SNx5173 四路差分线路接收器

1 特性

- 符合或超出 TIA/EIA-422-B、TIA/EIA-423-B 和 TIA/EIA-485-A 以及 ITU 建议 V.10、V.11、X.26 和 X.27 的要求
- 适用于嘈杂环境中长总线上的多点总线传输
- 三态输出
- -12V 至 12V 的共模输入电压范围
- 输入灵敏度：±200mV
- 输入迟滞：50mV（典型值）
- 高输入阻抗：12kΩ（最小值）
- 由 5V 单电源供电
- 低功耗要求
- AM26LS32 的引脚对引脚替代产品

2 应用

- 电机驱动器
- 工厂自动化和控制

3 说明

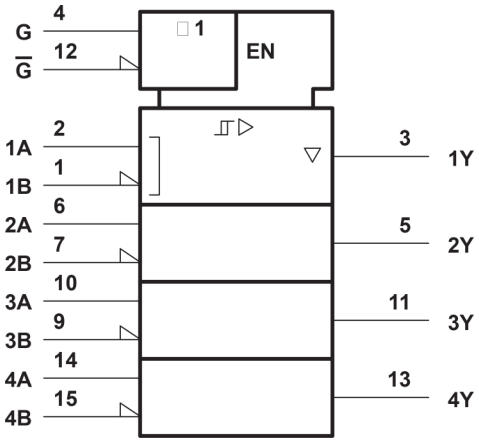
SN55173 和 SN75173 是具有三态输出的单片四路差分线路接收器。这些器件符合 TIA/EIA-422-B、TIA/EIA-423-B、TIA/EIA-485-A 和数项 ITU 建议的要求。这些标准适用于速率高达 10 兆位/秒的平衡多点总线传输。四个接收器共用两个经“或”运算的使能输入，一个在高电平时有效，另一个在低电平时有效。这些器件具有高输入阻抗、用于提高抗噪性的输入迟滞、以及在 –12V 至 12V 共模输入电压范围内 ±200mV 的输入灵敏度。失效防护设计规定在输入处于开路状态时，输出始终处于高电平状态。SN65173 和 SN75173 与 SN75172 或 SN75174 四路差分线路驱动器配合使用时，可实现卓越性能。

SN55173 可在 -55°C 至 125°C 的整个军用温度范围内运行。SN75173 的额定工作温度范围为 0°C 至 70°C。

封装信息

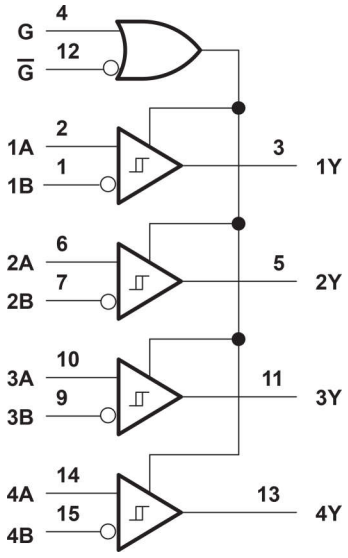
器件型号	封装(1)	封装尺寸(2)
SN55173	J（CDIP、16）	6.92mm × 19.56mm
	FK（LCCC，20）(3)	8.89mm x 8.89mm
SN75173	D（SOIC，16）	9.9mm × 6mm
	N（PDIP、16）	19.3 × 9.4mm
	NS（SO，16）	10.2 × 7.8mm

(1) 如需更多信息，请参阅 节 11。
(2) 封装尺寸（长 × 宽）为标称值，并包括引脚（如适用）。
(3) 不建议用于新设计。



A. 此符号符合 ANSI/IEEE 标准 91-1984 和 IEC 出版物 617-12。
所示引脚编号适用于 D、J 和 N 封装。
B. 所示引脚编号适用于 D、J 和 N 封装。

逻辑符号



逻辑图（正逻辑）

Table of Contents

4 Pin Configuration and Functions

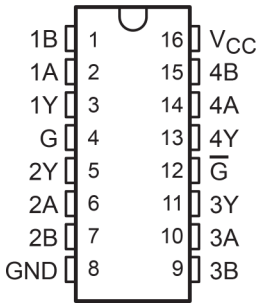
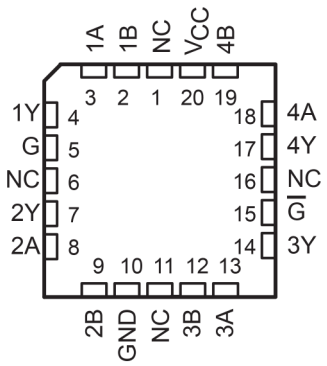


图 4-1. SN55173: J Package
SN75173: D, N or NS Package
(Top View)

表 4-1. Pin Functions

PIN		TYPE#none#	DESCRIPTION
NAME	NO.		
1B	1	I	Channel 1 Differential Receiver Inverting Input
1A	2	I	Channel 1 Differential Receiver Non-Inverting Input
1Y	3	O	Channel 1 Single Ended Output
G	4	I	Active High Enable
2Y	5	O	Channel 2 Single Ended Output
2A	6	I	Channel 2 Differential Receiver Non-Inverting Input
2B	7	I	Channel 2 Differential Receiver Inverting Input
GND	8	GND	Device GND
3B	9	I	Channel 3 Differential Receiver Inverting Input
3A	10	I	Channel 3 Differential Receiver Non-Inverting Input
3Y	11	O	Channel 3 Single Ended Output
$\overline{G}$	12	I	Active Low Enable
4Y	13	O	Channel 4 Single Ended Output
4A	14	I	Channel 4 Differential Receiver Non-Inverting Input
4B	15	I	Channel 4 Differential Receiver Inverting Input
V_{CC}	16	PWR	Device V_{CC} (4.75 V to 5.25 V)



NC – No internal connection

图 4-2. SN55173: FK Package (Top View)

A. The SN55173 FK package is not recommended for new designs.

表 4-2. Pin Functions

PIN		TYPE(1)	DESCRIPTION
NAME	NO.		
NC	1, 6, 11, 16	--	No Connect
1B	2	I	Differential Receiver Inverting Input
1A	3	I	Differential Receiver Non-Inverting Input
1Y	4	O	Single Ended Output
G	5	I	Active High Enable
2Y	7	O	Single Ended Output
2A	8	I	Differential Receiver Non-Inverting Input
2B	9	I	Differential Receiver Inverting Input
GND	10	GND	Device GND
3B	12	I	Differential Receiver Inverting Input
3A	13	I	Differential Receiver Non-Inverting Input
3Y	14	O	Single Ended Output
$\overline{G}$	15	I	Active Low Enable
4Y	17	O	Single Ended Output
4A	18	I	Differential Receiver Non-Inverting Input
4B	19	I	Receiver Inverting Input
V_{CC}	20	PWR	Device VCC

(1) Signal Types: I = Input, O = Output, I/O = Input or Output.

5 Specifications

5.1 Absolute Maximum Ratings

over operating free-air temperature range (unless otherwise noted)(1)

			MIN	MAX	UNIT
V_{CC} (2)	Supply voltage				V
V_I	Input voltage (A or B inputs)			± 25	V
V_{ID} (3)	Differential input voltage			± 25	V
$V_{I(EN)}$	Enable input voltage				V
I_{OL}	Low-level output current			50	mA
	Continuous total dissipation		See Dissipation Rating Table		
	Lead temperature 1,6 mm (1/16 inch) from case for 60 seconds:	D or N package		260	°C
	Lead temperature 1,6 mm (1/16 inch) from case for 60 seconds:	J package		300	°C
T_{stg}	Storage temperature range		65	150	°C

(1) 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.
(2) All voltage values, except differential input voltage, are with respect to network ground terminal.
(3) Differential input voltage is measured at the noninverting input with respect to the corresponding inverting input.

