

# SN75125, SN75127 SEVEN-CHANNEL LINE RECEIVERS

SLLS108B – D239, JANUARY 1977 – REVISED FEBRUARY 1993

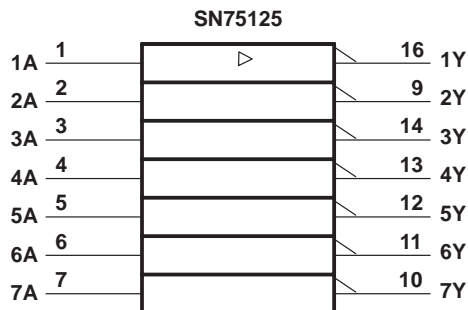
- Meets IBM 360/370 I/O Specification
- Input Resistance . . . 7 k $\Omega$  to 20 k $\Omega$
- Output Compatible With TTL
- Schottky-Clamped Transistors
- Operates From Single 5-V Supply
- High Speed . . . Low Propagation Delay
- Ratio Specification for Propagation Delay Time, Low-to-High/High-to-Low
- Seven Channels in One 16-Pin Package
- Standard V<sub>CC</sub> and Ground Positioning on SN75127

## description

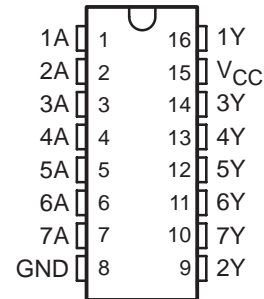
The SN75125 and SN75127 are monolithic seven-channel line receivers designed to satisfy the requirements of the IBM System 360/370 input/output interface specifications. Special low-power design and Schottky-clamped transistors allow for low supply-current requirements while maintaining fast switching speeds and high-current TTL outputs.

The SN75125 and SN75127 are characterized for operation from 0°C to 70°C.

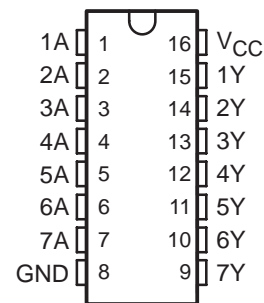
## logic symbols†



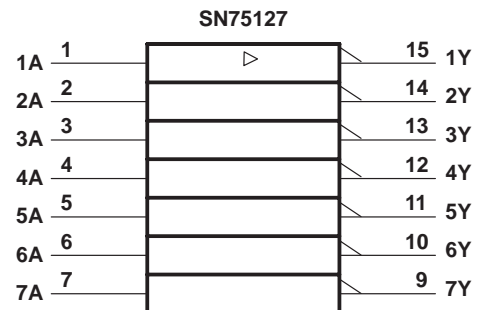
SN75125 . . . D OR N PACKAGE  
(TOP VIEW)



SN75127 . . . D OR N PACKAGE  
(TOP VIEW)



