

SN75125, SN75127 SEVEN-CHANNEL LINE RECEIVERS

SLLS108B – D239, JANUARY 1977 – REVISED FEBRUARY 1993

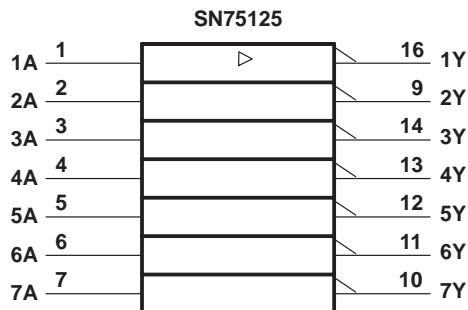
- Meets IBM 360/370 I/O Specification
- Input Resistance . . . 7 k Ω to 20 k Ω
- Output Compatible With TTL
- Schottky-Clamped Transistors
- Operates From Single 5-V Supply
- High Speed . . . Low Propagation Delay
- Ratio Specification for Propagation Delay Time, Low-to-High/High-to-Low
- Seven Channels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

description

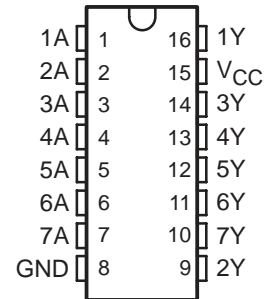
The SN75125 and SN75127 are monolithic seven-channel line receivers designed to satisfy the requirements of the IBM System 360/370 input/output interface specifications. Special low-power design and Schottky-clamped transistors allow for low supply-current requirements while maintaining fast switching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

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

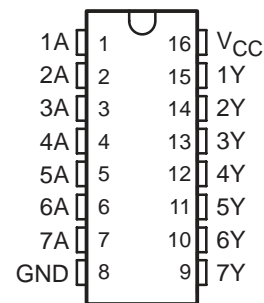
logic symbols†



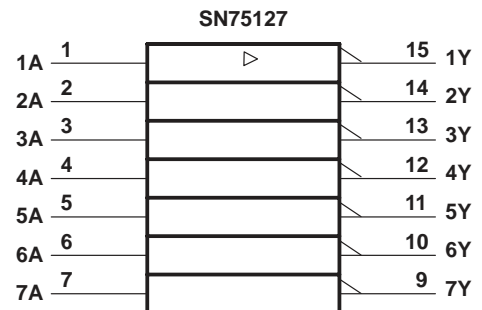
SN75125 . . . D OR N PACKAGE
(TOP VIEW)



