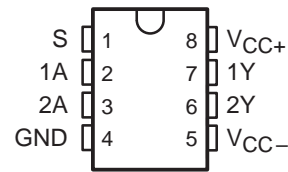


- Meets or Exceeds the Requirement of TIA/EIA-232-F and ITU Recommendation V.28
- Withstands Sustained Output Short Circuit to Any Low-Impedance Voltage Between –25 V and 25 V
- 2-μs Maximum Transition Time Through the 3-V to –3-V Transition Region Under Full 2500-pF Load
- Inputs Compatible With Most 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)

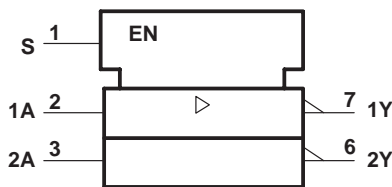


description

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 TIA/EIA-232-F. A rate of 20 kbits/s 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.

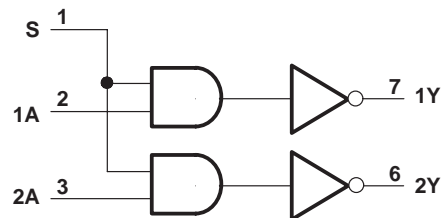
The SN75150 is characterized for operation from 0°C to 70°C.

logic 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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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.

**TEXAS
INSTRUMENTS**

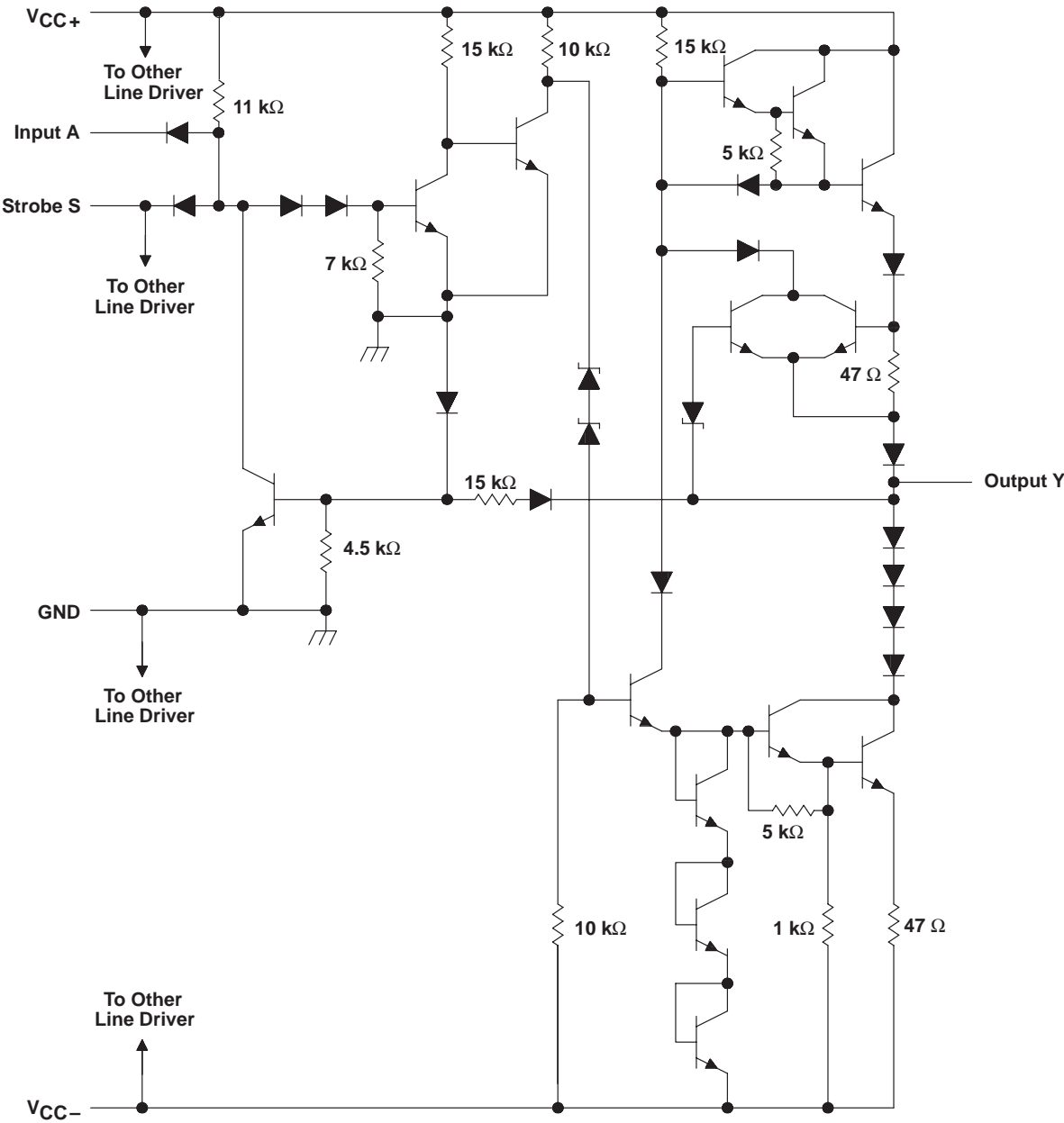
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SN75150 DUAL LINE DRIVER

