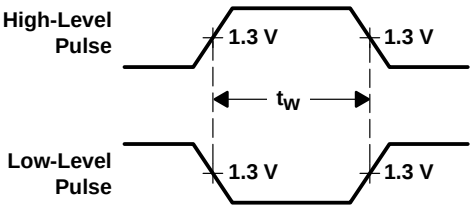
LOAD CIRCUIT
FOR 2-STATE TOTEM-POLE OUTPUTS



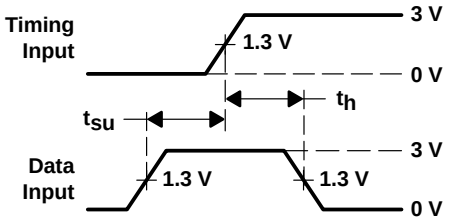
LOAD CIRCUIT
FOR OPEN-COLLECTOR OUTPUTS



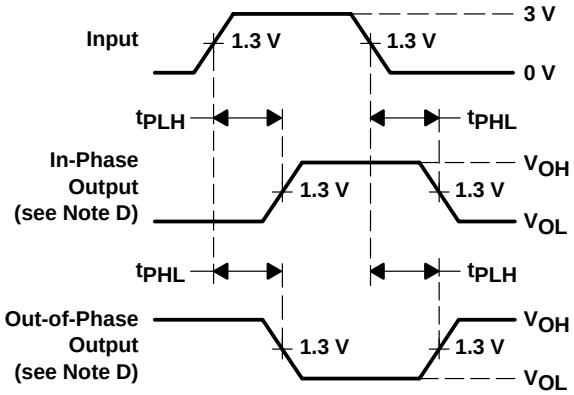
LOAD CIRCUIT
FOR 3-STATE OUTPUTS



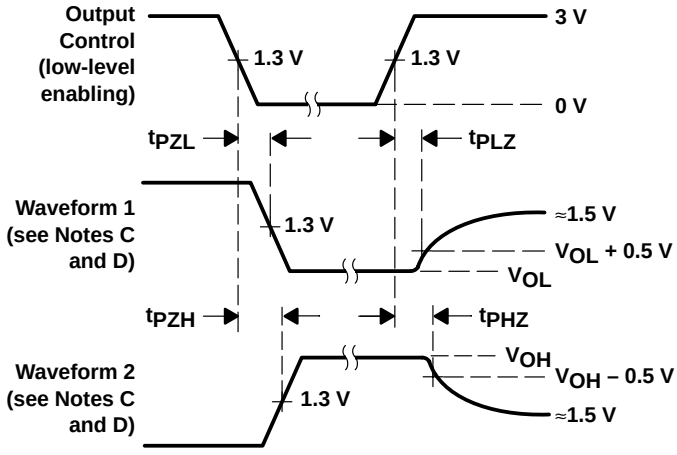
VOLTAGE WAVEFORMS
PULSE DURATIONS



VOLTAGE WAVEFORMS
SETUP AND HOLD TIMES



VOLTAGE WAVEFORMS
PROPAGATION DELAY TIMES



VOLTAGE WAVEFORMS
ENABLE AND DISABLE TIMES, 3-STATE OUTPUTS

NOTES: A. C_L includes probe and jig capacitance.
B. All diodes are 1N3064 or equivalent.
C. 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.
D. S1 and S2 are closed for t_{PLH}, t_{PHL}, t_{PHZ}, and t_{PLZ}; S1 is open and S2 is closed for t_{PZH}; S1 is closed and S2 is open for t_{PZL}.
E. Phase relationships between inputs and outputs have been chosen arbitrarily for these examples.
F. All input pulses are supplied by generators having the following characteristics: PRR ≤ 1 MHz, $Z_O \approx 50\ \Omega$, $t_r \le 1.5$ ns, $t_f \le 2.6$ ns.
G. The outputs are measured one at a time with one input transition per measurement.

Figure 2. 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
JM38510/32301B2A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	JM38510/ 32301B2A	Samples
JM38510/32301BCA	ACTIVE	CDIP	J	14	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	JM38510/ 32301BCA	Samples
JM38510/32301BDA	ACTIVE	CFP	W	14	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	JM38510/ 32301BDA	Samples
M38510/32301B2A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	JM38510/ 32301B2A	Samples
M38510/32301BCA	ACTIVE	CDIP	J	14	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	JM38510/ 32301BCA	Samples
M38510/32301BDA	ACTIVE	CFP	W	14	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	JM38510/ 32301BDA	Samples
SN54LS125AJ	ACTIVE	CDIP	J	14	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	SN54LS125AJ	Samples
SN74LS125AD	ACTIVE	SOIC	D	14	50	Green (RoHS & no Sb/Br)	NIPDAU	Level-1-260C-UNLIM	0 to 70	LS125A	Samples
SN74LS125ADBR	ACTIVE	SSOP	DB	14	2000	Green (RoHS & no Sb/Br)	NIPDAU	Level-1-260C-UNLIM	0 to 70	LS125A	Samples
SN74LS125ADR	ACTIVE	SOIC	D	14	2500	Green (RoHS & no Sb/Br)	NIPDAU	Level-1-260C-UNLIM	0 to 70	LS125A	Samples
SN74LS125ADRE4	ACTIVE	SOIC	D	14	2500	Green (RoHS & no Sb/Br)	NIPDAU	Level-1-260C-UNLIM	0 to 70	LS125A	Samples
SN74LS125AN	ACTIVE	PDIP	N	14	25	Green (RoHS & no Sb/Br)	NIPDAU	N / A for Pkg Type	0 to 70	SN74LS125AN	Samples
SN74LS125ANSR	ACTIVE	SO	NS	14	2000	Green (RoHS & no Sb/Br)	NIPDAU	Level-1-260C-UNLIM	0 to 70	74LS125A	Samples
SN74LS126AD	ACTIVE	SOIC	D	14	50	Green (RoHS & no Sb/Br)	NIPDAU	Level-1-260C-UNLIM	0 to 70	LS126A	Samples
SN74LS126ADR	ACTIVE	SOIC	D	14	2500	Green (RoHS & no Sb/Br)	NIPDAU	Level-1-260C-UNLIM	0 to 70	LS126A	Samples
SN74LS126AN	ACTIVE	PDIP	N	14	25	Green (RoHS & no Sb/Br)	NIPDAU	N / A for Pkg Type	0 to 70	SN74LS126AN	Samples
SN74LS126ANSR	ACTIVE	SO	NS	14	2000	Green (RoHS & no Sb/Br)	NIPDAU	Level-1-260C-UNLIM	0 to 70	74LS126A	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
SNJ54LS125AJ	ACTIVE	CDIP	J	14	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	SNJ54LS125AJ	Samples
SNJ54LS125AW	ACTIVE	CFP	W	14	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	SNJ54LS125AW	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) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".
RoHS Exempt: TI defines "RoHS Exempt" to mean products that contain lead but are compliant with EU RoHS pursuant to a specific EU RoHS exemption.
Green: TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of <=1000ppm threshold. Antimony trioxide based flame retardants must also meet the <=1000ppm threshold requirement.

