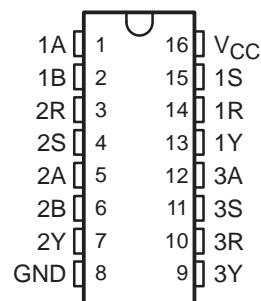


- Meets or Exceeds the Requirements of IBM™ System 360 Input/Output Interface Specification
- Operates From Single 5-V Supply
- TTL Compatible
- Built-In Input Threshold Hysteresis
- High Speed . . . Typical Propagation Delay Time = 20 ns
- Independent Channel Strobes
- Input Gating Increases Application Flexibility
- Designed for Use With Dual Line Driver SN75123
- Designed to Be Interchangeable With Signetics N8T24

D OR N PACKAGE
(TOP VIEW)



description

The SN75124 triple line receiver is specifically designed to meet the input/output interface specifications for IBM System 360. It is also compatible with standard TTL logic and supply voltage levels.

The SN75124 has receiver inputs with built-in hysteresis to provide increased noise margin for single-ended systems. An open line affects the receiver input as does a low-level input voltage, and the receiver input can withstand a level of -0.15 V with power on or off. The other inputs are in TTL configuration. The S input must be high to enable the receiver input. Two of the line receivers have A and B inputs that, if both are high, hold the output low. The third receiver has only an A input that, if high, holds the output low.

See the SN751730 for new IBM 360/370 interface designs.

The SN75124 is characterized for operation from 0°C to 70°C .

FUNCTION TABLE

INPUTS				OUTPUT Y
A	B†	R	S	
H	H	X	X	L
X	X	L	H	L
L	X	H	X	H
L	X	X	L	H
X	L	H	X	H
X	L	X	L	H

† B input and last two lines of the function table are applicable to receivers 1 and 2 only.



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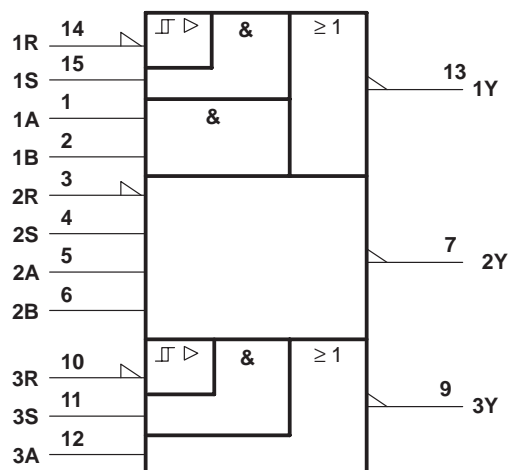
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SN75124 TRIPLE LINE RECEIVER

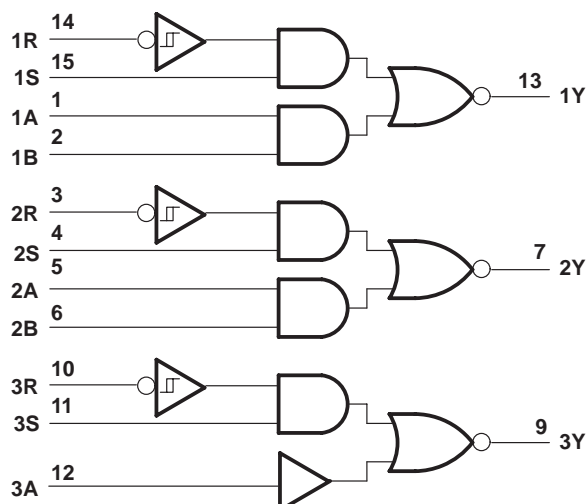
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logic symbol†