SLLS081C – JANUARY 1971 – REVISED JUNE 1999

schematic (each line driver)



Resistor values shown are nominal.

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
Package thermal impedance, θ_{JA} (see Notes 2 and 3): D package	197°C/W
P package	104°C/W
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds	260°C
Storage temperature range, T_{stg}	–65°C to 150°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.

- NOTES:
1. Voltage values are with respect to network ground terminal.
 2. Maximum power dissipation is a function of $T_J(\text{max})$, θ_{JA} , and T_A . The maximum allowable power dissipation at any allowable ambient temperature is $P_D = (T_J(\text{max}) - T_A)/\theta_{JA}$. Operating at the absolute maximum T_J of 150°C can impact reliability.
 3. The package thermal impedance is calculated in accordance with JESD 51, except for through-hole packages, which use a trace length of zero.

recommended operating conditions

		MIN	NOM	MAX	UNIT
Supply voltage	V_{CC+}	10.8	12	13.2	V
	V_{CC-}	–10.8	–12	–13.2	
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

SN75150

DUAL LINE DRIVER

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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 4)	$V_{CC+} = 10.8$ 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 Strobe input $V_I = 2.4$ V		1	10	μ A
				2	20	
I_{IL}	Low-level input current	Data input Strobe input $V_I = 0.4$ V		-1	-1.6	mA
				-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	mA
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	mA

† 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.

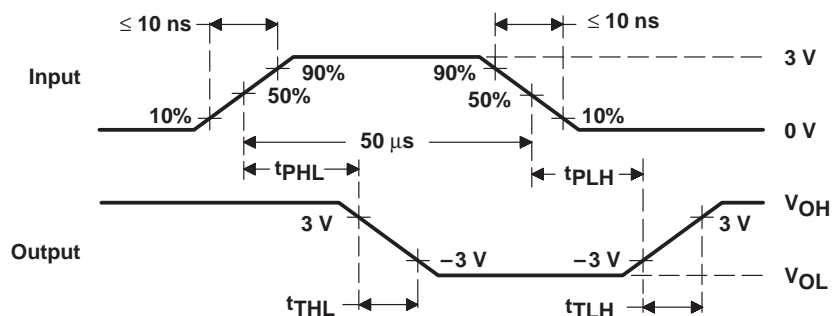
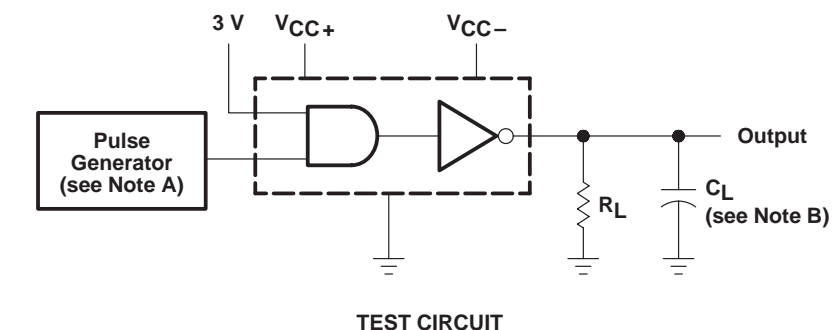
NOTE 4: The algebraic convention, in which the less positive (more negative) limit is designated as minimum, is used in this data sheet for logic levels only, e.g., when -5 V is the maximum, the typical value is a more negative voltage.