(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.

OTHER QUALIFIED VERSIONS OF SN54LS125A, SN74LS125A :

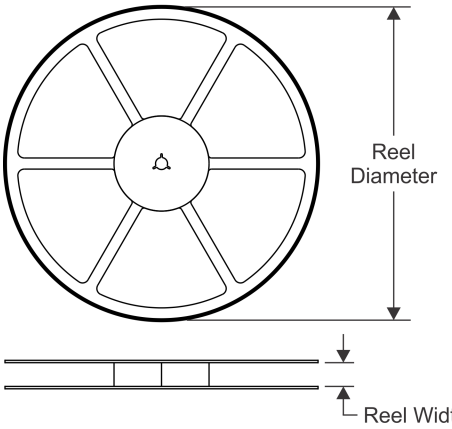
- Catalog: SN74LS125A
- Military: SN54LS125A

NOTE: Qualified Version Definitions:

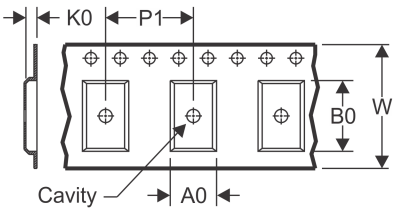
- Catalog - TI's standard catalog product
- Military - QML certified for Military and Defense Applications

TAPE AND REEL INFORMATION

REEL DIMENSIONS

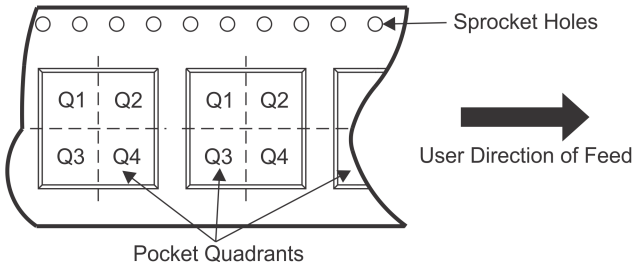


TAPE DIMENSIONS



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

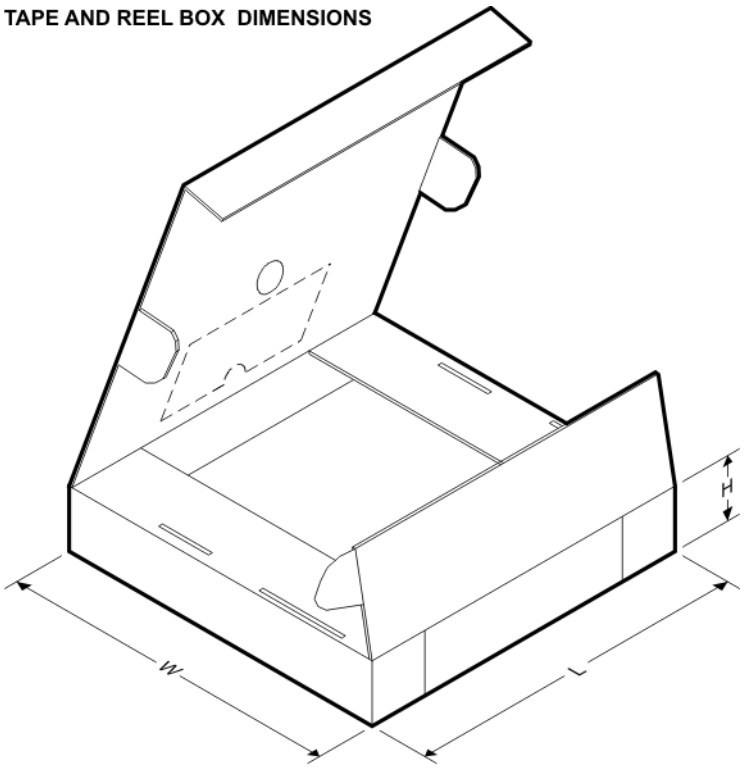
QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*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
SN74LS125ADR	SOIC	D	14	2500	330.0	16.4	6.5	9.0	2.1	8.0	16.0	Q1
SN74LS125ANSR	SO	NS	14	2000	330.0	16.4	8.2	10.5	2.5	12.0	16.0	Q1
SN74LS126ADR	SOIC	D	14	2500	330.0	16.4	6.5	9.0	2.1	8.0	16.0	Q1
SN74LS126ANSR	SO	NS	14	2000	330.0	16.4	8.2	10.5	2.5	12.0	16.0	Q1