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



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

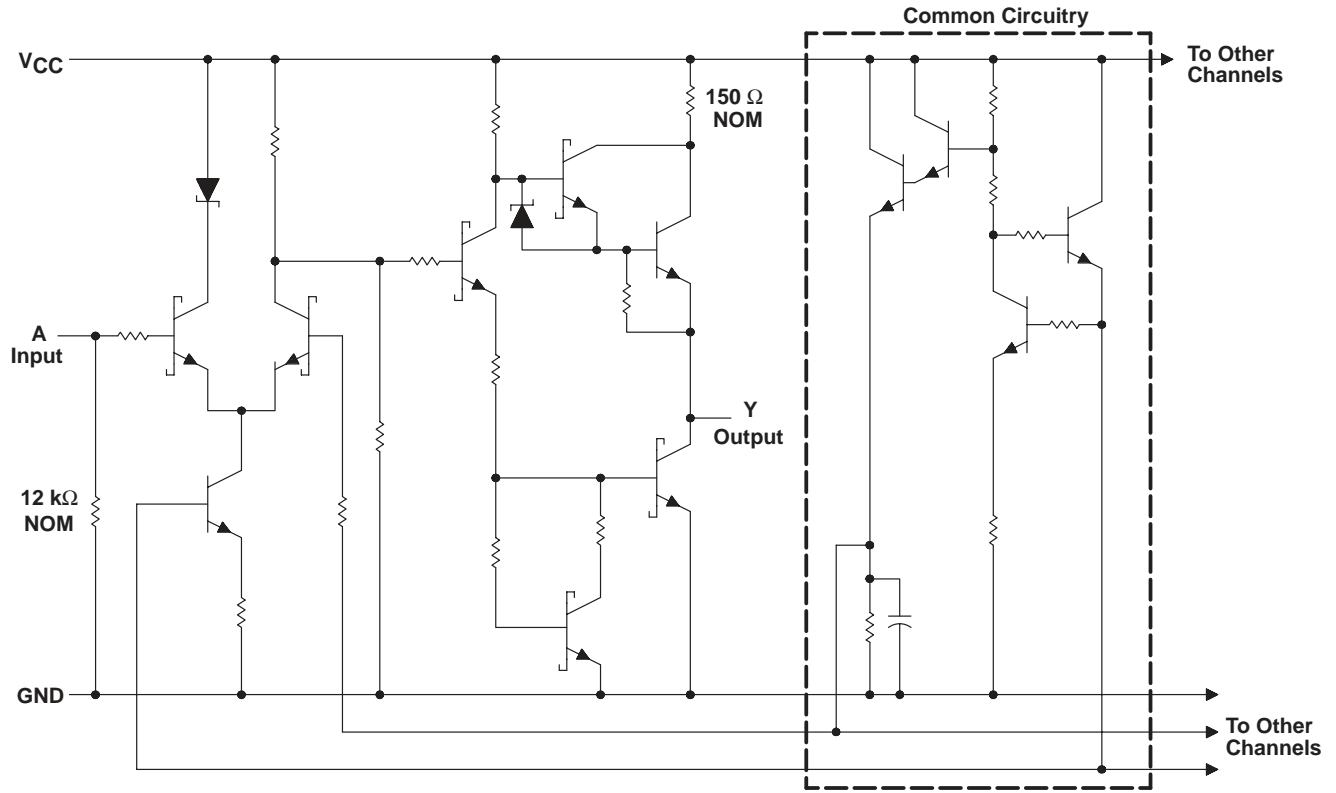


† These symbols are in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

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

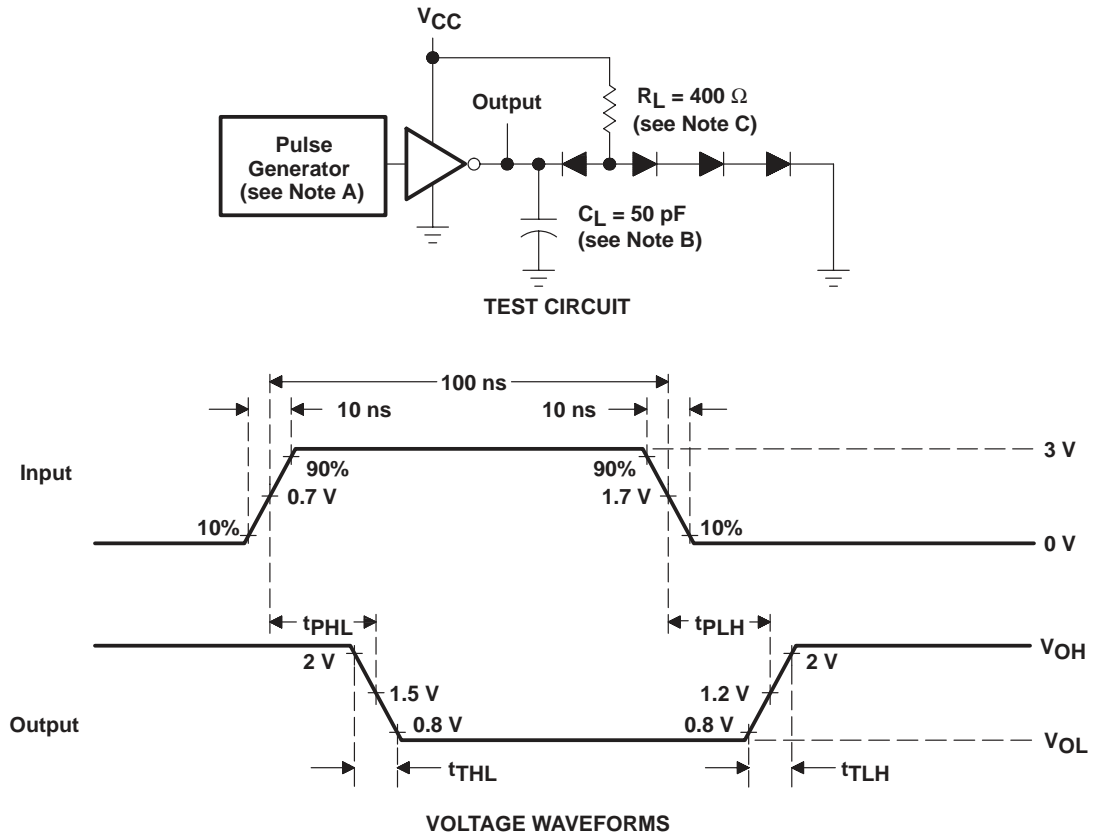
| PARAMETER | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--|---|-----|-----|-----|------|
| t_{PLH} Propagation delay time, low-to-high-level output | $R_L = 400\ \Omega$, $C_L = 50\text{ pF}$, See Figure 1 | 7 | 14 | 25 | ns |
| t_{PHL} Propagation delay time, high-to-low-level output | | 10 | 18 |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

