

# SN75ALS125, SN75ALS127 SEVEN-CHANNEL LINE RECEIVERS

SLLS027B – D2239, APRIL 1987 – REVISED AUGUST 1989

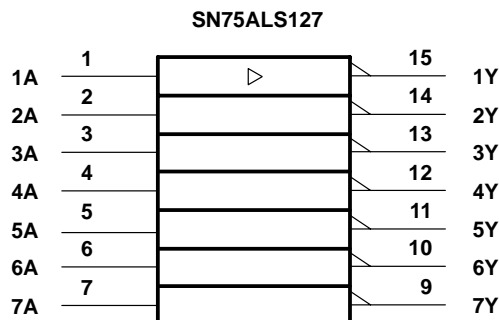
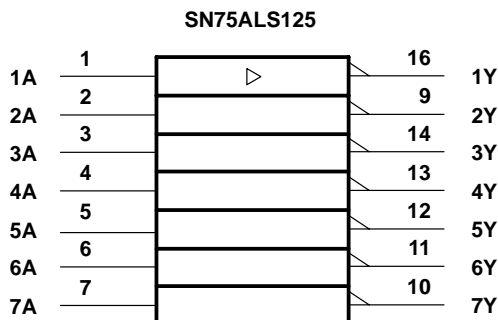
- Meets IBM 360/370 I/O Specification
- Input Resistance . . . 7 k $\Omega$  to 20 k $\Omega$
- Output Compatible with TTL
- **IMPACT™** Low-Power Schottky Technology
- Operates from Single 5-V Supply
- High Speed . . . Low Propagation Delay
- Ratio Specification for Propagation Delay Time, Low-to-High/High-to-Low
- Glitch-Free Power-Up and Power-Down
- Seven Channels in One 16-Pin Package
- Standard  $V_{CC}$  and Ground Positioning on SN75ALS127

## description

The SN75ALS125 and SN75ALS127 are monolithic seven-channel line receivers designed to satisfy the requirements of the IBM System 360/370 input/output interface specifications. Employing the IMPACT™ process allows low supply-current requirements while maintaining fast switching speeds and high-current TTL outputs.

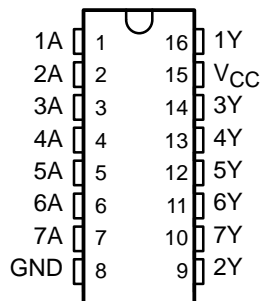
The SN75ALS125 and SN75ALS127 are characterized for operation from 0°C to 70°C.

## logic symbols†

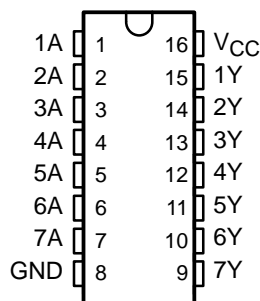


† These symbols are in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

SN75ALS125 . . . D, J, OR N PACKAGE  
(TOP VIEW)



SN75ALS127 . . . D, J, OR N PACKAGE  
(TOP VIEW)



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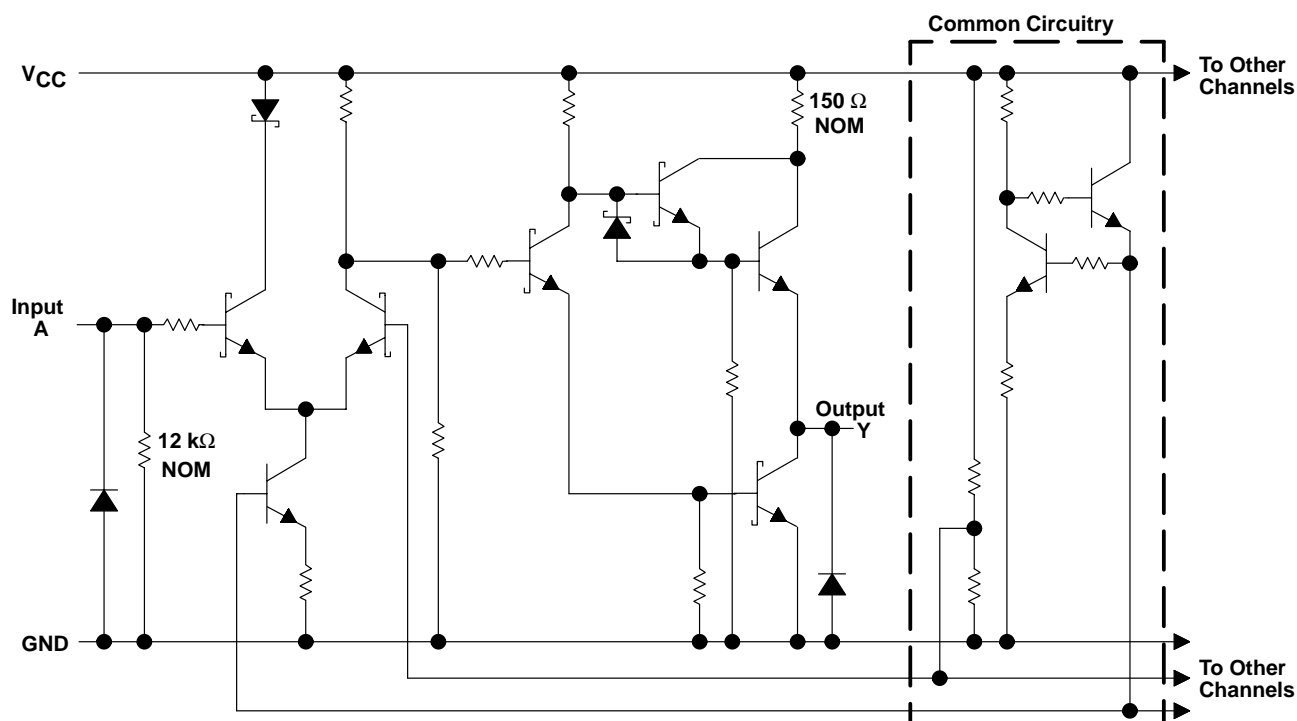
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## schematic (each receiver)