5.2 Dissipation Rating Table

PACKAGE	$T_A \leqslant$ 25°C POWER RATING	DERATING FACTOR	T_A = 70°C POWER RATING	T_A = 125°C POWER RATING
FK	1375 mW	11 mW/°C	880 mW	275 mW
J	1375 mW	11 mW/°C	880 mW	275 mW

5.3 Recommended Operating Conditions

		MIN	NOM	MAX	UNIT
Supply voltage, V_{CC}	SN55173	4.5	5	5.5	V
	SN75173	4.75	5	5.25	V
Common-mode input voltage, V_{IC}				± 12	V
Differential input voltage, V_{ID}				± 12	V
High-level enable-input voltage, V_{IH}		2			V
Low-level enable-input voltage, V_{IL}				0.8	V
High-level output current, I_{OH}				–400	µA
Low-level output current, I_{OL}				16	mA
Operating free-air temperature, T_A	SN55173	–55		125	°C
	SN75173	0		70	

5.4 Thermal Information

THERMAL METRIC(1)		D (SOIC)	N (PDIP)	NS (SOP)	J (CDIP)	UNIT
		16-PINS				
$R_{\theta JA}$	Junction-to-ambient thermal resistance	84.6	60.6	88.5	65.6	°C/W
$R_{\theta JC(top)}$	Junction-to-case (top) thermal resistance	43.5	48.1	46.2	54.6	°C/W
$R_{\theta JB}$	Junction-to-board thermal resistance	43.2	40.6	50.7	42.1	°C/W
ψ_{JT}	Junction-to-top characterization parameter	10.4	27.5	13.5	22.9	°C/W
ψ_{JB}	Junction-to-board characterization parameter	42.8	40.3	50.3	41.6	°C/W
$R_{\theta JC(bot)}$	Junction-to-case (bottom) thermal resistance	n/a	n/a	n/a	n/a	°C/W

(1) For more information about traditional and new thermal metrics, see the *Semiconductor and IC package thermal metrics* application report.

5.5 Electrical Characteristics

over recommended ranges of common-mode input voltage, supply voltage, and operating free-air temperature

PARAMETER		TEST CONDITIONS			MIN	TYP(1)	MAX	UNIT
VIT+	Positive-going input threshold voltage	V_O = 2.7 V,	I_O = – 0.4 mA				0.2	V
VIT –	Negative-going input threshold voltage	V_O = 0.5 V,	I_O = 16 mA		– 0.2(2)			V
Vhys	Hysteresis (V_{IT+} – V_{IT-})	See 图 5-1				50		mV
VIK	Enable-input clamp voltage	I_I = – 18 mA					– 1.5	V
VOH	High-level output voltage	V_{ID} = 200 mV,	I_{OH} = – 400 µA	SN55173	2.5			V
				SN75173	2.7			V
VOL	Low-level output voltage	V_{ID} = – 200 mV,	See 图 6-1	I_{OL} = 8 mA			0.45	V
				I_{OL} = 16 mA			0.5	
IOZ	High-impedance-state output current	V_O = 0.4 V to 2.4 V					± 20	µA
I_I	Line input current	Other input at 0 V,	See Note 3	V_I = 12 V			1	mA
				V_I = – 7 V			– 0.8	
IIH	High-level enable-input current	V_{IH} = 2.7 V					20	µA
IIL	Low-level enable-input current	V_{IL} = 0.4 V					– 100	µA
r_i	Input resistance					12		kΩ
IOS	Short-circuit output current				– 15		– 85	mA
ICC	Supply current	Outputs disabled					70	mA

(1) All typical values are at V_{CC} = 5 V, T_A = 25°C.
(2) The algebraic convention, in which the less positive (more negative) limit is designated as minimum, is used in this data sheet for threshold voltage levels only.
(3) Refer to TIA/EIA-422-B and TIA/EIA-423-B for exact conditions.

5.6 Switching Characteristics

V_{CC} = 5 V, T_A = 25°C

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{PLH}	Propagation delay time, low-to-high-level output	V_{ID} = – 1.5 V to 1.5 V, C_L = 15 pF, See 图 6-1		20	35	ns
t_{PHL}	Propagation delay time, high-to-low-level output			22	35	ns
t_{PZH}	Output enable time to high level	C_L = 15 pF, See 图 6-2		17	22	ns
t_{PZL}	Output enable time to low level	C_L = 15 pF, See 图 6-3		20	25	ns
t_{PHZ}	Output disable time from high level	C_L = 5 pF, See 图 6-2		21	30	ns
t_{PLZ}	Output disable time from low level	C_L = 5 pF, See 图 6-3		30	40	ns

5.7 Typical Characteristics

Operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied.