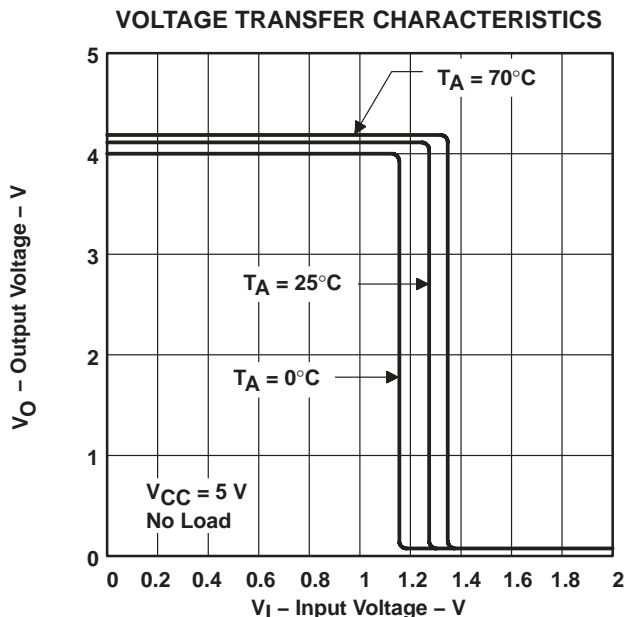


Figure 2

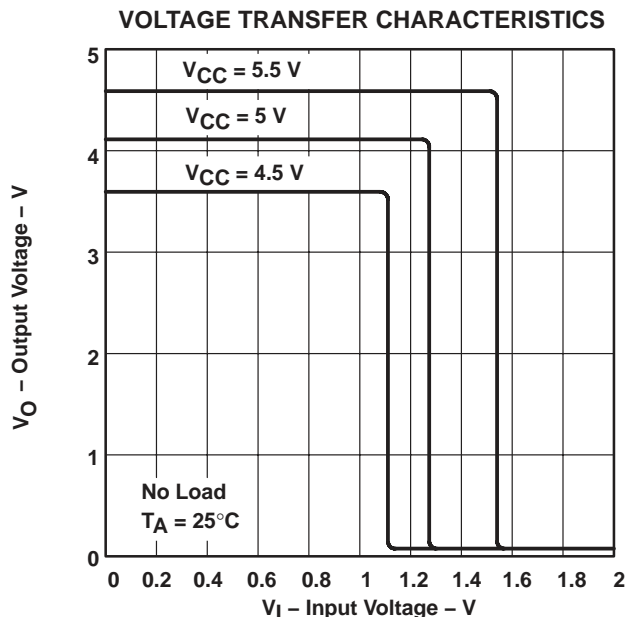


Figure 3

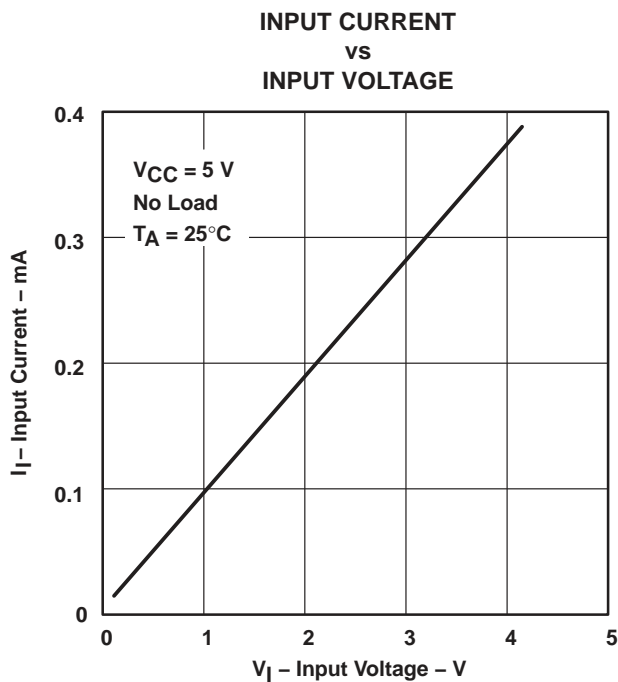


Figure 4

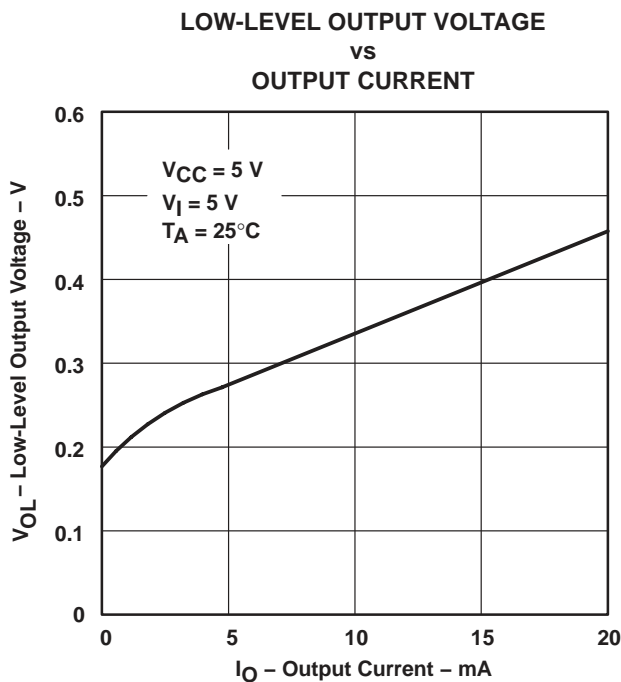