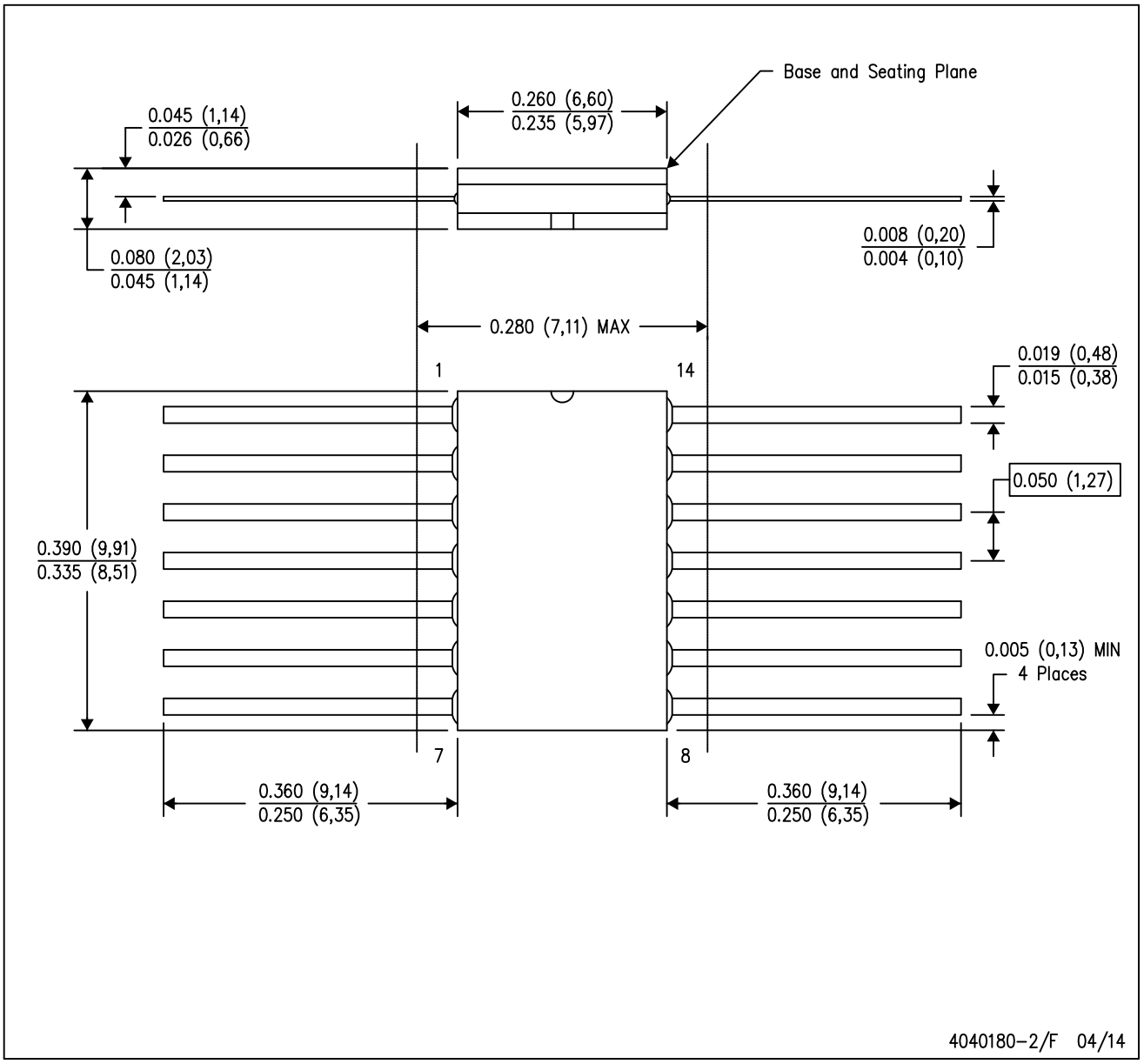
TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74LS125ADR	SOIC	D	14	2500	367.0	367.0	38.0
SN74LS125ANSR	SO	NS	14	2000	367.0	367.0	38.0
SN74LS126ADR	SOIC	D	14	2500	367.0	367.0	38.0
SN74LS126ANSR	SO	NS	14	2000	367.0	367.0	38.0

W (R–GDFP–F14) CERAMIC DUAL FLATPACK

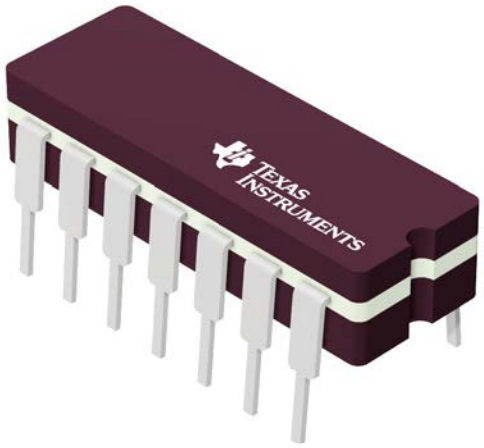


NOTES:
A. All linear dimensions are in inches (millimeters).
B. This drawing is subject to change without notice.
C. This package can be hermetically sealed with a ceramic lid using glass frit.
D. Index point is provided on cap for terminal identification only.
E. Falls within MIL STD 1835 GDFP1–F14

GENERIC PACKAGE VIEW

J 14 CDIP - 5.08 mm max height

CERAMIC DUAL IN LINE PACKAGE



Images above are just a representation of the package family, actual package may vary.
Refer to the product data sheet for package details.