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



PARAMETER MEASUREMENT INFORMATION



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

Figure 1. Test Circuit and Voltage Waveforms

TYPICAL CHARACTERISTICS

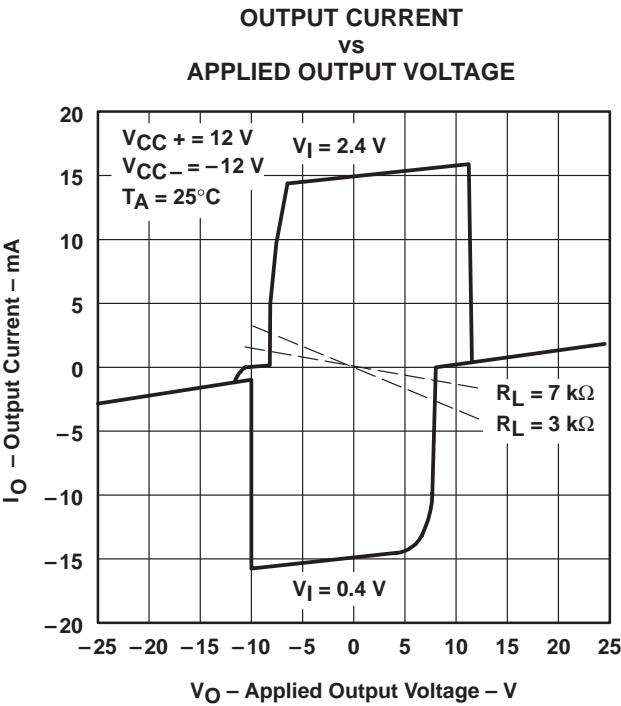


Figure 2

PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾
SN75150D	ACTIVE	SOIC	D	8	75	Pb-Free (RoHS)	CU NIPDAU	Level-2-260C-1 YEAR/ Level-1-235C-UNLIM
SN75150DR	ACTIVE	SOIC	D	8	2500	Pb-Free (RoHS)	CU NIPDAU	Level-2-260C-1 YEAR/ Level-1-235C-UNLIM
SN75150JG	OBSOLETE	CDIP	JG	8		None	Call TI	Call TI
SN75150P	ACTIVE	PDIP	P	8	50	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC

⁽¹⁾ The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

⁽²⁾ Eco Plan - May not be currently available - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

None: Not yet available Lead (Pb-Free).

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

Green (RoHS & no Sb/Br): TI defines "Green" to mean "Pb-Free" and in addition, uses package materials that do not contain halogens, including bromine (Br) or antimony (Sb) above 0.1% of total product weight.

⁽³⁾ MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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JG (R-GDIP-T8)

CERAMIC DUAL-IN-LINE



- NOTES:
- All linear dimensions are in inches (millimeters).
 - This drawing is subject to change without notice.
 - This package can be hermetically sealed with a ceramic lid using glass frit.
 - Index point is provided on cap for terminal identification.
 - Falls within MIL STD 1835 GDIP1-T8

P (R-PDIP-T8)

PLASTIC DUAL-IN-LINE



- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. Falls within JEDEC MS-001

For the latest package information, go to http://www.ti.com/sc/docs/package/pkg_info.htm

D (R-PDSO-G8)

PLASTIC SMALL-OUTLINE PACKAGE



- NOTES:
- All linear dimensions are in inches (millimeters).
 - This drawing is subject to change without notice.
 - Body dimensions do not include mold flash or protrusion not to exceed 0.006 (0,15).
 - Falls within JEDEC MS-012 variation AA.

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