**THE SN75125 IS NOT  
RECOMMENDED FOR NEW DESIGN**

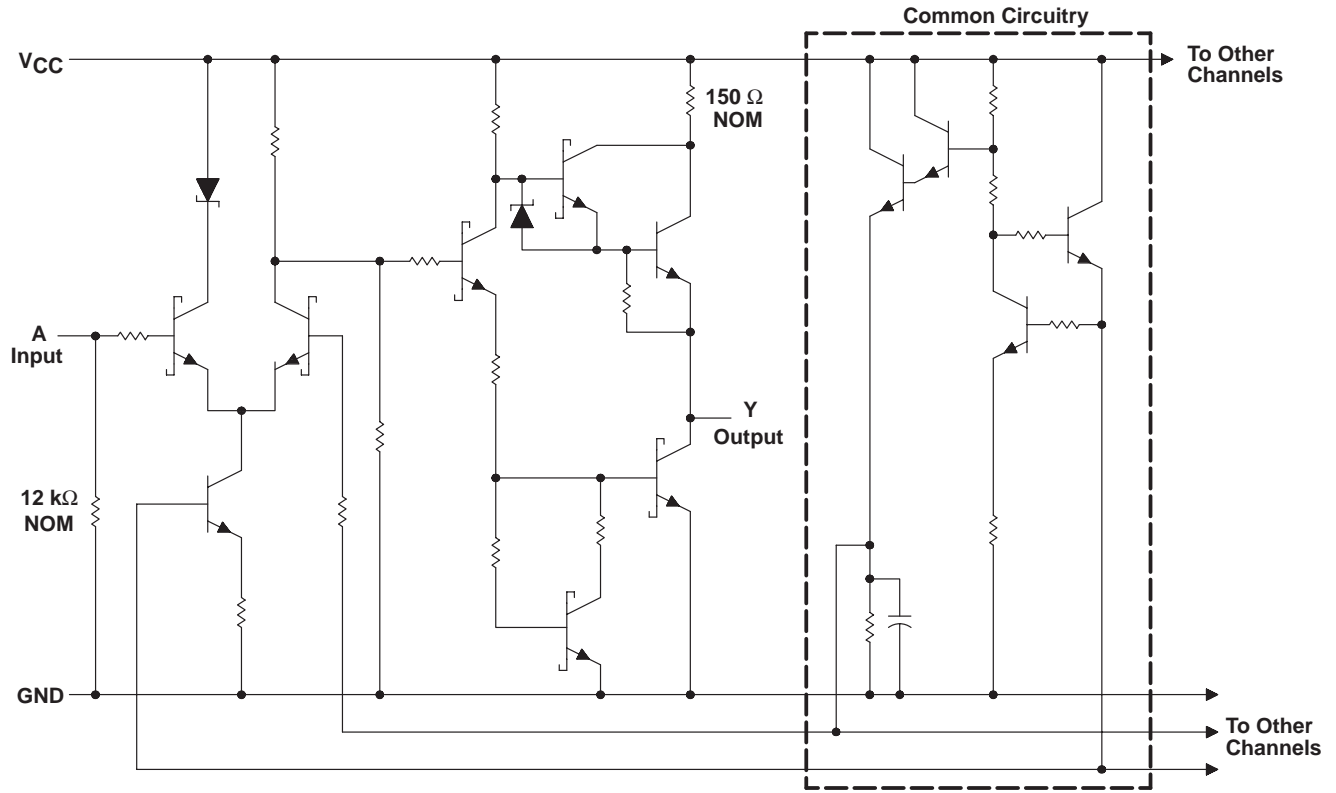


† These symbols are in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

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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: SN75125	- 0.15 V to 7 V
SN75127	- 2 V to 7 V
Continuous total power dissipation	See Dissipation Rating Table
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 10 seconds	260°C

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

DISSIPATION RATING TABLE

PACKAGE	$T_A \leq 25^\circ\text{C}$ POWER RATING	OPERATING FACTOR ABOVE $T_A = 25^\circ\text{C}$	$T_A = 70^\circ\text{C}$ POWER RATING
D	950 mW	7.6 mW/°C	608 mW
N	1050 mW	9.2 mW/°C	736 mW

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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	mA
