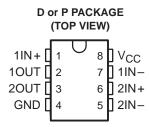
SLLS084C - SEPTEMBER 1980 - REVISED MARCH 1997

- Meets or Exceeds the Requirements of ANSI Standards EIA/TIA-422-B and EIA/TIA-423-B and ITU Recommendation V.10 and V.11
- Operates From Single 5-V Power Supply
- Wide Common-Mode Voltage Range
- High Input Impedance
- TTL-Compatible Outputs
- High-Speed Schottky Circuitry
- 8-Pin Dual-In-Line Package

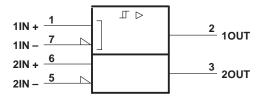


description

The SN75157 is a dual differential line receiver designed to meet Standards EIA/TIA-422-B and -423-B and ITU V.10 and V.11. It utilizes Schottky circuitry and has TTL-compatible outputs. The inputs are compatible with either a single-ended or a differential-line system. The device operates from a single 5-V power supply and is supplied in 8-pin dual-in-line and small-outline packages.

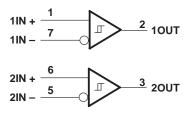
The SN75157 is characterized for operation from 0°C to 70°C.

logic symbol†



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

logic diagram (positive logic)

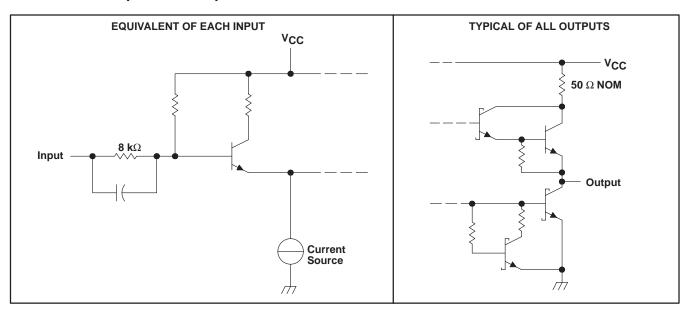




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schematics of inputs and outputs



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

Supply voltage range, V _{CC} (see Note 1)	0.5 V to 7 V
Input voltage, V _I	
Differential input voltage, V _{ID} (see Note 2)	±15 V
Output voltage range, V _O (see Note 1)	0.5 V to 5.5 V
Low-level output current, I _{OL}	50 mA
Continuous total dissipation	
Operating free-air temperature range, T _A	0°C to 70°C
Storage temperature range, T _{stq}	–65°C to 150°C
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds	

[†] 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.

NOTES: 1. All voltage values, except differential input voltage, are with respect to the network ground terminal.

2. Differential input voltage is measured at the noninverting input with respect to the corresponding inverting input.

DISSIPATION RATING TABLE

PACKAGE	$T_{\mbox{\scriptsize A}} \le 25^{\circ}\mbox{\scriptsize C}$ POWER RATING	OPERATING FACTOR ABOVE T _A = 25°C	T _A = 70°C POWER RATING		
D	725 mW	5.8 mW/°C	464 mW		
Р	1000 mW	8.0 mW/°C	640 mW		

recommended operating conditions

	MIN	NOM	MAX	UNIT
Supply voltage, V _{CC}	4.75	5	5.25	V
Common-mode input voltage, V _{IC}			±7	V
Operating free-air temperature, T _A	0	25	70	°C



electrical characteristics over recommended ranges of supply voltage, common-mode input voltage, and operating free-air temperature (unless otherwise noted)[†]

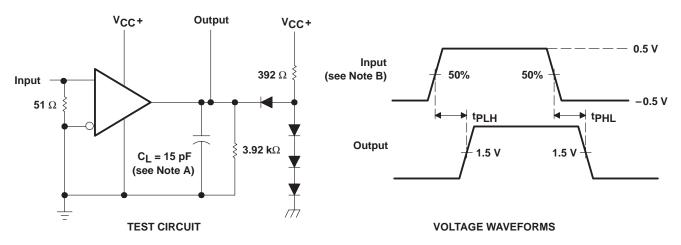
	PARAMETER TEST CONDITIONS		MIN	TYP [‡]	MAX	UNIT	
\/	Input threshold voltage (VIT+ and VIT-)			-0.2		0.2	V
VIT		See Note 3		-0.4		0.4	V
V _{hys}	Hysteresis voltage (V _{IT+} – V _{IT-})				70		mV
VOH	High-level output voltage	V _{ID} = 0.2 V,	$I_O = -1 \text{ mA}$	2.5	3.5		V
VOL	Low-level output voltage	$V_{ID} = -0.2 V$,	I _O = 20 mA		0.35	0.5	V
II	Input current	V _{CC} = 0 to 5.5 V, See Note 4	V _I = 10 V		1.1	3.25	mA
			V _I = -10 V		-1.6	-3.25	IIIA
los	Short-circuit output current§	$V_{O} = 0,$	V _{ID} = 0.2 V	-40	-75	-100	mA
ICC	Supply current	$V_{ID} = -0.5 V$,	No load		35	50	mA

[†] The algebraic convention, where the less positive (more negative) limit is designated as minimum, is used in this data sheet for threshold levels only.