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

Supply voltage, $V_{CC}$ (see Note 1)	7 V
Input voltage range	-0.15 V to 7 V
Continuous total dissipation at (or below) 25°C free-air temperature (see Note 2):	
D package	950 mW
J package	1025 mW
N package	1150 mW
Operating free-air temperature range	0°C to 70°C
Storage temperature range	-65°C to 150°C
Lead temperature 1,6 mm (1/16 inch) from case for 60 seconds: J package	300°C
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds: D or N package	260°C

NOTES: 1. All voltage values are with respect to network ground terminal.

2. For operation above 25°C free-air temperature, derate the D package to 608 mW at 70°C at the rate of 7.6 mW/°C, the J package to 656 mW/°C at 70°C at the rate of 8.2 mW/°C, and the N package to 736 mW at 70°C at the rate of 9.2 mW/°C.

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## recommended operating conditions

	MIN	NOM	MAX	UNIT
Supply voltage, $V_{CC}$	4.5	5	5.5	V
High-level input voltage, $V_{IH}$	1.7			V
Low-level input voltage, $V_{IL}$			0.7	V
High-level output current, $I_{OH}$			-0.4	V
Low-level output current, $I_{OL}$			16	mA
Operating free-air temperature, $T_A$	0		70	°C

## electrical characteristics over recommended operating free-air temperature range

PARAMETER	TEST CONDITIONS	MIN	TYP†	MAX	UNIT
$V_{OH}$ High-level output voltage	$V_{CC} = 4.5$ V, $V_{IL} = 0.7$ V, $I_{OH} = -0.4$ mA	2.4	3.1		V
$V_{OL}$ Low-level output voltage	$V_{CC} = 4.5$ V, $V_{IH} = 1.7$ V, $I_{OL} = 16$ mA		0.4	0.5	V
$I_{IH}$ High-level input current	$V_{CC} = 5.5$ V, $V_I = 3.11$ V		0.3	0.42	mA
$I_{IL}$ Low-level input current	$V_{CC} = 5.5$ V, $V_I = 0.15$ V			30	μA
$I_{OS}$ Short-circuit output current‡	$V_{CC} = 5.5$ V, $V_O = 0$	-18		-60	mA
$r_i$ Input resistance	$V_{CC} = 4.5$ V, 0, or open, $\Delta V_I = 0.15$ V to 4.15 V	7		20	kΩ
$I_{CC}$ Supply current	$V_{CC} = 5.5$ V, $I_{OH} = -0.4$ mA, All inputs at 0.7 V		15	25	mA
	$V_{CC} = 5.5$ V, $I_{OL} = 16$ mA, All inputs at 4 V		28	47	mA

## switching characteristics over recommended operating temperature range, $V_{CC} = 5$ V

PARAMETER	TEST CONDITIONS	MIN	TYP†	MAX	UNIT
$t_{PLH}$ Propagation delay time, low-to-high-level output	$R_L = 400$ Ω, $C_L = 50$ pF, See Figure 1	7	14	25	ns
$t_{PHL}$ Propagation delay time, high-to-low-level output		10	18	30	ns
$\frac{t_{PLH}}{t_{PHL}}$ Ratio of propagation delay times		0.5	0.8	1.3	
$t_{TLH}$ Transition time, low-to-high-level output		1	7	12	ns
$t_{THL}$ Transition time, high-to-low-level output		1	3	12	ns

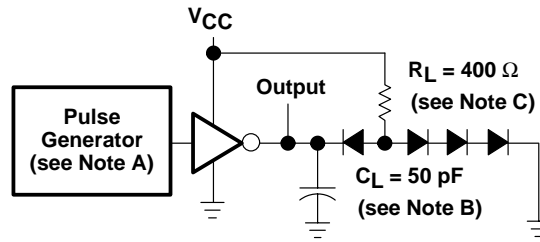
† All typical values are at  $V_{CC} = 5$  V,  $T_A = 25^\circ\text{C}$ .

‡ Not more than one output should be shorted at a time.

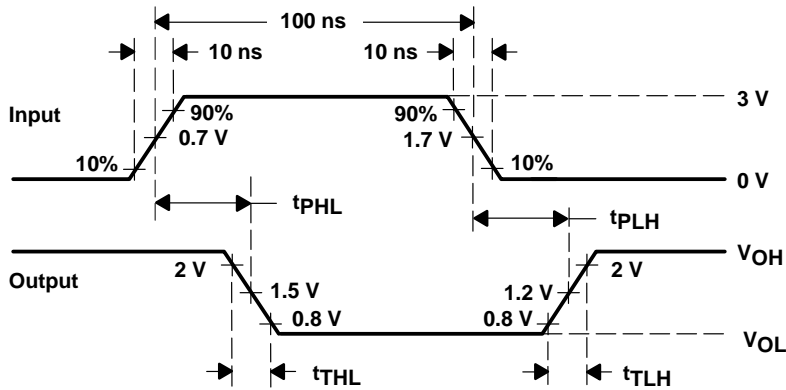
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## PARAMETER MEASUREMENT INFORMATION



### TEST CIRCUIT



### VOLTAGE WAVEFORMS

- NOTES: A. The pulse generator has the following characteristics:  $Z_0 \approx 50 \Omega$ ,  $PRR \leq 5 \text{ MHz}$ .  
 B.  $C_L$  includes probe and jig capacitance.  
 C. All diodes are 1N3064 or equivalent.

Figure 1

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