Figure 5

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TYPICAL CHARACTERISTICS

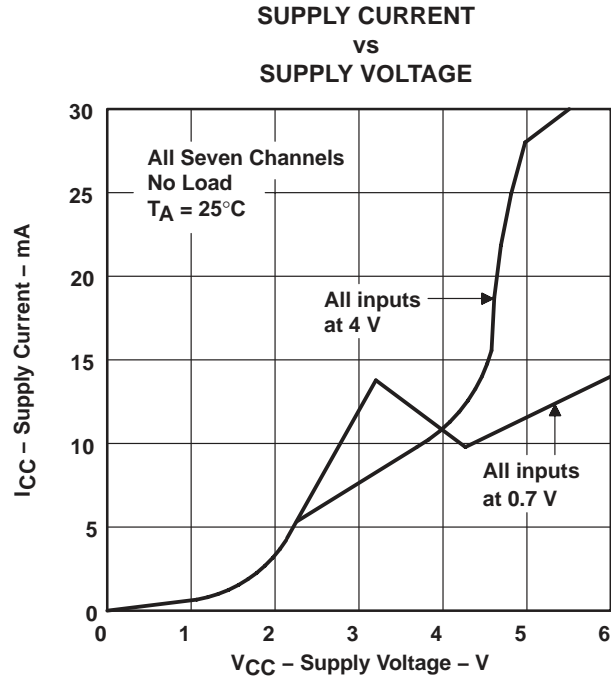


Figure 6

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