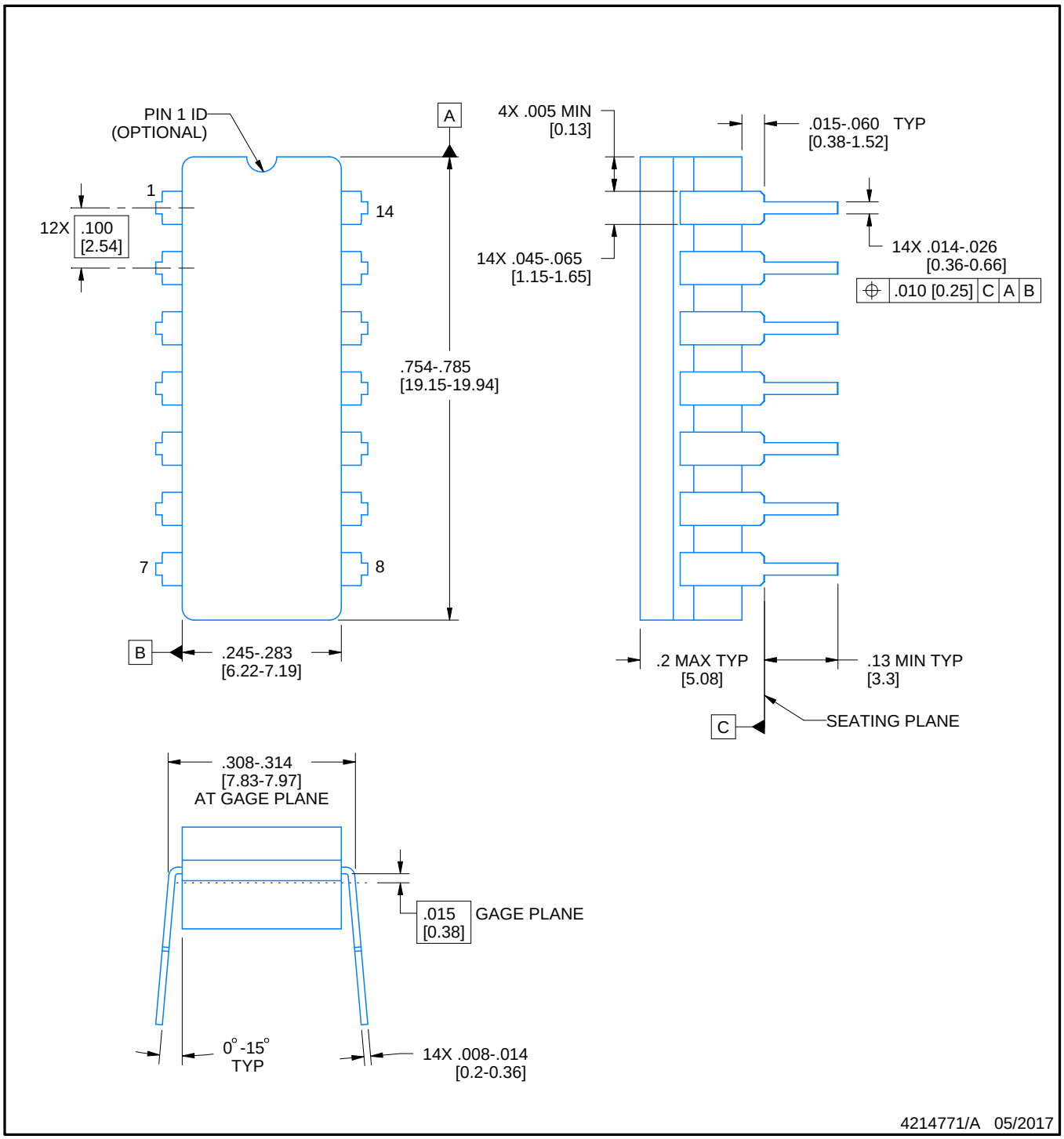
4040083-5/G

PACKAGE OUTLINE

J0014A

CDIP - 5.08 mm max height

CERAMIC DUAL IN LINE PACKAGE



NOTES:

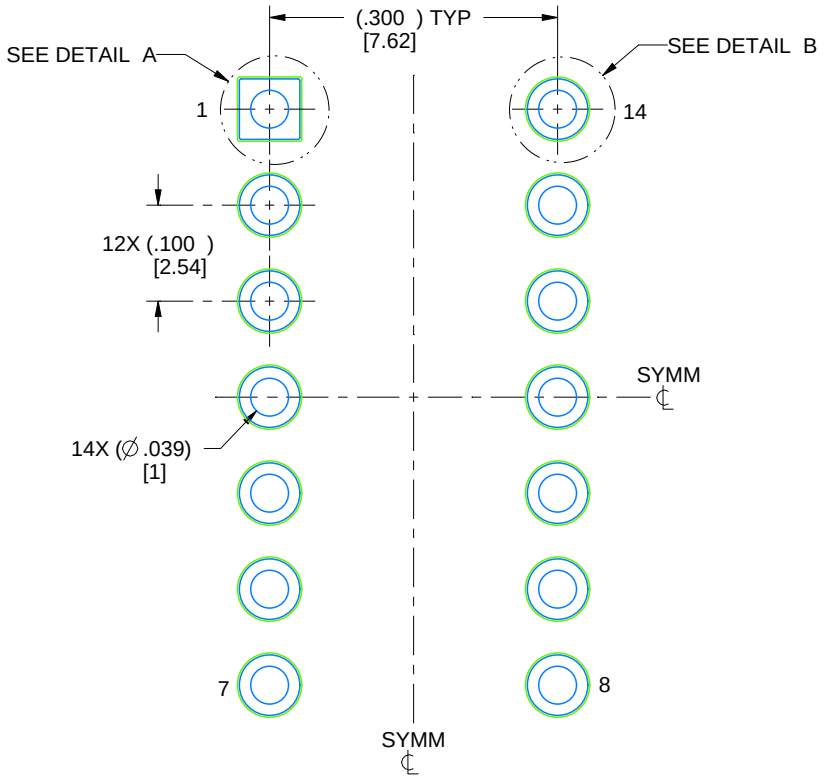
1. All controlling linear dimensions are in inches. Dimensions in brackets are in millimeters. Any dimension in brackets or parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This package is hermitically sealed with a ceramic lid using glass frit.
4. Index point is provided on cap for terminal identification only and on press ceramic glass frit seal only.
5. Falls within MIL-STD-1835 and GDIP1-T14.