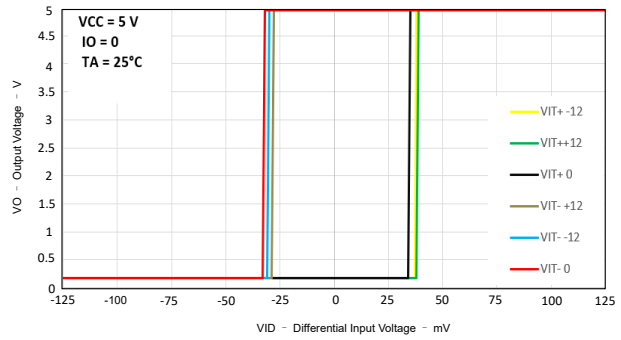


图 5-1. Output Voltage vs Differential Input Voltage

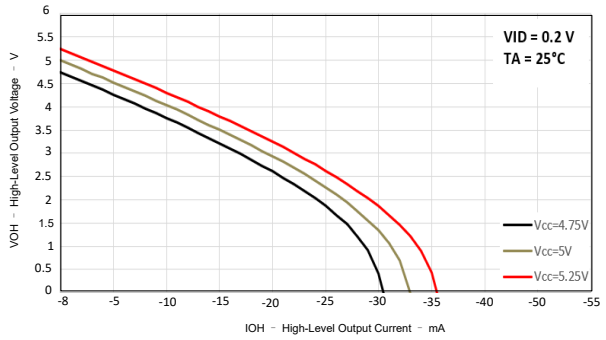


图 5-2. High-level Output Voltage vs High-level Output Current

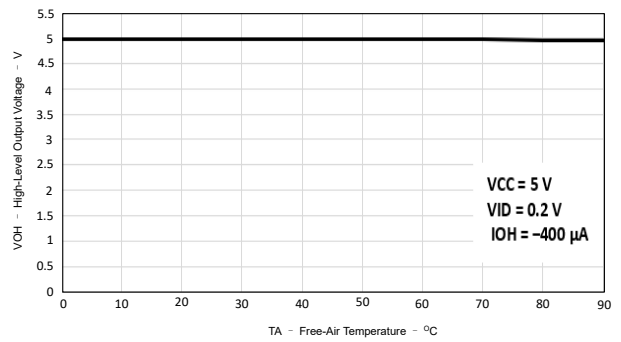


图 5-3. High-level Output Voltage vs Free-air Temperature 5

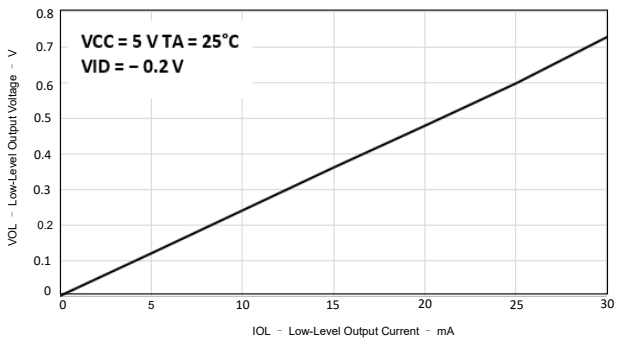


图 5-4. Low-level Output Voltage vs Low-level Output Current

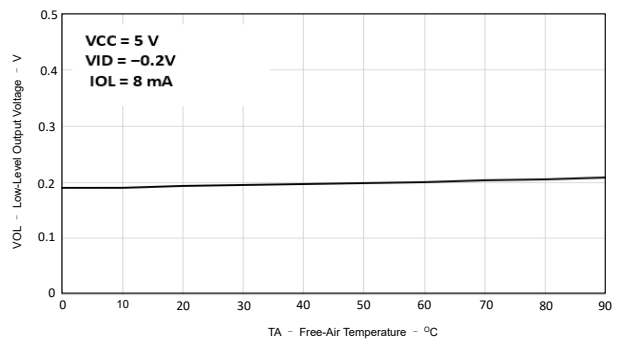


图 5-5. Low-level Output Voltage vs Free-air Temperature

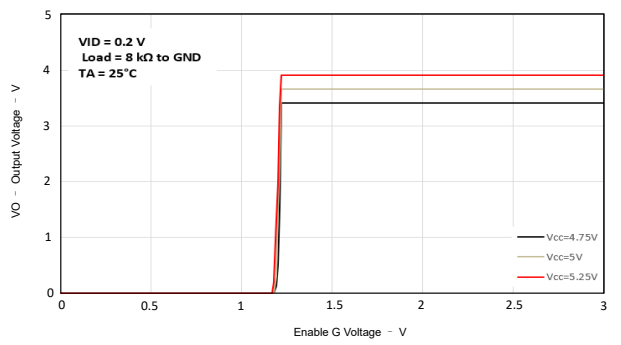


图 5-6. Output Voltage vs Enable G Voltage

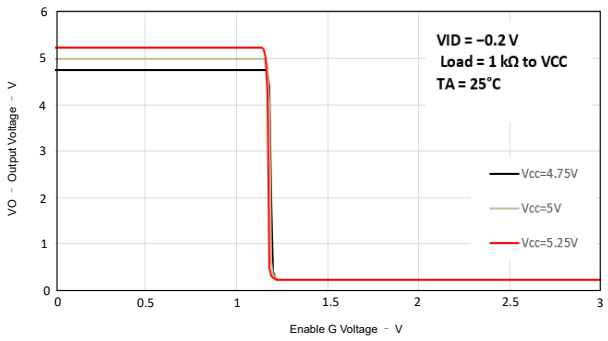


图 5-7. Output Voltage vs Enable G Voltage

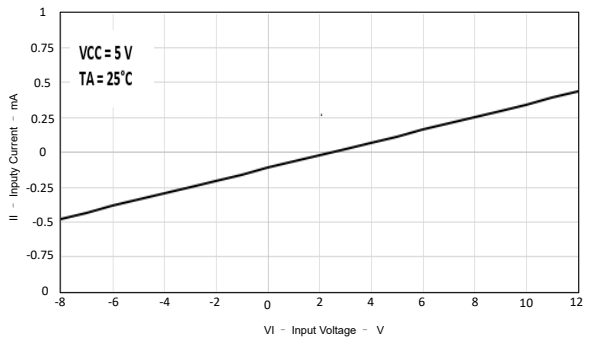
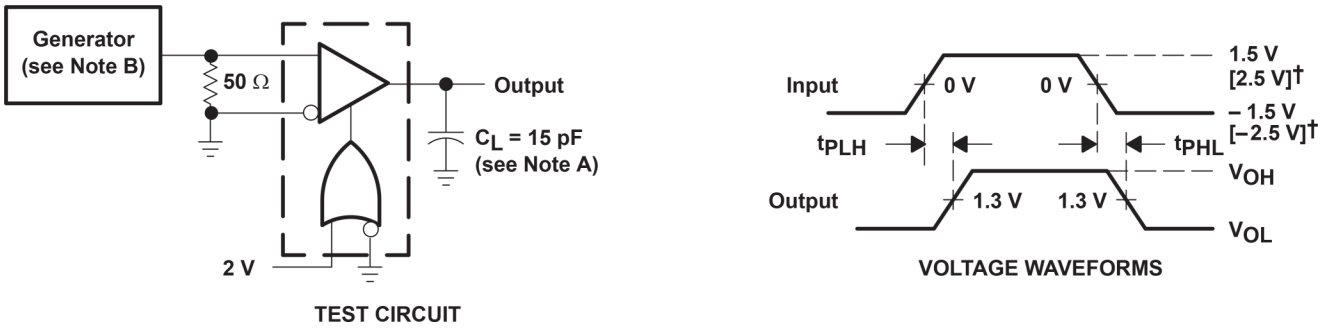


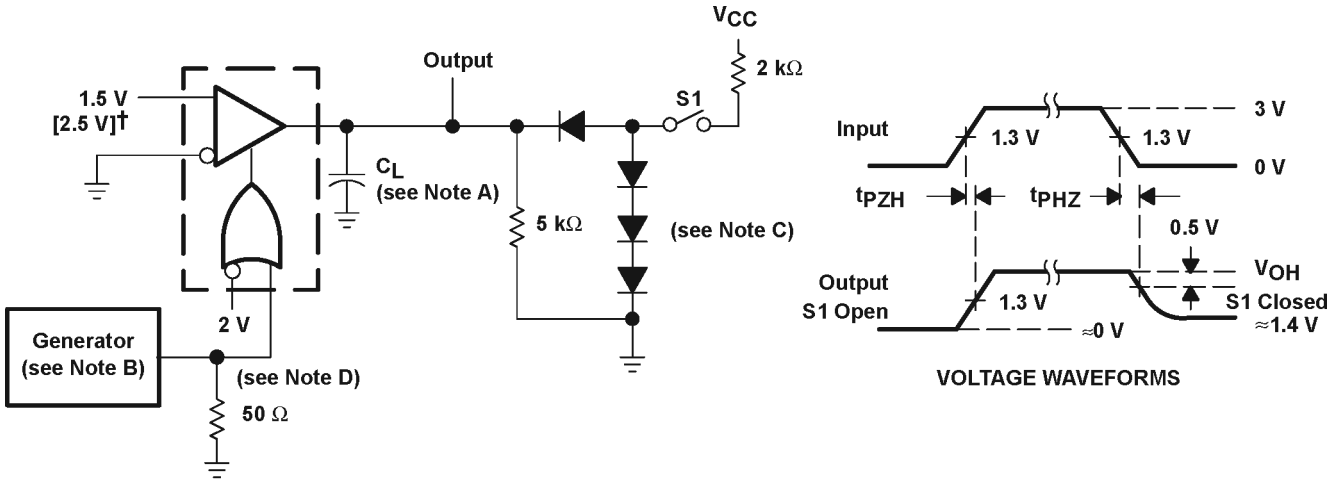
图 5-8. Input Current vs Input Voltage

6 Parameter Measurement Information



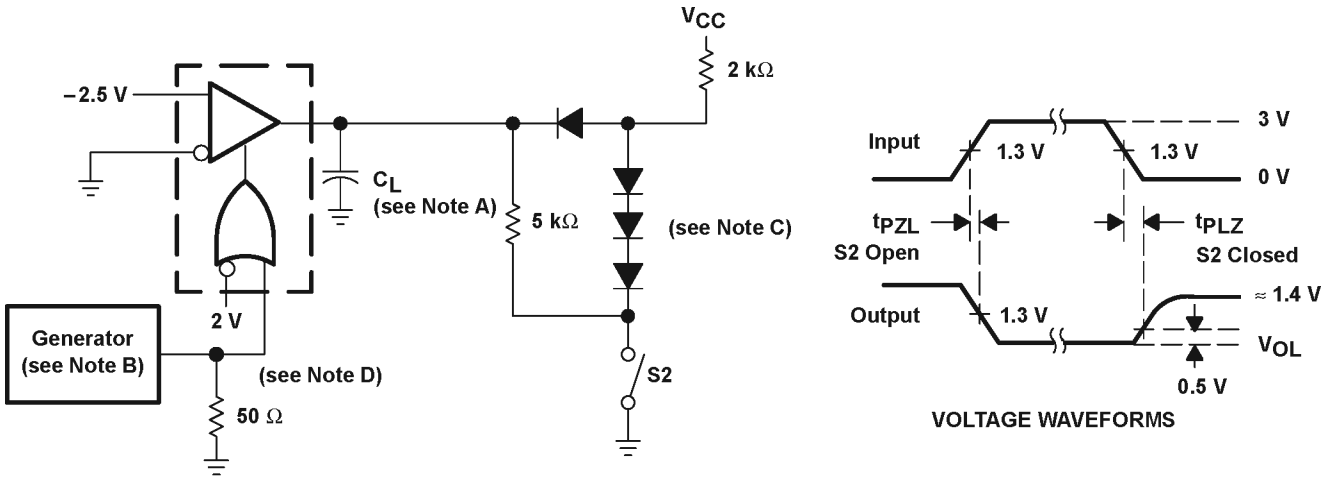
A. † Voltage for the SN55173 only.
B. C_L includes probe and jig capacitance.
C. The input pulse is supplied by a generator having the following characteristics: PRR = 1 MHz, duty cycle = 50%, $t_r \leqslant 6$ ns, $t_f \leqslant 6$ ns, Z_O = 50 Ω.