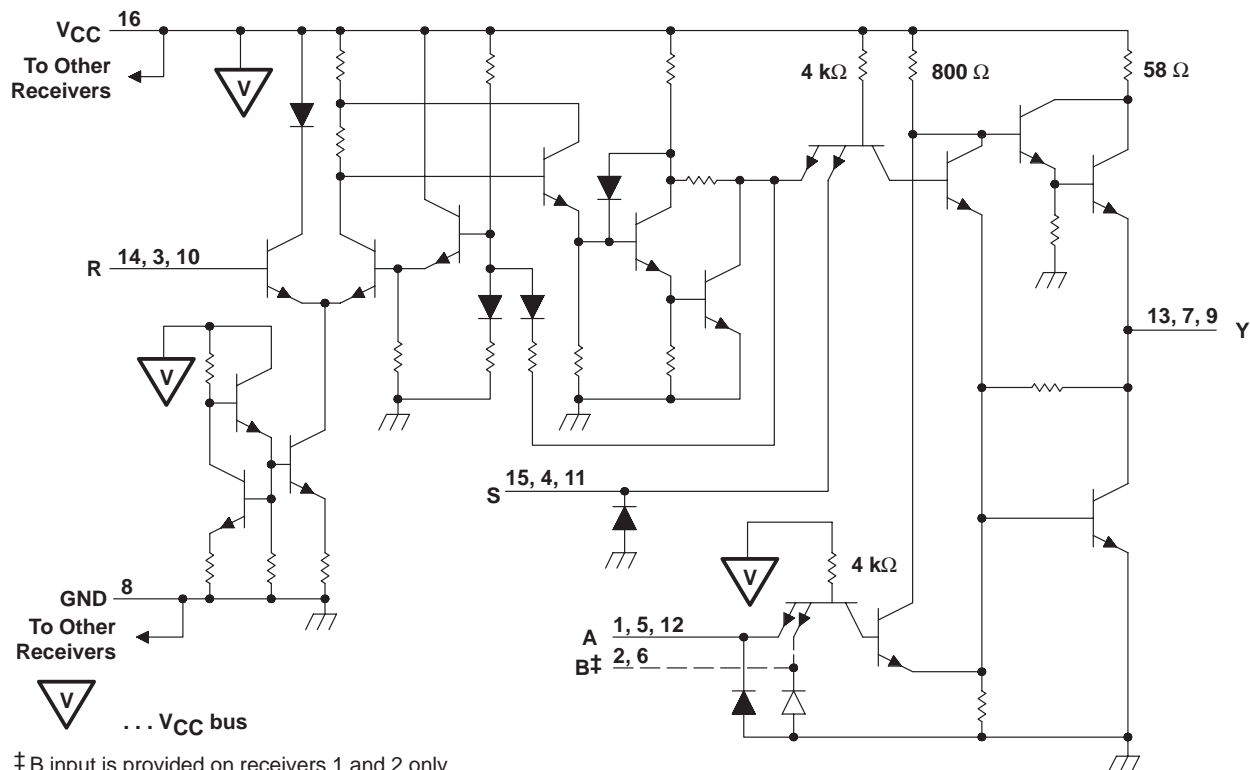


† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

logic diagram (positive logic)



schematic (each receiver)



‡ B input is provided on receivers 1 and 2 only.
Resistor values shown are nominal.

Supply voltage, V_{CC} (see Note 1)	7 V
Input voltage, V_i : R input with V_{CC} applied	7 V
R input with V_{CC} not applied	6 V
A, B, or S input	5.5 V
Output voltage, V_O	7 V
Output current, I_O	± 100 mA
Continuous total dissipation	See Dissipation Rating Table
Operating free-air temperature range, T_A	0°C to 70°C
Storage temperature range, T_{stg}	-65°C to 150°C
Lead temperature 1.6 mm (1/16 inch) from case for 10 seconds	260°C

NOTE 1: Voltage values are with respect to network ground terminal

PACKAGE	T _A ≤ 25°C POWER RATING	DERATING FACTOR ABOVE T _A = 25°C	T _A = 70°C POWER RATING
D	950 mW	7.6 mW/°C	608 mW
N	1150 mW	9.2 mW/°C	736 mW

		MIN	NOM	MAX	UNIT
Supply voltage, V_{CC}		4.75	5	5.25	V
High-level input voltage, V_{IH}	A, B, or S	2			V
	R	1.7			
Low-level input voltage, V_{IL}	A, B, or S	0.8			V
	R	0.7			
High-level output current, I_{OH}		−800			μA
Low-level output current, I_{OL}		16			mA
Operating free-air temperature, T_A		0	70		°C

