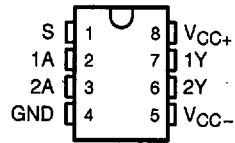


SN75150 DUAL LINE DRIVER

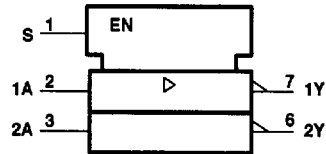
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- Meets or Exceeds the Requirement of ANSI EIA/TIA-232-E and ITU Recommendation V.28
- Withstands Sustained Output Short Circuit to Any Low-Impedance Voltage Between -25 V and 25 V
- 2- μ s Max Transition Time Through the 3-V to -3-V Transition Region Under Full 2500-pF Load
- Inputs Compatible With Most TTL Families
- Common Strobe Input
- Inverting Output
- Slew Rate Can Be Controlled With an External Capacitor at the Output
- Standard Supply Voltages . . . ± 12 V

D OR P PACKAGE
(TOP VIEW)



logic symbol†



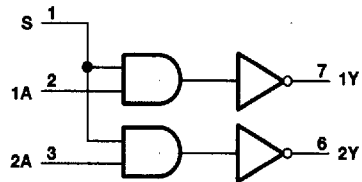
† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

description

The SN75150 is a monolithic dual line driver designed to satisfy the requirements of the standard interface between data terminal equipment and data communication equipment as defined by ANSI EIA/TIA-232-E. A rate of 20000 bits per second can be transmitted with a full 2500-pF load. Other applications are in data-transmission systems using relatively short single lines, in level translators, and for driving MOS devices. The logic input is compatible with most TTL families. Operation is from 12-V and -12-V power supplies.

The SN75150 is characterized for operation from 0°C to 70°C.

logic diagram (positive logic)



PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

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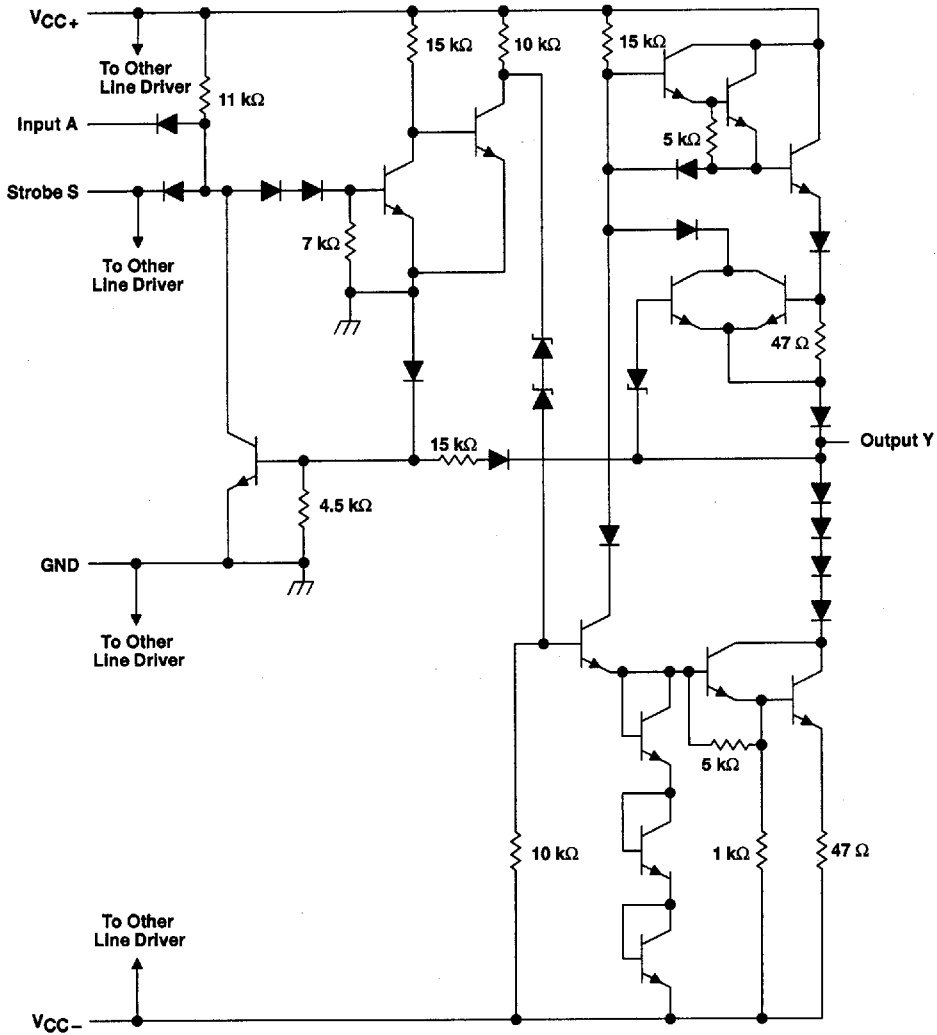
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SN75150 DUAL LINE DRIVER