图 6-1. t_{PLH}, T_{PHL} Test Circuit and Voltage Waveforms



A. C_L includes probe and jig capacitance.
B. The input pulse is supplied by a generator having the following characteristics: PRR = 1 MHz, duty cycle = 50%, $t_r \leqslant 6$ ns, $t_f \leqslant 6$ ns, Z_O = 50 Ω.
C. All diodes are 1N916, or equivalent.
D. To test the active-low enable $\overline{G}$, ground G and apply an inverted input waveform to G.

图 6-2. t_{PHZ}, T_{PZH} Test Circuit and Voltage Waveforms



TEST CIRCUIT

A. C_L includes probe and jig capacitance.

B. The input pulse is supplied by a generator having the following characteristics: PRR = 1 MHz, duty cycle = 50%, $t_r \leqslant 6$ ns, $t_f \leqslant 6$ ns, Z_O = 50 Ω.

C. All diodes are 1N916, or equivalent.

D. To test the active-low enable G, ground G and apply an inverted input waveform to G.

图 6-3. t_{PZL}, T_{PLZ} Test Circuit and Voltage Waveforms

7 Detailed Description

7.1 Device Functional Modes

表 7-1. Function Table (Each Receiver)

DIFFERENTIAL A – B	ENABLES(1)		OUTPUT Y
	G	$\overline{G}$	
$V_{ID} \geq 0.2$ V	H	X	H
	X	L	H
– 0.2 V < V_{ID} < 0.2 V	H	XL	?
	X		?
$V_{ID} \leq$ – 0.2 V	H	X	L
	X	L	L
X	L	H	Z
Open circuit	X	L	H
	H	X	H

(1) H = high level, L = low level, ? = indeterminate, X = irrelevant, Z = high impedance (off)

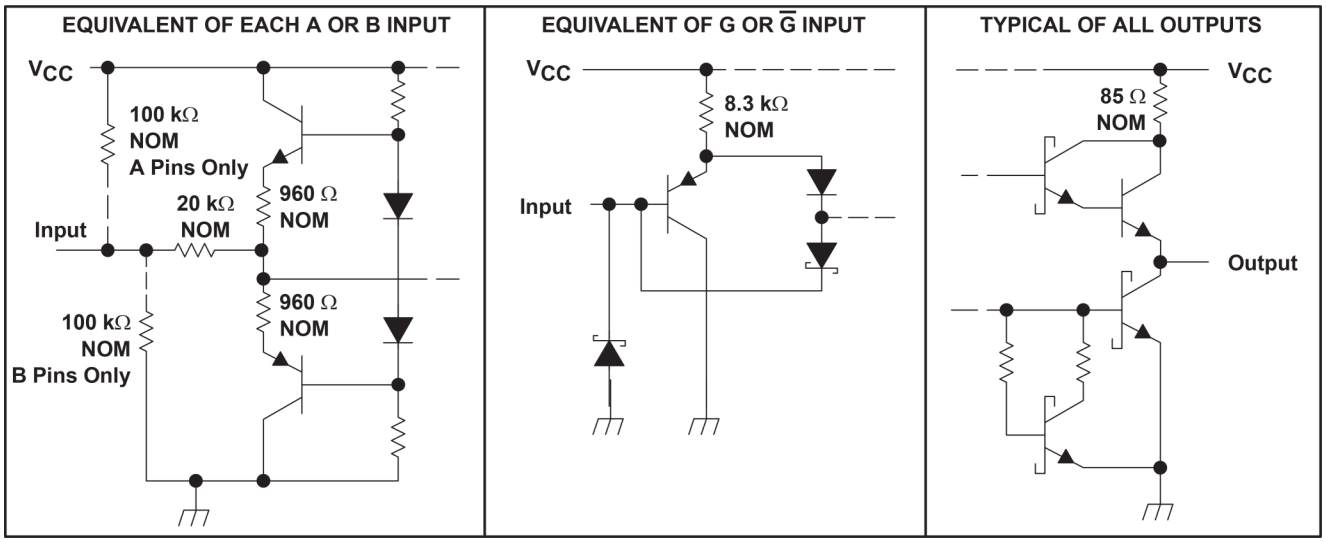


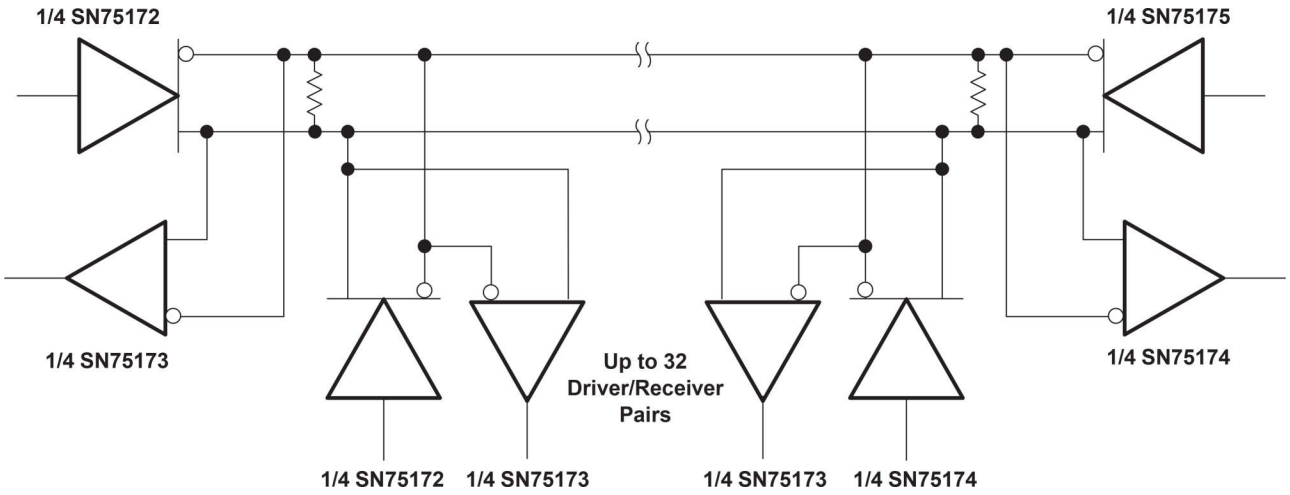
图 7-1. Schematics of Inputs and Outputs

8 Application and Implementation

备注

以下应用部分中的信息不属于 TI 器件规格的范围，TI 不担保其准确性和完整性。TI 的客 户应负责确定器件是否适用于其应用。客户应验证并测试其设计，以确保系统功能。

8.1 Application Information



A. The line should be terminated at both ends in its characteristic impedance. Stub lengths off the main line should be kept as short as possible.

图 8-1. Typical Application Circuit

9 Device and Documentation Support

TI offers an extensive line of development tools. Tools and software to evaluate the performance of the device, generate code, and develop solutions are listed below.