SN75124
TRIPLE LINE RECEIVER

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electrical characteristics over recommended ranges of supply voltage and operating free-air temperature (unless otherwise noted)

PARAMETER			TEST CONDITIONS	MIN	TYP	MAX	UNIT
V _{hys}	Hysteresis voltage (V _{IT+} – V _{IT–})	R	V _{CC} = 5 V, T _A = 25°C	0.2	0.5		V
V _{IK}	Input clamp voltage	A, B, or S	V _{CC} = 5 V, I _I = 12 mA			–1.5	V
V _{I(BR)}	Input breakdown voltage	A, B, or S	V _{CC} = 5 V, I _I = 10 mA	5.5			V
V _{OH}	High-level output voltage		V _{IH} = V _{IHmin} , I _{OH} = –800 μA, V _{IL} = V _{ILmax} , See Note 2	2.6			V
V _{OL}	Low-level output voltage		V _{IH} = V _{IHmin} , I _{OL} = 16 mA, V _{IL} = V _{ILmax} , See Note 2			0.4	V
I _I	Input current at maximum input voltage	R	V _I = 7 V			5	mA
			V _I = 6 V, V _{CC} = 0			5	
I _{IH}	High-level input current	A, B, or S	V _I = 4.5 V			40	μA
		R	V _I = 3.11 V			170	
I _{IL}	Low-level input current	A, B, or S	V _I = 0.4 V, V _{IR} = 0.8 V	–0.1		–1.6	mA
I _{OS}	Short-circuit output current†			–50		–100	mA
I _{CC}	Supply current		All inputs = 0.8 V			72	mA
			All inputs = 2 V			100	

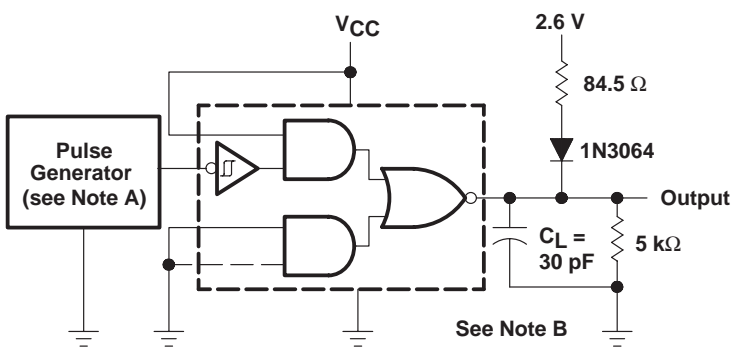
† Not more than one output should be shorted at a time, and duration of the short circuit should not exceed one second.

NOTE 2: The output voltage and current limits are characterized for any appropriate combination of high and low inputs specified by the function table for the desired output.

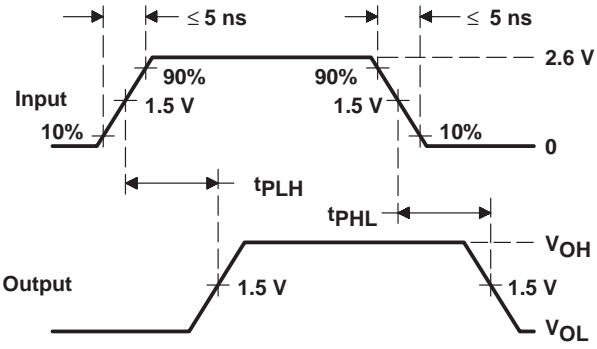
switching characteristics, V_{CC} = 5 V, T_A = 25°C

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
t _{PLH}	Propagation delay time, low-to-high-level output from R input	See Figure 1		20	30	ns
t _{PHL}	Propagation delay time, high-to-low-level output from R input			20	30	

PARAMETER MEASUREMENT INFORMATION



TEST CIRCUIT



VOLTAGE WAVEFORMS

NOTES: A. The pulse generator has the following characteristics: Z_O ≈ 50 Ω, PRR ≤ 5 MHz, duty cycle = 50%.
B. C_L includes probe and jig capacitance.