EXAMPLE BOARD LAYOUT

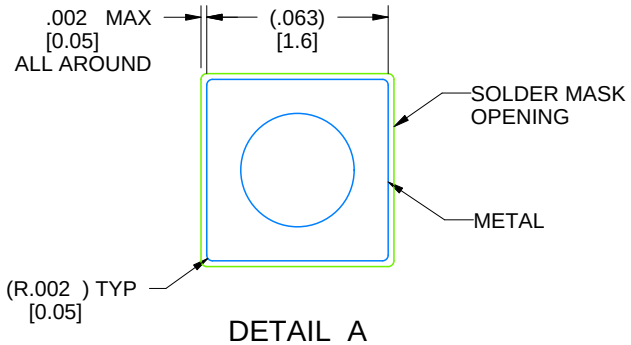
J0014A

CDIP - 5.08 mm max height

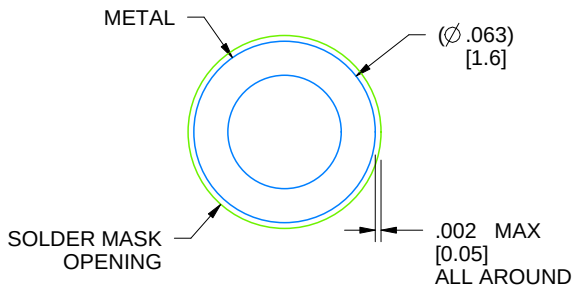
CERAMIC DUAL IN LINE PACKAGE



LAND PATTERN EXAMPLE
NON-SOLDER MASK DEFINED
SCALE: 5X



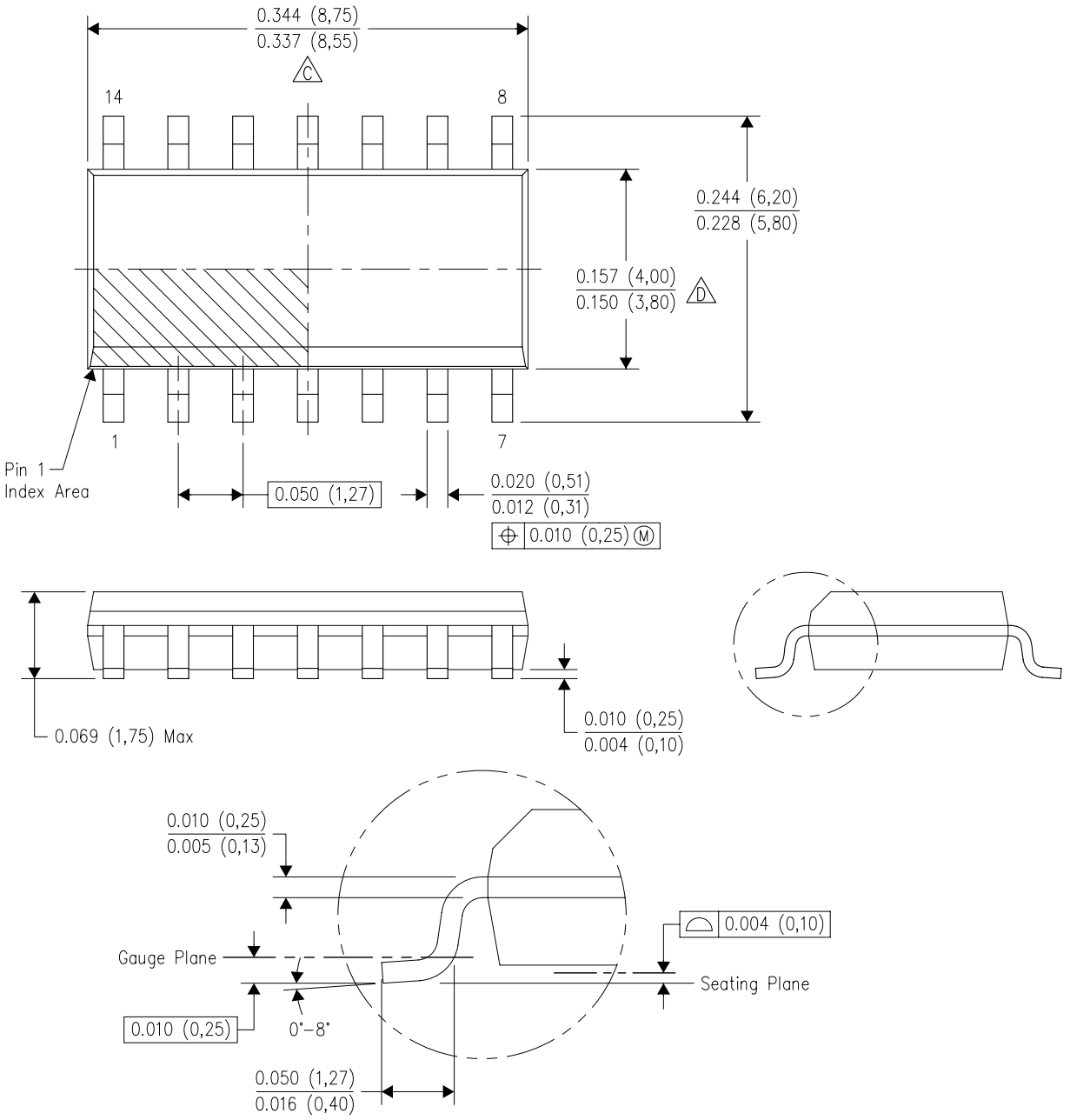
DETAIL A
SCALE: 15X



DETAIL B
13X, SCALE: 15X

4214771/A 05/2017

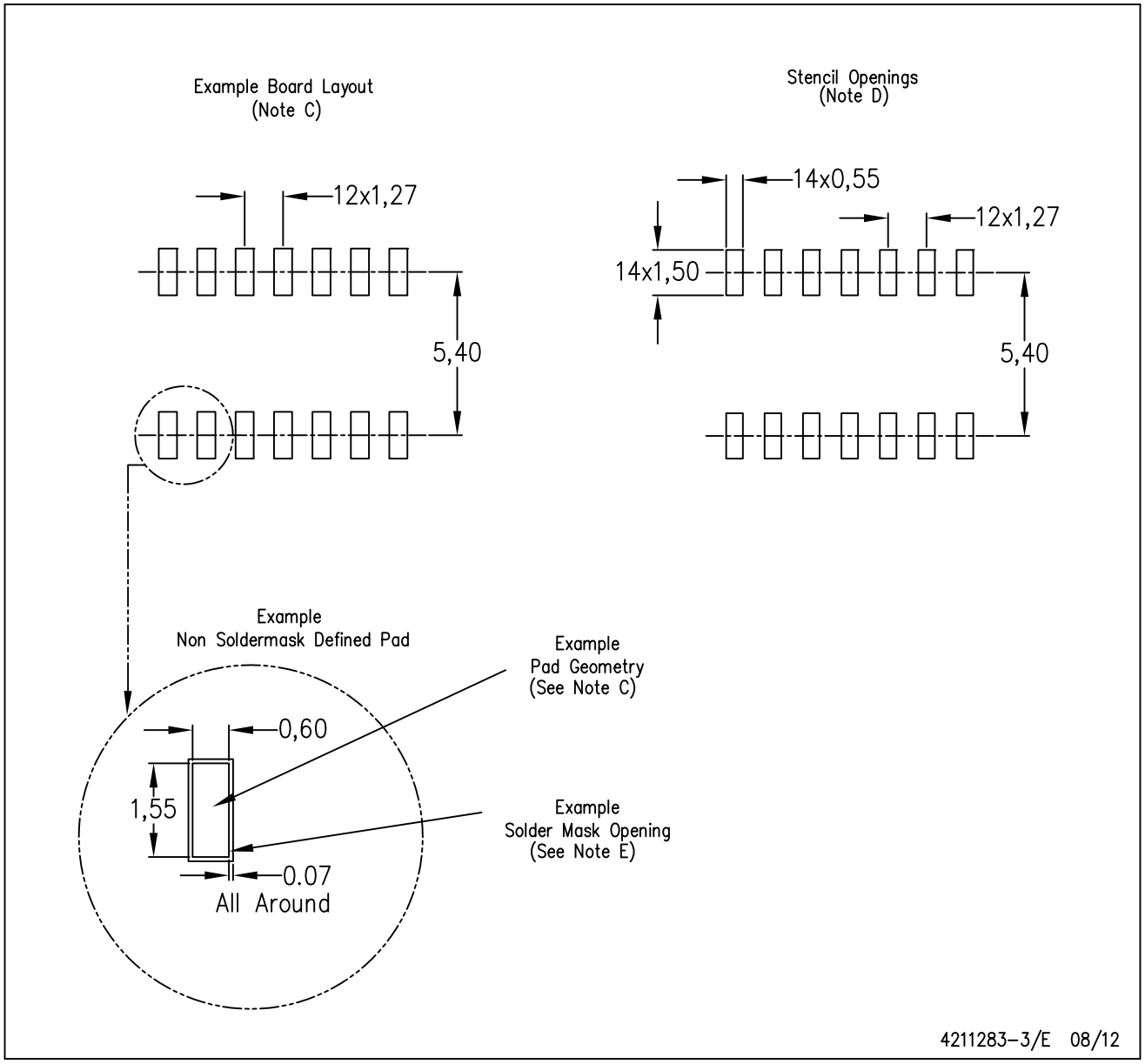
D (R–PDSO–G14) PLASTIC SMALL OUTLINE



4040047–5/M 06/11

NOTES:
A. All linear dimensions are in inches (millimeters).
B. This drawing is subject to change without notice.
C. Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.006 (0,15) each side.