9.1 接收文档更新通知

要接收文档更新通知，请导航至 ti.com 上的器件产品文件夹。点击 *订阅更新* 进行注册，即可每周接收产品信息更改摘要。有关更改的详细信息，请查看任何已修订文档中包含的修订历史记录。

9.2 支持资源

TI E2E™ 中文支持论坛是工程师的重要参考资料，可直接从专家处获得快速、经过验证的解答和设计帮助。搜索现有解答或提出自己的问题，获得所需的快速设计帮助。

链接的内容由各个贡献者“按原样”提供。这些内容并不构成 TI 技术规范，并且不一定反映 TI 的观点；请参阅 TI 的使用条款。

9.3 商标

TI E2E™ is a trademark of Texas Instruments.
所有商标均为其各自所有者的财产。

9.4 静电放电警告

静电放电 (ESD) 会损坏这个集成电路。德州仪器 (TI) 建议通过适当的预防措施处理所有集成电路。如果不遵守正确的处理和安装程序，可能会损坏集成电路。

ESD 的损坏小至导致微小的性能降级，大至整个器件故障。精密的集成电路可能更容易受到损坏，这是因为非常细微的参数更改都可能会导致器件与其发布的规格不相符。

9.5 术语表

TI 术语表	本术语表列出并解释了术语、首字母缩略词和定义。

10 Revision History

注：以前版本的页码可能与当前版本的页码不同

Changes from Revision E (April 2000) to Revision F (October 2023)	Page
• 更改了整个文档中的表格、图和交叉参考的编号格式	1

11 Mechanical, Packaging, and Orderable Information

The following pages include mechanical, packaging, and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

PACKAGING INFORMATION

Orderable part number	Status (1)	Material type (2)	Package | Pins	Package qty | Carrier	RoHS (3)	Lead finish/ Ball material (4)	MSL rating/ Peak reflow (5)	Op temp (°C)	Part marking (6)
SN55173J	Active	Production	CDIP (J) | 16	25 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	SN55173J
SN55173J.A	Active	Production	CDIP (J) | 16	25 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	SN55173J
SN75173D	Obsolete	Production	SOIC (D) | 16	-	-	Call TI	Call TI	0 to 70	SN75173
SN75173DR	Active	Production	SOIC (D) | 16	2500 | LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	0 to 70	SN75173
SN75173DR.A	Active	Production	SOIC (D) | 16	2500 | LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	0 to 70	SN75173
SN75173N	Active	Production	PDIP (N) | 16	25 | TUBE	Yes	NIPDAU | NIPDAU	N/A for Pkg Type	0 to 70	SN75173N
SN75173N.A	Active	Production	PDIP (N) | 16	25 | TUBE	Yes	NIPDAU	N/A for Pkg Type	0 to 70	SN75173N
SN75173NSR	Active	Production	SOP (NS) | 16	2000 | LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	0 to 70	SN75173
SN75173NSR.A	Active	Production	SOP (NS) | 16	2000 | LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	0 to 70	SN75173
SNJ55173J	Active	Production	CDIP (J) | 16	25 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	SNJ55173J
SNJ55173J.A	Active	Production	CDIP (J) | 16	25 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	SNJ55173J

(1) **Status:** For more details on status, see our product life cycle.

(2) **Material type:** When designated, preproduction parts are prototypes/experimental devices, and are not yet approved or released for full production. Testing and final process, including without limitation quality assurance, reliability performance testing, and/or process qualification, may not yet be complete, and this item is subject to further changes or possible discontinuation. If available for ordering, purchases will be subject to an additional waiver at checkout, and are intended for early internal evaluation purposes only. These items are sold without warranties of any kind.

(3) **RoHS values:** Yes, No, RoHS Exempt. See the TI RoHS Statement for additional information and value definition.

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

(5) **MSL rating/Peak reflow:** The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will be used to mount the part to the printed circuit board.

(6) **Part marking:** There may be an additional marking, which relates to the logo, the lot trace code information, or the environmental category of the part.

Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "~" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

OTHER QUALIFIED VERSIONS OF SN55173, SN75173 :

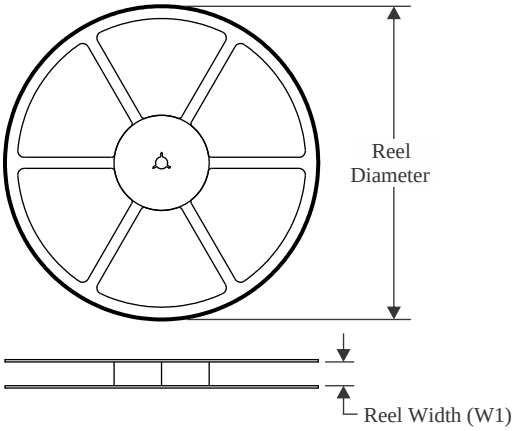
- Catalog : SN75173
- Military : SN55173

NOTE: Qualified Version Definitions:

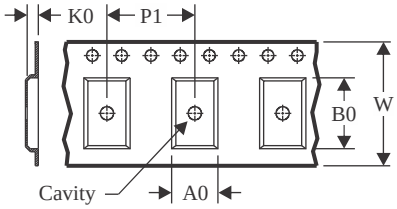
- Catalog - TI's standard catalog product
- Military - QML certified for Military and Defense Applications

TAPE AND REEL INFORMATION

REEL DIMENSIONS

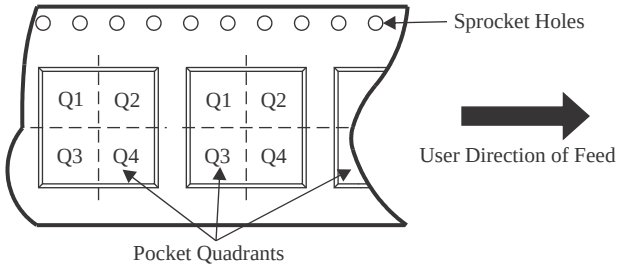


TAPE DIMENSIONS



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

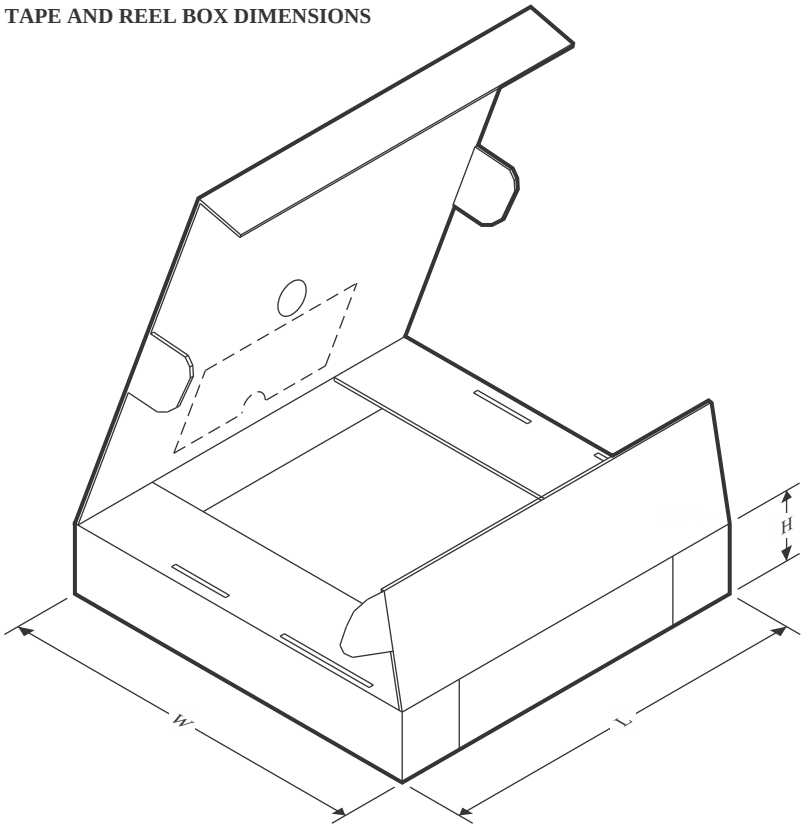
QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*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
SN75173DR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1
SN75173NSR	SOP	NS	16	2000	330.0	16.4	8.1	10.4	2.5	12.0	16.0	Q1