Figure 1. Test Circuit and Voltage Waveforms

TYPICAL CHARACTERISTICS

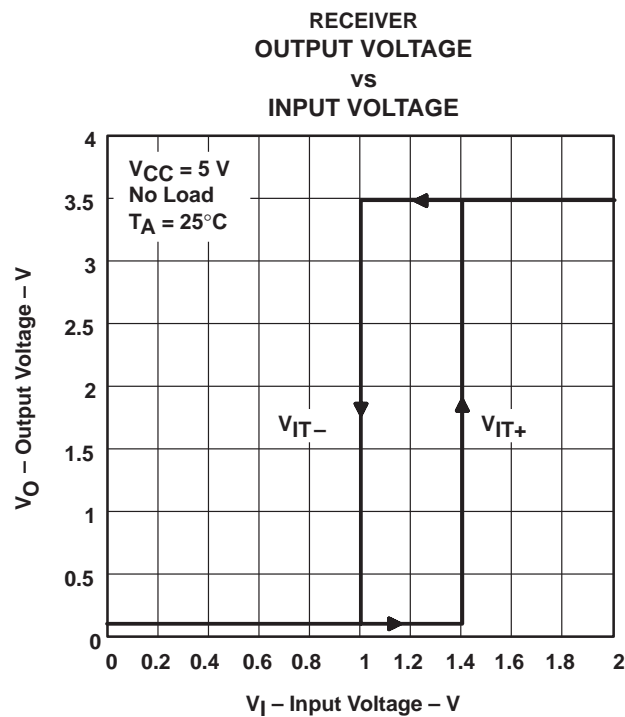


Figure 2

APPLICATION INFORMATION

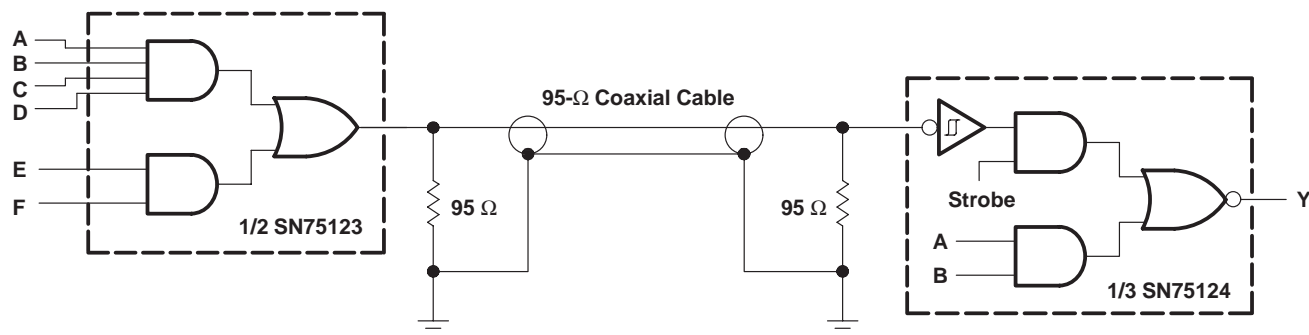


Figure 3. Unbalanced Line Communication Using SN75123 and SN75124

PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾
SN75124D	OBSOLETE	SOIC	D	16		TBD	Call TI	Call TI
SN75124N	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type
SN75124NE4	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type
SN75124NSR	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75124NSRE4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN75124NSRG4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM

⁽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.

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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
SN75124NSR	SO	NS	16	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)
SN75124NSR	SO	NS	16	2000	346.0	346.0	33.0

MECHANICAL DATA

NS (R-PDSO-G**)