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schematic (each line driver)



Resistor values shown are nominal.

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

Supply voltage, V_{CC+} (see Note 1)	15 V
Supply voltage, V_{CC-}	-15 V
Input voltage, V_I	15 V
Applied output voltage	±25 V
Continuous total power 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

† 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.

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

DISSIPATION RATING TABLE

PACKAGE	$T_A \leq 25^\circ\text{C}$ POWER RATING	DERATING FACTOR ABOVE $T_A = 25^\circ\text{C}$	$T_A = 70^\circ\text{C}$ POWER RATING
D	725 mW	5.8 mW/°C	464 mW
P	1000 mW	8.0 mW/°C	640 mW

recommended operating conditions

	MIN	NOM	MAX	UNIT
Supply voltage, V_{CC+}	10.8	12	13.2	V
Supply voltage, V_{CC-}	-10.8	-12	-13.2	V
High-level input voltage, V_{IH}	2		5.5	V
Low-level input voltage, V_{IL}	0		0.8	V
Driver output voltage, V_O			±15	V
Operating free-air temperature, T_A	0		70	°C

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electrical characteristics over recommended operating free-air temperature range, $V_{CC\pm} = \pm 13.2$ V (unless otherwise noted)

PARAMETER		TEST CONDITIONS	MIN	TYP†	MAX	UNIT		
V_{OH}	High-level output voltage	$V_{CC+} = 10.8$ V, $V_{IL} = 0.8$ V, $V_{CC-} = -10.8$ V, $R_L = 3$ k Ω to 7 k Ω	5	8		V		
V_{OL}	Low-level output voltage (see Note 2)	$V_{CC+} = 10.8$ V, $V_{IH} = 2$ V, $V_{CC-} = -10.8$ V, $R_L = 3$ k Ω to 7 k Ω		-8	-5	V		
I_{IH}	High-level input current	Data input	$V_I = 2.4$ V		1	10	μ A	
		Strobe input			2	20		
I_{IL}	Low-level input current	Data input	$V_I = 0.4$ V		-1	-1.6	mA	
		Strobe input			-2	-3.2		
I_{OS}	Short-circuit output current‡	$V_O = 25$ V			2	8	mA	
		$V_O = -25$ V			-3	-8		
		$V_O = 0$, $V_I = 3$ V			10	15		30
		$V_O = 0$, $V_I = 0$			-10	-15		-30
I_{CCH+}	Supply current from V_{CC+} , high-level output	$V_I = 0$, $R_L = 3$ k Ω , $T_A = 25^\circ$ C			10	22	mA	
I_{CCH-}	Supply current from V_{CC-} , high-level output			-1	-10			
I_{CCL+}	Supply current from V_{CC+} , low-level output	$V_I = 3$ V, $R_L = 3$ k Ω , $T_A = 25^\circ$ C			8	17	mA	
I_{CCL-}	Supply current from V_{CC-} , low-level output			-9	-20			

† All typical values are at $V_{CC+} = 12$ V, $V_{CC-} = -12$ V, $T_A = 25^\circ$ C.

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

NOTE 2: The algebraic convention, in which the less positive (more negative) limit is designated as minimum, is used in this data sheet for logic levels only, e.g., when -5 V is the maximum, the typical value is a more negative voltage.