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 (unless otherwise noted)

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

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

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

## switching characteristics, $V_{CC} = 5\text{ V}$ , $T_A = 25^\circ\text{C}$

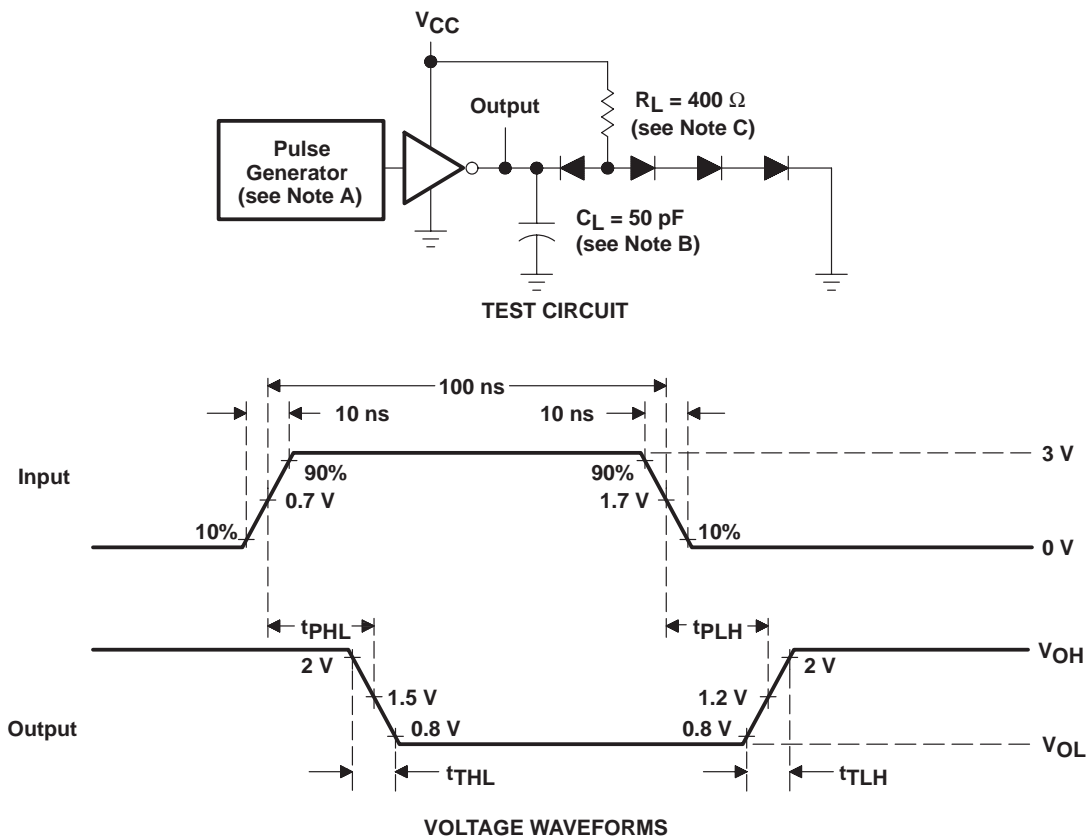
PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
$t_{PLH}$ Propagation delay time, low-to-high-level output	$R_L = 400\ \Omega$ , $C_L = 50\text{ pF}$ , See Figure 1	7	14	25	ns
$t_{PHL}$ Propagation delay time, high-to-low-level output		10	18	30	ns
$\frac{t_{PLH}}{t_{PHL}}$ Ratio of propagation delay times		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