PLASTIC SMALL-OUTLINE PACKAGE

14-PINS SHOWN



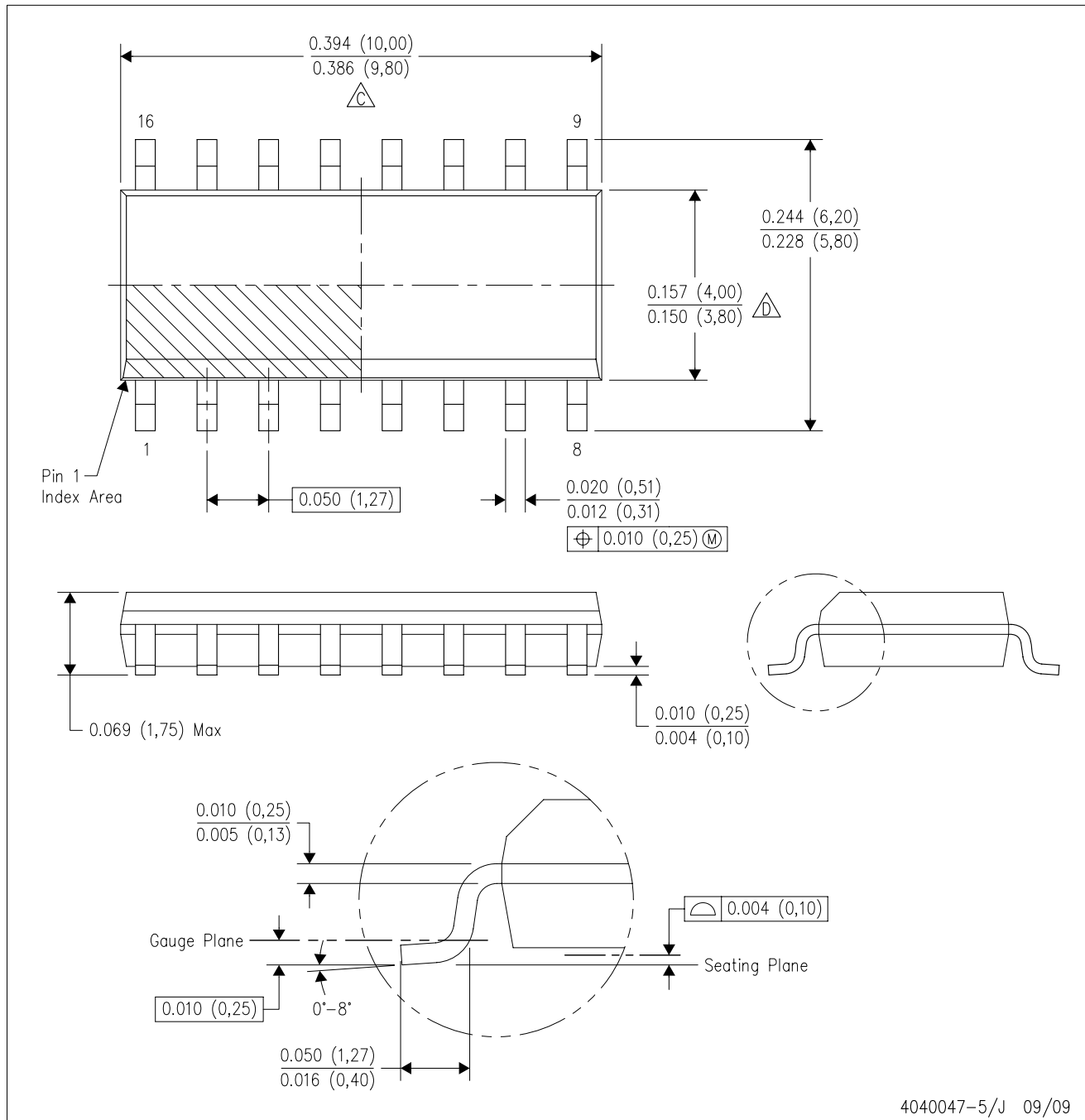
DIM \ PINS **	14	16	20	24
A MAX	10,50	10,50	12,90	15,30
A MIN	9,90	9,90	12,30	14,70

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.

D (R-PDSO-G16)

PLASTIC SMALL-OUTLINE PACKAGE



4040047-5/J 09/09

- 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 .006 (0,15) per end.
 - D. Body width does not include interlead flash. Interlead flash shall not exceed .017 (0,43) per side.
 - E. Reference JEDEC MS-012 variation AC.

N (R-PDIP-T**)

16 PINS SHOWN

PLASTIC DUAL-IN-LINE PACKAGE



PINS **	14	16	18	20
DIM				
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	AA	BB	AC	AD



14/18 Pin Only
20 Pin vendor option

4040049/E 12/2002

- 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.

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