D. Body width does not include interlead flash. Interlead flash shall not exceed 0.017 (0,43) each side.
E. Reference JEDEC MS–012 variation AB.

D (R–PDSO–G14) PLASTIC SMALL OUTLINE

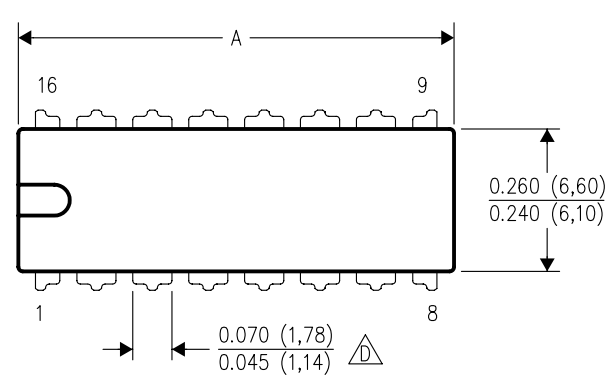


NOTES:
A. All linear dimensions are in millimeters.
B. This drawing is subject to change without notice.
C. Publication IPC–7351 is recommended for alternate designs.
D. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC–7525 for other stencil recommendations.
E. Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

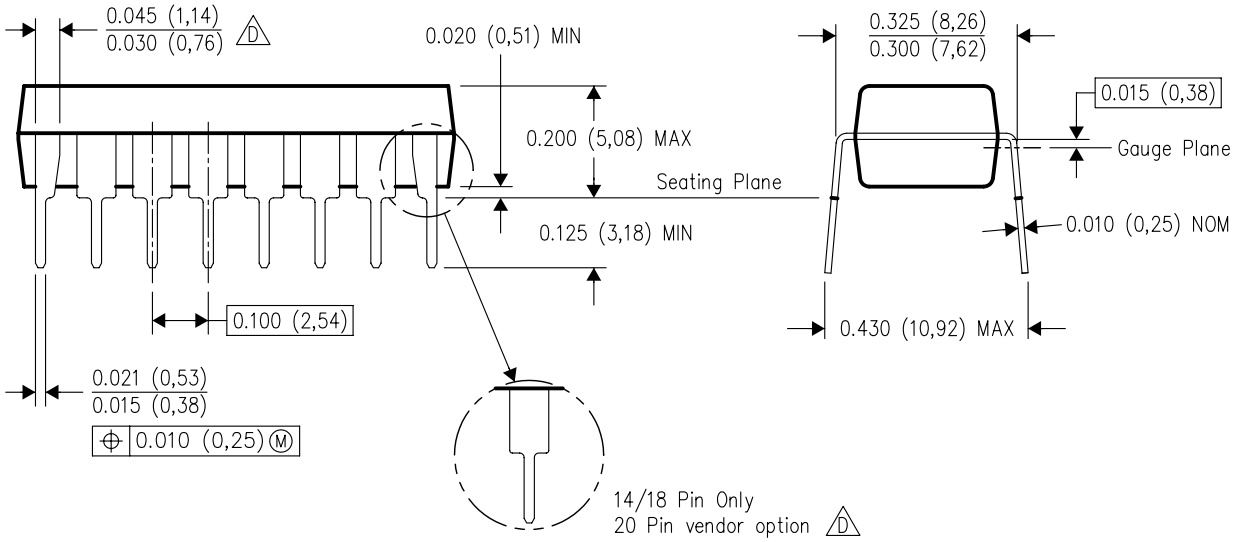
N (R–PDIP–T**)

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–001 VARIATION (C)	AA	BB	AC	AD