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## PARAMETER MEASUREMENT INFORMATION



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

Figure 1. Tests Circuit and Voltage Waveforms

TYPICAL CHARACTERISTICS

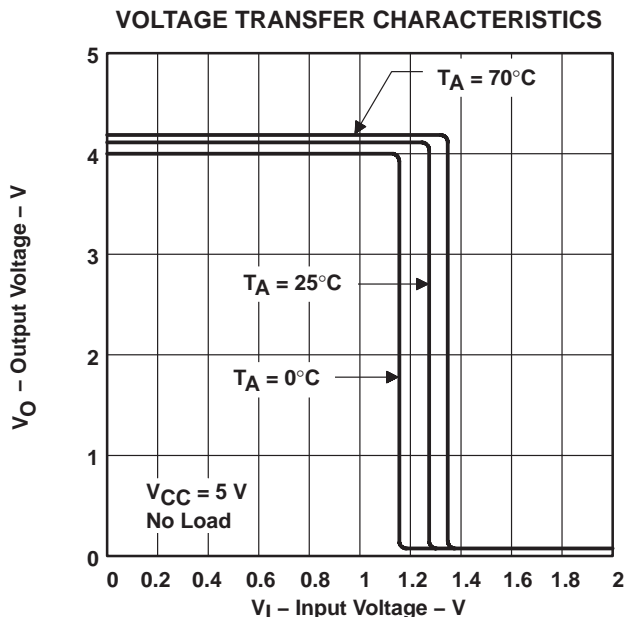


Figure 2

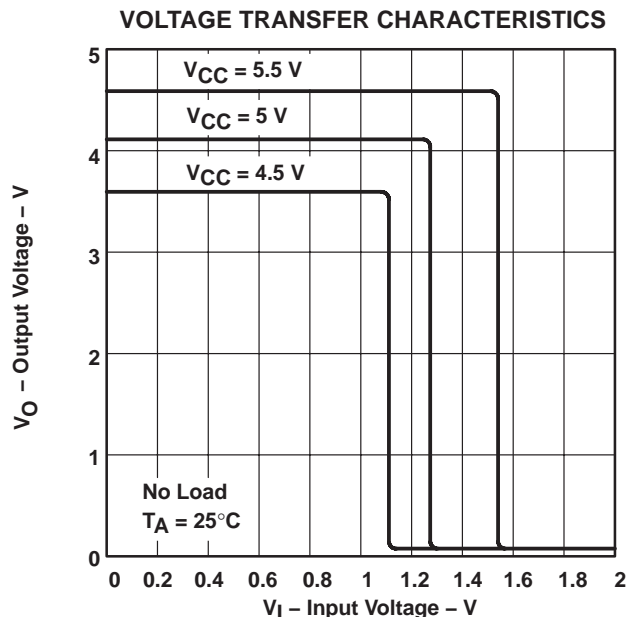


Figure 3

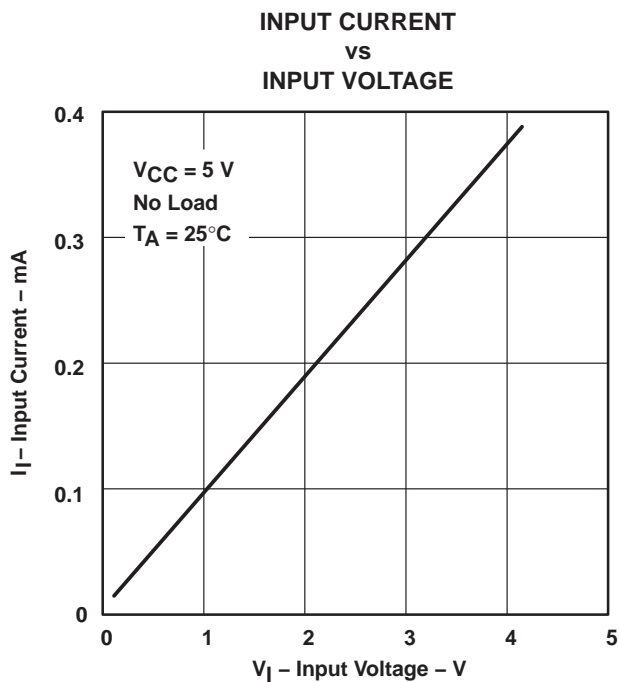


Figure 4

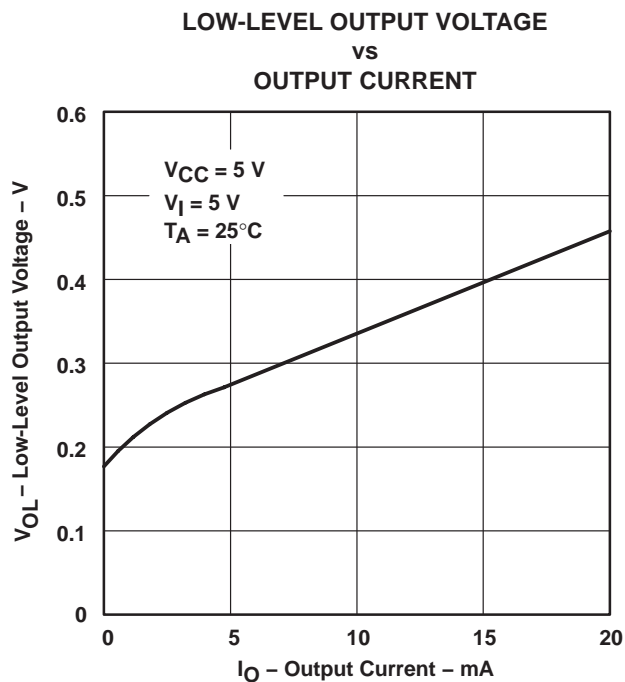


Figure 5

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## TYPICAL CHARACTERISTICS

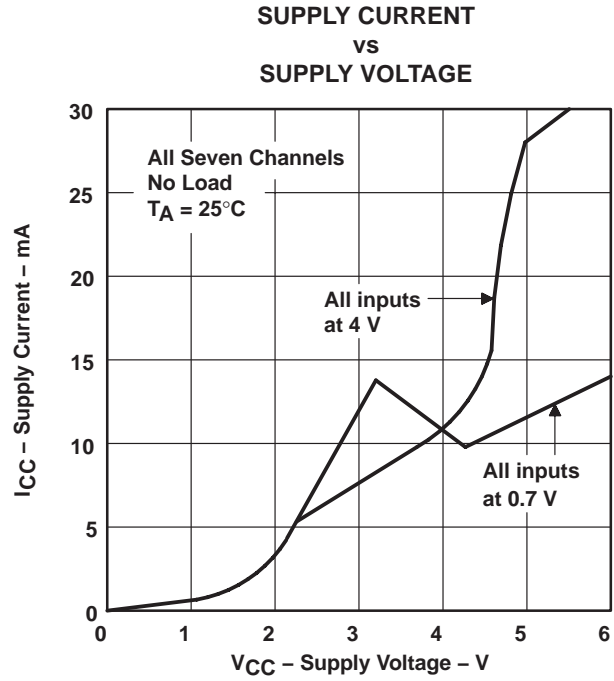


Figure 6

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