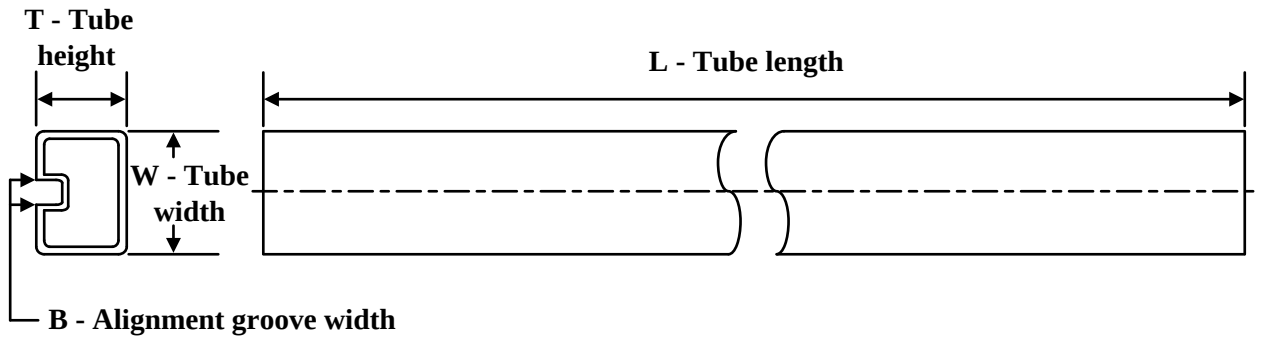
TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

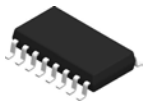
Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN75173DR	SOIC	D	16	2500	340.5	336.1	32.0
SN75173NSR	SOP	NS	16	2000	353.0	353.0	32.0

TUBE



*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (µm)	B (mm)
SN75173N	N	PDIP	16	25	506	13.97	11230	4.32
SN75173N.A	N	PDIP	16	25	506	13.97	11230	4.32

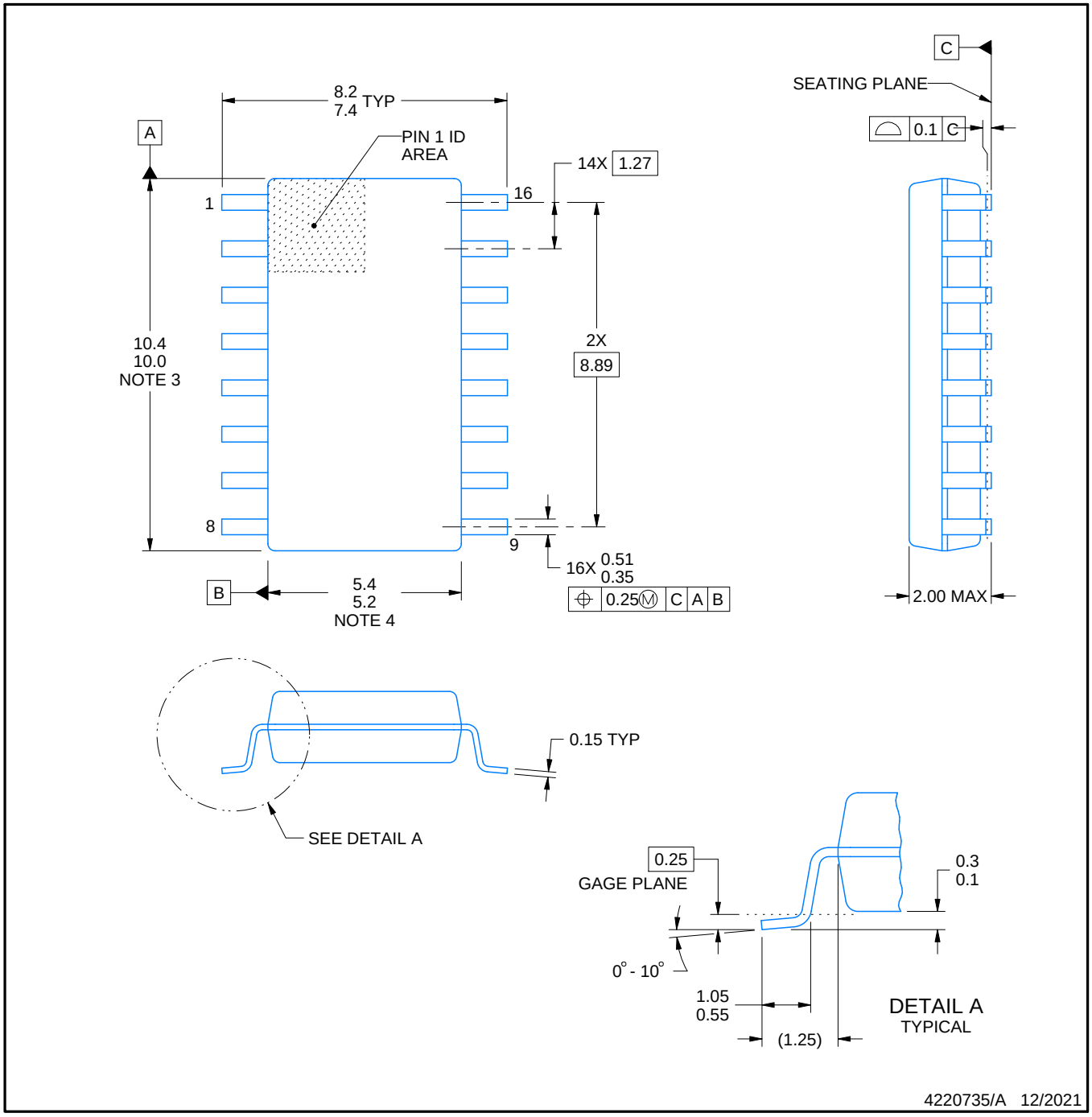


PACKAGE OUTLINE

NS0016A

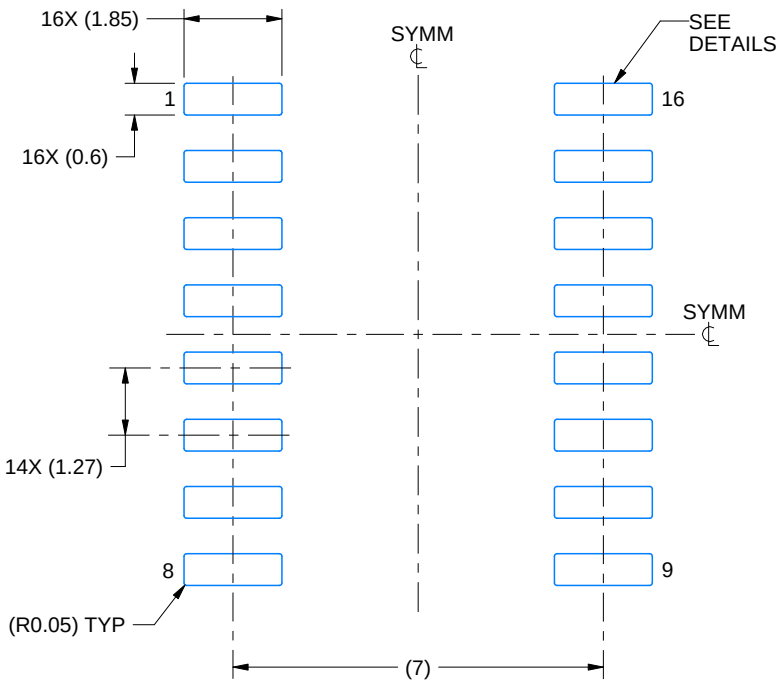
SOP - 2.00 mm max height

SOP

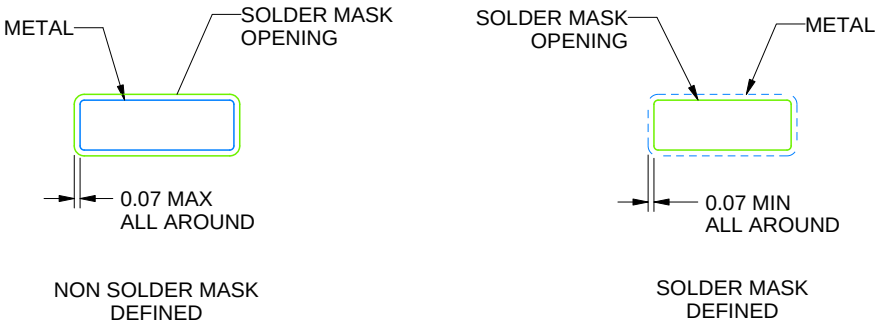


NOTES:

1. All linear dimensions are in millimeters. Dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.15 mm, per side.
4. This dimension does not include interlead flash. Interlead flash shall not exceed 0.25 mm, per side.