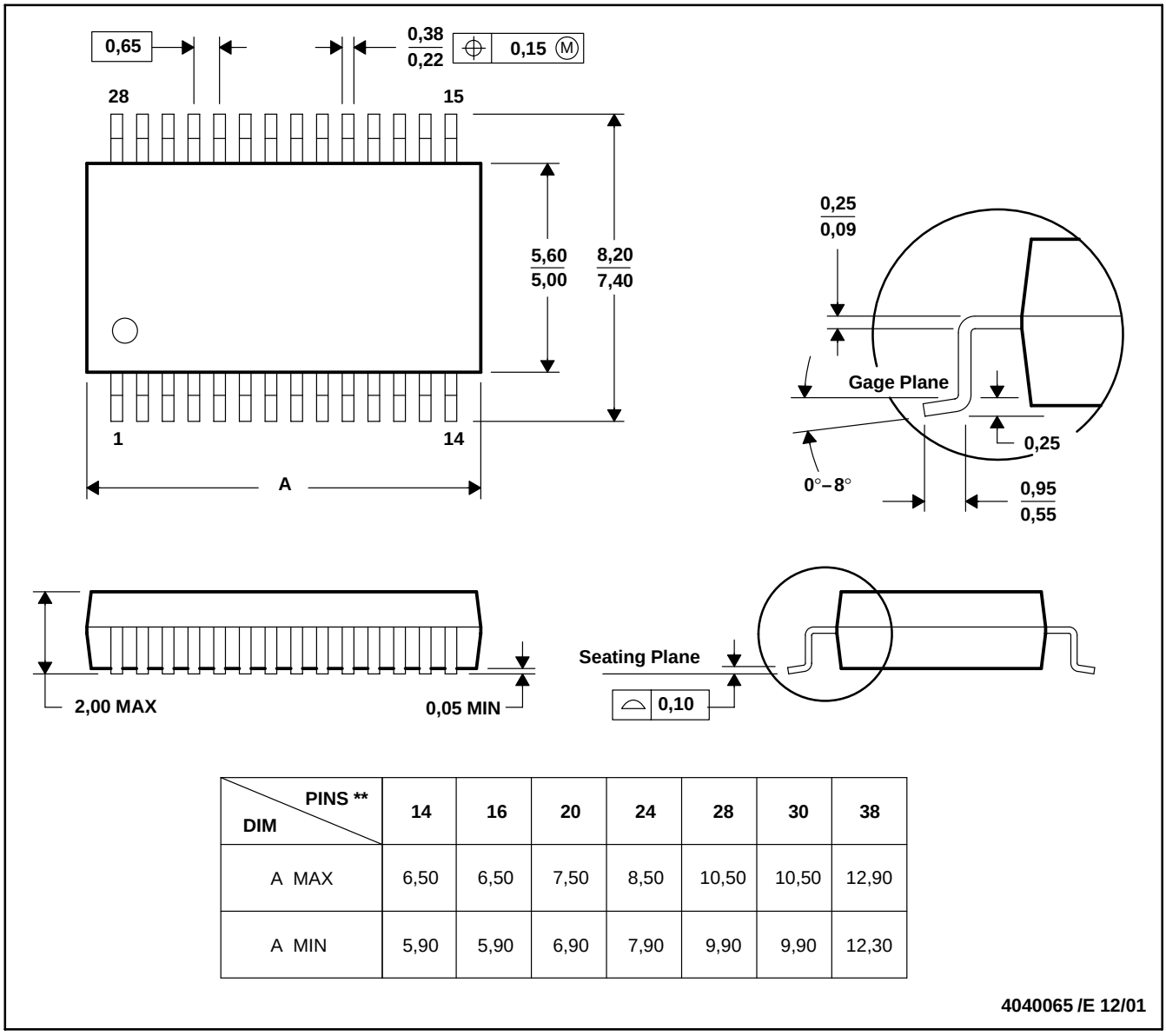
4040049/E 12/2002

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.

MSSO002E – JANUARY 1995 – REVISED DECEMBER 2001

DB (R-PDSO-G)** **PLASTIC SMALL-OUTLINE**

28 PINS SHOWN



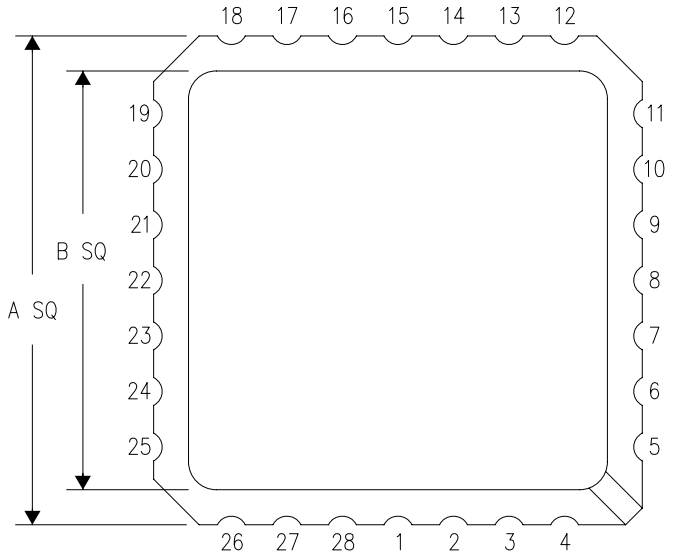
DIM \ PINS **	14	16	20	24	28	30	38
A MAX	6,50	6,50	7,50	8,50	10,50	10,50	12,90
A MIN	5,90	5,90	6,90	7,90	9,90	9,90	12,30