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

	PARAMETER	TEST CONDITIONS		MIN	TYP	MAX	UNIT
tPLH	Propagation delay time, low- to high-level output	C 15 pE	See Figure 1		15	25	ns
tPHL	Propagation delay time, high- to low-level output	$C_L = 15 \text{ pF},$	15 pr, See rigule 1		13	25	ns

PARAMETER MEASUREMENT INFORMATION



NOTES: A. C_L includes probe and jig capacitance.

B. The input pulse is supplied by a generator having the following characteristics: $t_{\Gamma} \le 5$ ns, $t_{\Gamma} \le$

Figure 1. Test Circuit and Voltage Waveforms



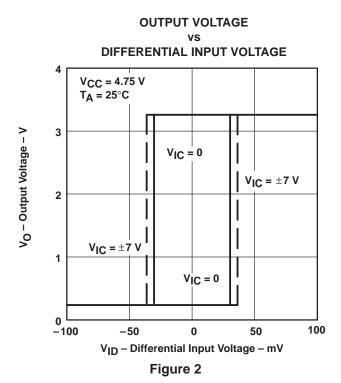
[‡] All typical values are at $V_{CC} = 5 \text{ V}$, $T_A = 25^{\circ}\text{C}$.

[§] Only one output should be shorted at a time and duration of the short circuit should not exceed one second.

NOTES: 3. The expanded threshold parameter is tested with a 500- Ω resistor in series with each input.

^{4.} The input not under test is grounded.

TYPICAL CHARACTERISTICS



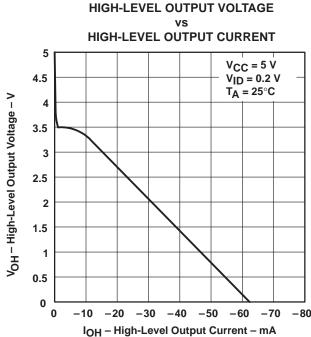
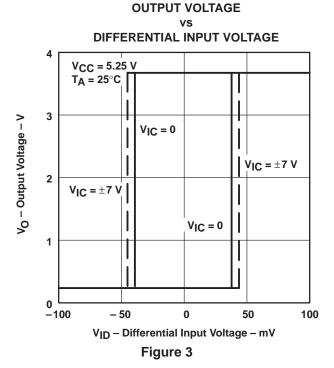
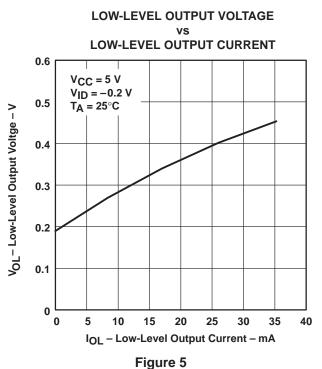


Figure 4





TYPICAL CHARACTERISTICS

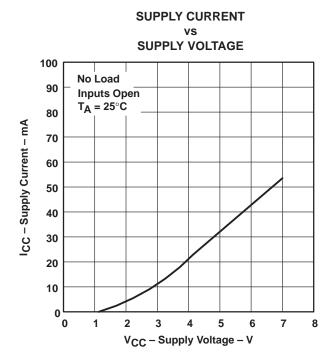


Figure 6

APPLICATION INFORMATION

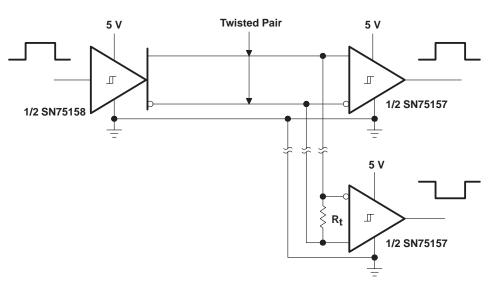


Figure 7. EIA/TIA-422-B System Application

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