LAND PATTERN EXAMPLE
SCALE:7X



NON SOLDER MASK
DEFINED

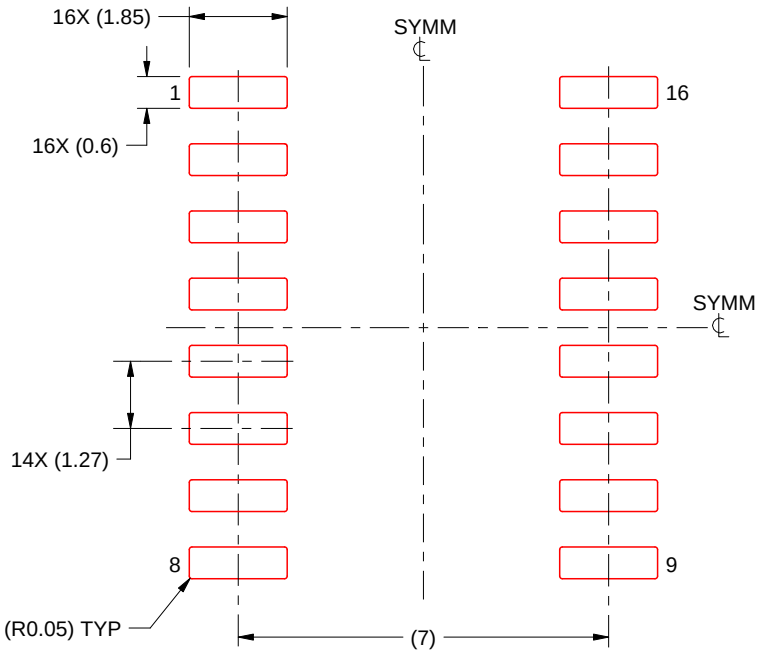
SOLDER MASK
DEFINED

SOLDER MASK DETAILS

4220735/A 12/2021

NOTES: (continued)

5. Publication IPC-7351 may have alternate designs.
6. Solder mask tolerances between and around signal pads can vary based on board fabrication site.



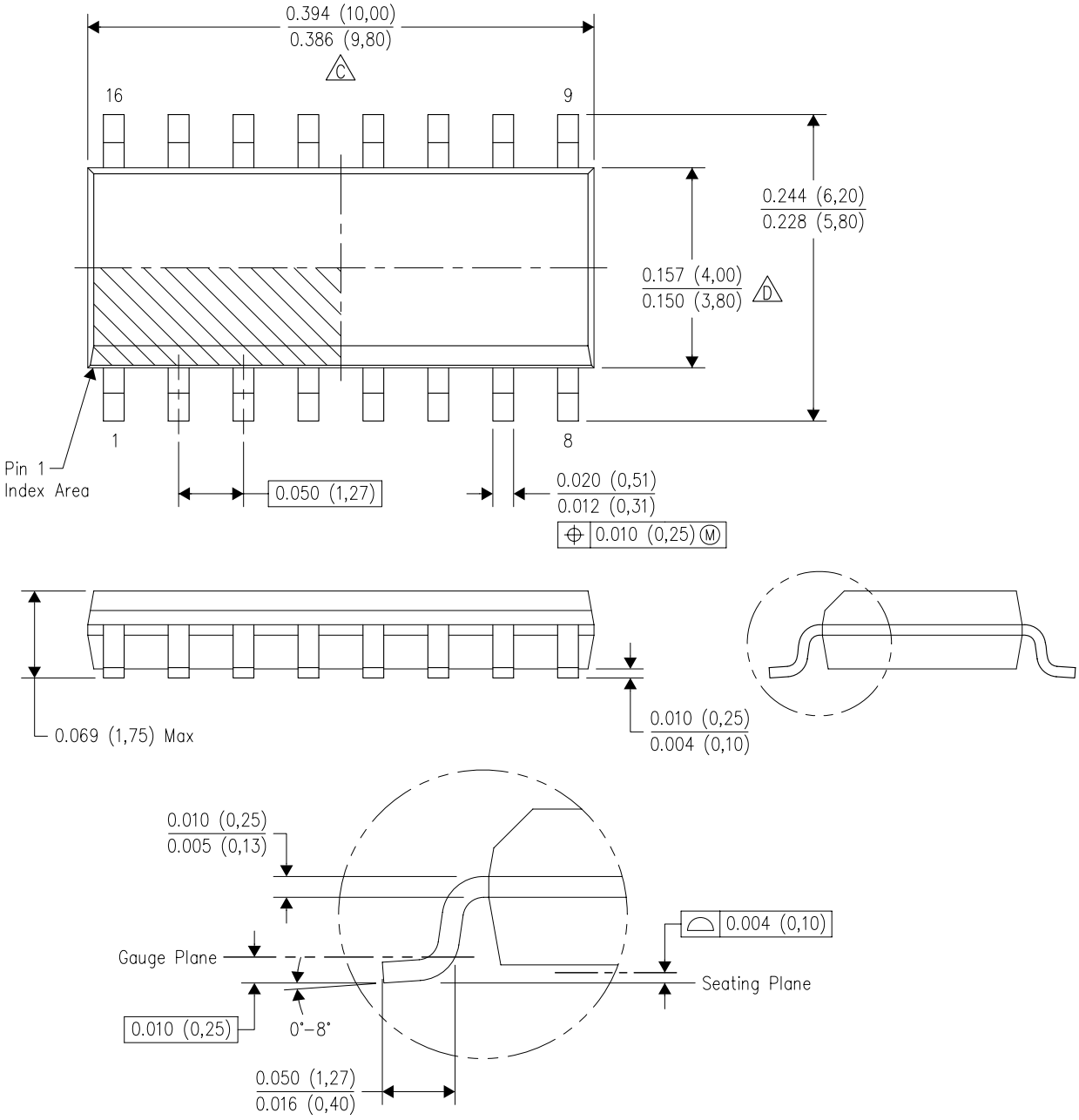
SOLDER PASTE EXAMPLE
BASED ON 0.125 mm THICK STENCIL
SCALE:7X

4220735/A 12/2021

NOTES: (continued)

7. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.
8. Board assembly site may have different recommendations for stencil design.