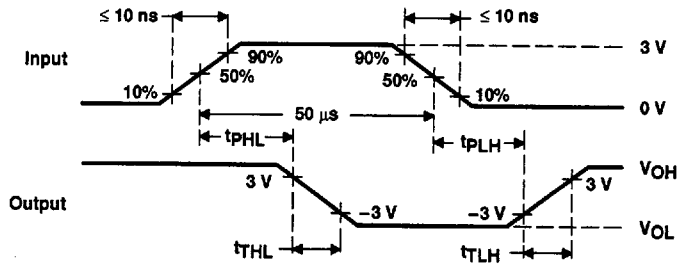
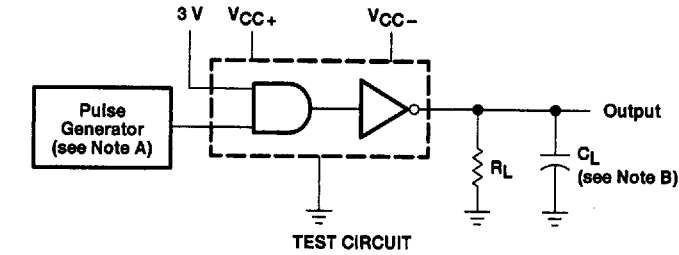
switching characteristics, $V_{CC+} = 12$ V, $V_{CC-} = -12$ V, $T_A = 25^\circ$ C (see Figure 1)

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{TLH}	Transition time, low-to-high-level output	$C_L = 2500$ pF, $R_L = 3$ k Ω to 7 k Ω	0.2	1.4	2	μ s
t_{THL}	Transition time, high-to-low-level output		0.2	1.5	2	μ s
t_{TLH}	Transition time, low-to-high-level output	$C_L = 15$ pF, $R_L = 7$ k Ω			40	ns
t_{THL}	Transition time, high-to-low-level output				20	ns
t_{PLH}	Propagation delay time, low-to-high-level output	$C_L = 15$ pF, $R_L = 7$ k Ω			60	ns
t_{PHL}	Propagation delay time, high-to-low-level output				45	ns

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PARAMETER MEASUREMENT INFORMATION



- NOTES: A. The pulse generator has the following characteristics: duty cycle ≤ 50%, $Z_O = 50 \Omega$.
B. C_L includes probe and jig capacitance.

Figure 1. Test Circuit and Voltage Waveforms

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TYPICAL CHARACTERISTICS OUTPUT CURRENT vs APPLIED OUTPUT VOLTAGE

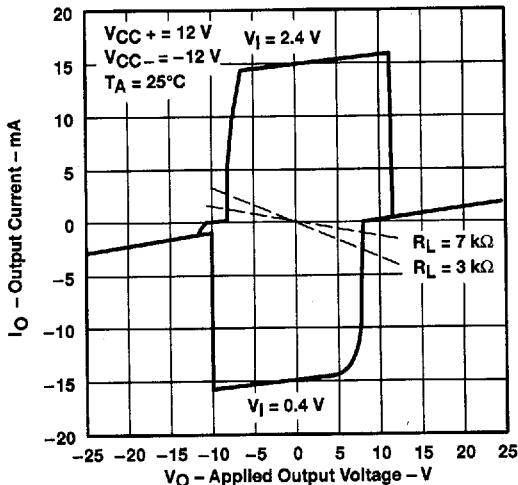


Figure 2

APPLICATION INFORMATION

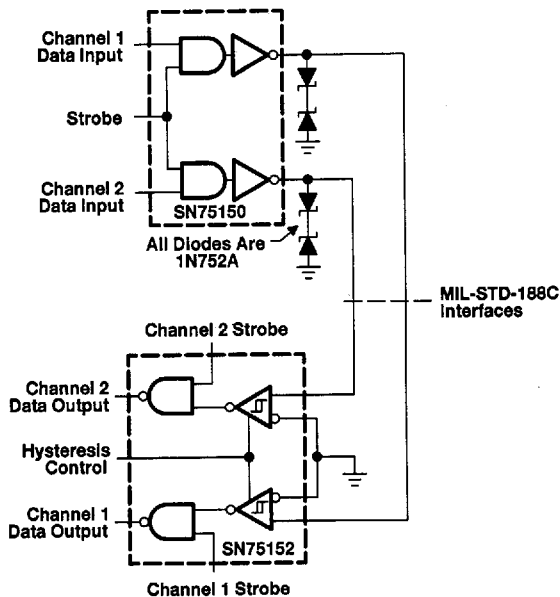


Figure 3. Dual-Channel Single-Ended Interface Circuit Meeting MIL-STD-188C, Paragraph 7.2.

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