4040065 /E 12/01

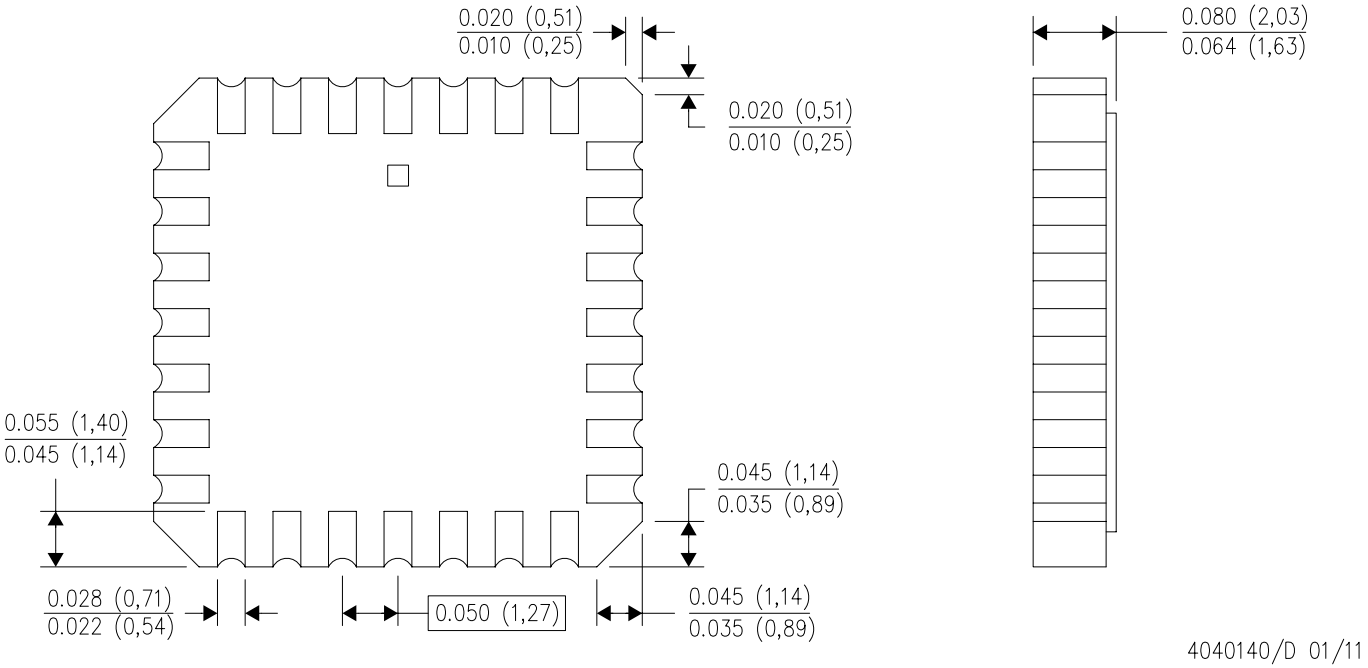
NOTES: A. All linear dimensions are in millimeters.
B. This drawing is subject to change without notice.
C. Body dimensions do not include mold flash or protrusion not to exceed 0,15.
D. Falls within JEDEC MO-150

FK (S–CQCC–N**) LEADLESS CERAMIC CHIP CARRIER

28 TERMINAL SHOWN



NO. OF TERMINALS **	A		B	
	MIN	MAX	MIN	MAX
20	0.342 (8,69)	0.358 (9,09)	0.307 (7,80)	0.358 (9,09)
28	0.442 (11,23)	0.458 (11,63)	0.406 (10,31)	0.458 (11,63)
44	0.640 (16,26)	0.660 (16,76)	0.495 (12,58)	0.560 (14,22)
52	0.740 (18,78)	0.761 (19,32)	0.495 (12,58)	0.560 (14,22)
68	0.938 (23,83)	0.962 (24,43)	0.850 (21,6)	0.858 (21,8)
84	1.141 (28,99)	1.165 (29,59)	1.047 (26,6)	1.063 (27,0)



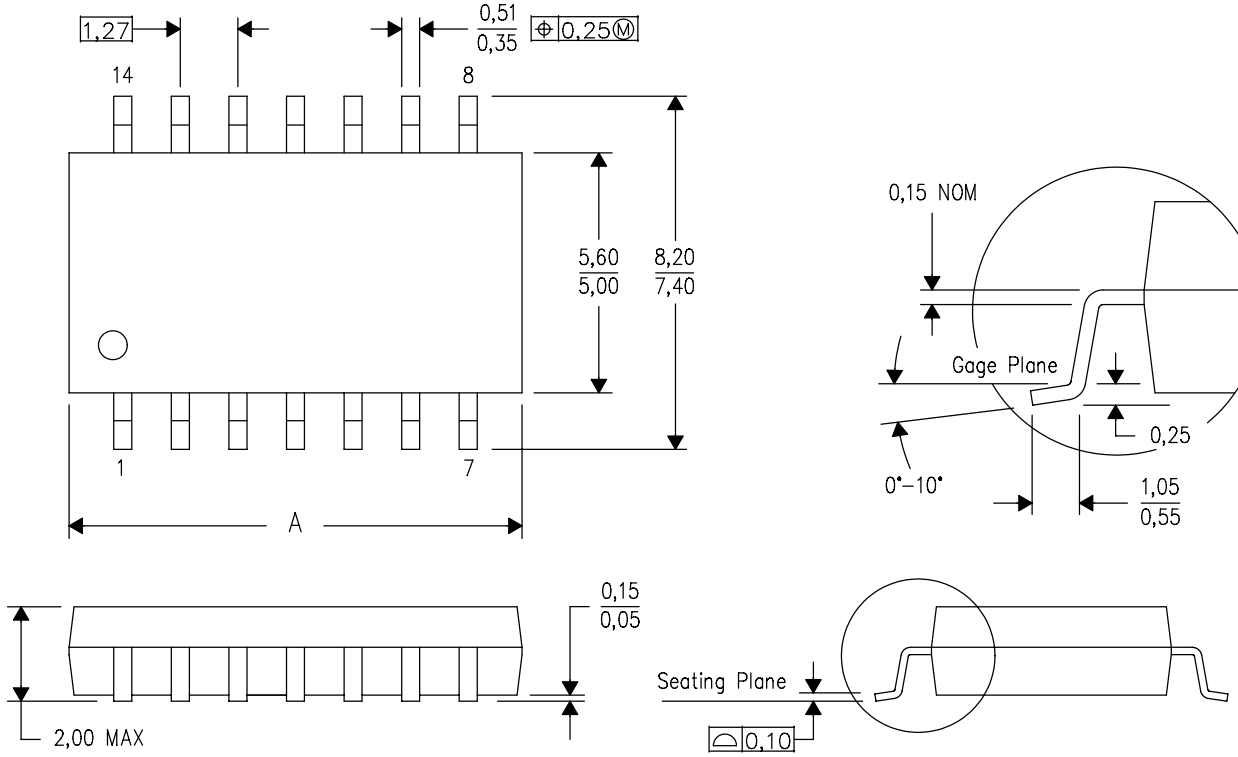
4040140/D 01/11

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

MECHANICAL DATA

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/C 03/03

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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