D (R–PDSO–G16) PLASTIC SMALL OUTLINE

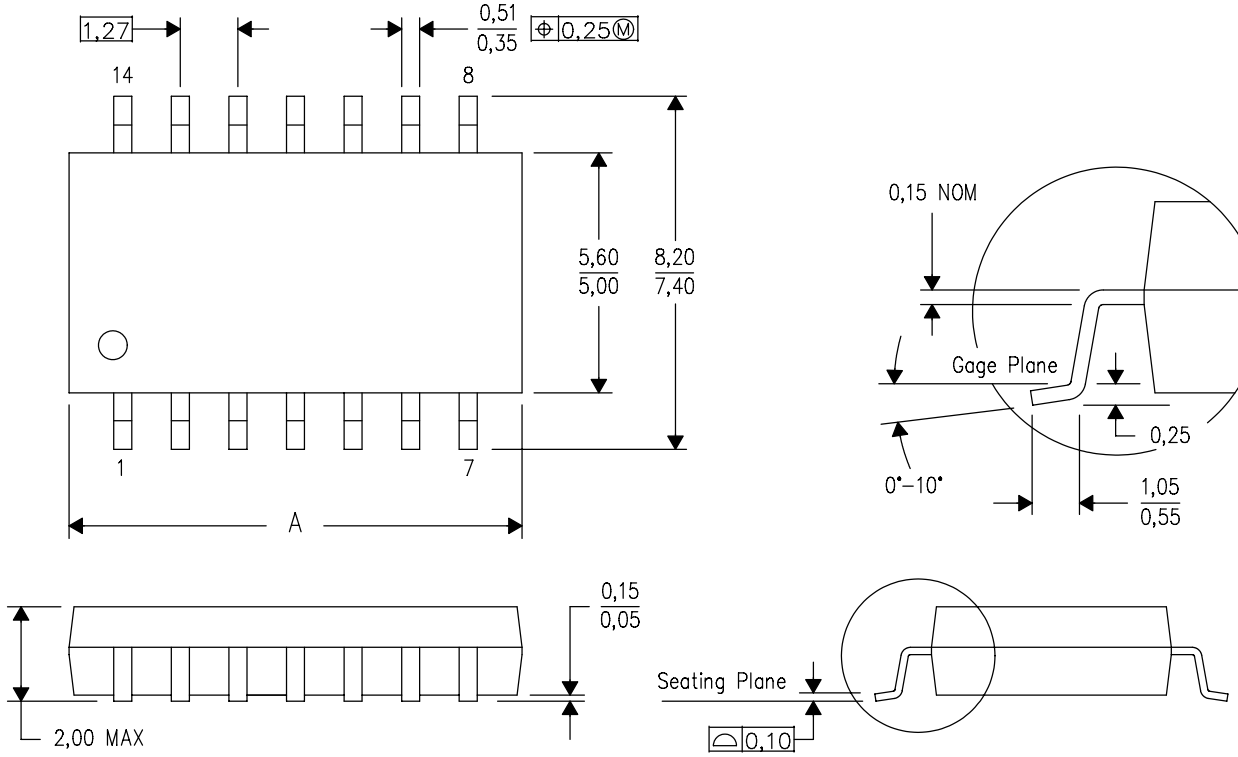


NOTES:
A. All linear dimensions are in inches (millimeters).
B. This drawing is subject to change without notice.
C. Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.006 (0,15) each side.
D. Body width does not include interlead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

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

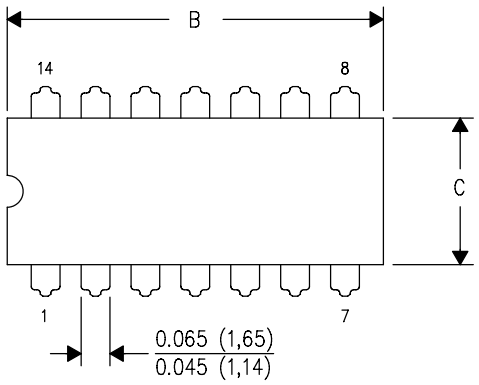
4040062/C 03/03

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.

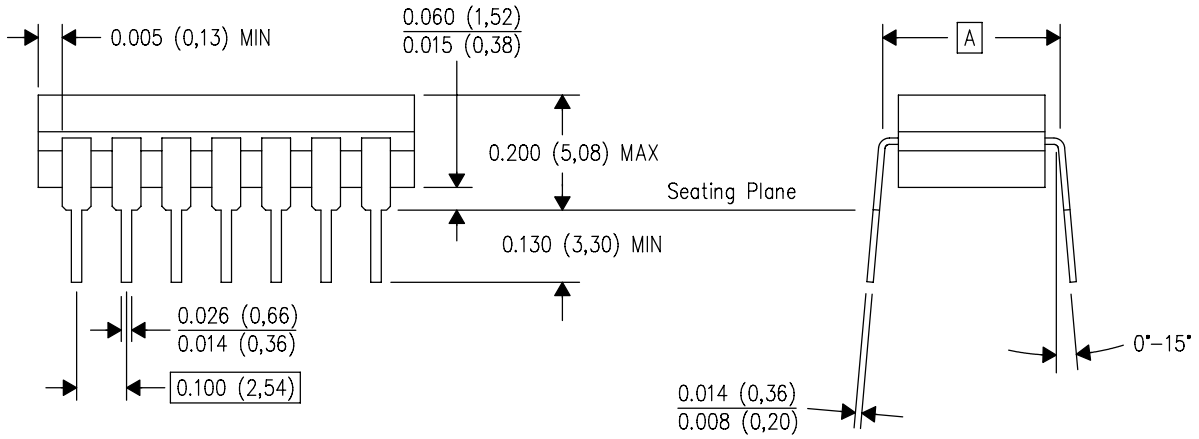
J (R–GDIP–T**)

14 LEADS SHOWN

CERAMIC DUAL IN–LINE PACKAGE



DIM \ PINS **	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)



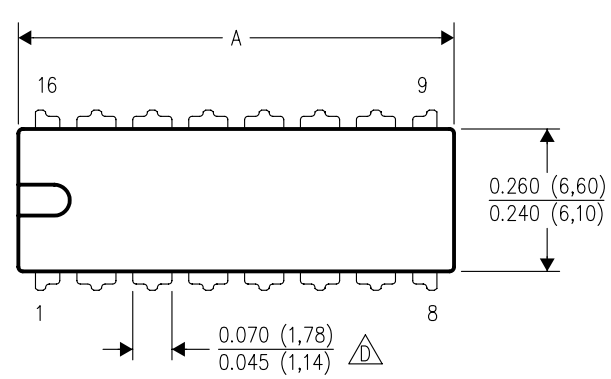
4040083/F 03/03

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.

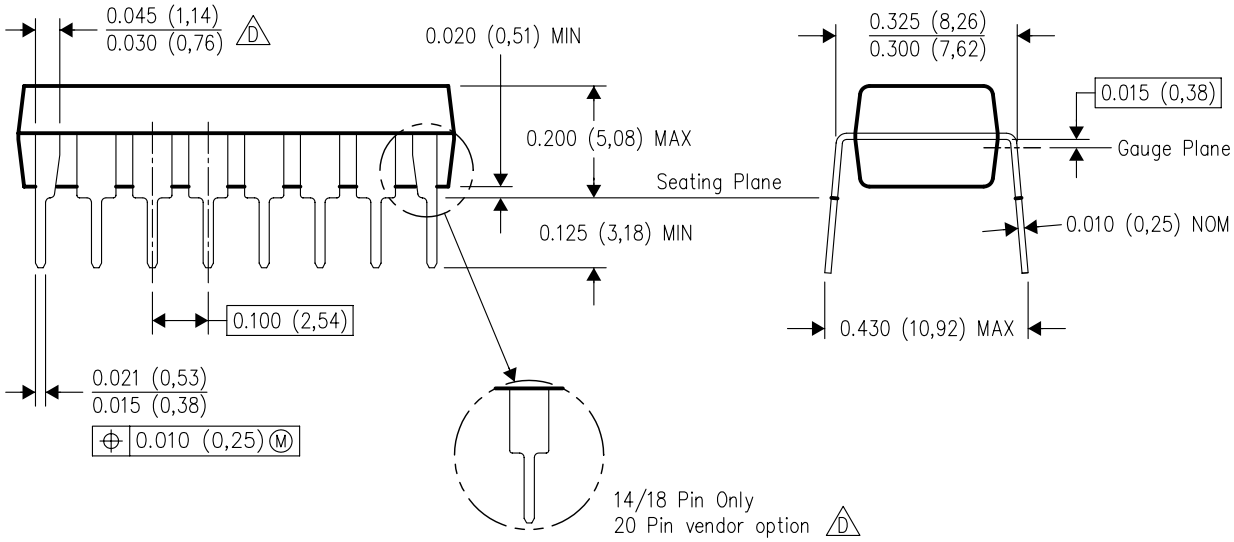
N (R–PDIP–T**)

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.

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