

# SN54LS540, SN54LS541, SN74LS540, SN74LS541 OCTAL BUFFERS AND LINE DRIVERS WITH 3-STATE OUTPUTS

SDLS180 – AUGUST 1979 – REVISED MARCH 1988

- 3-State Outputs Drive Bus Lines or Buffer Memory Address Registers
- P-N-P Inputs Reduce D-C Loading
- Hysteresis at Inputs Improves Noise Margins
- Data Flow-thru Pinout (All Inputs on Opposite Side from Outputs)

## description

These octal buffers and line drivers are designed to have the performance of the popular SN54LS240/SN74LS240 series and, at the same time, offer a pinout having the inputs and outputs on opposite sides of the package. This arrangement greatly enhances printed circuit board layout.

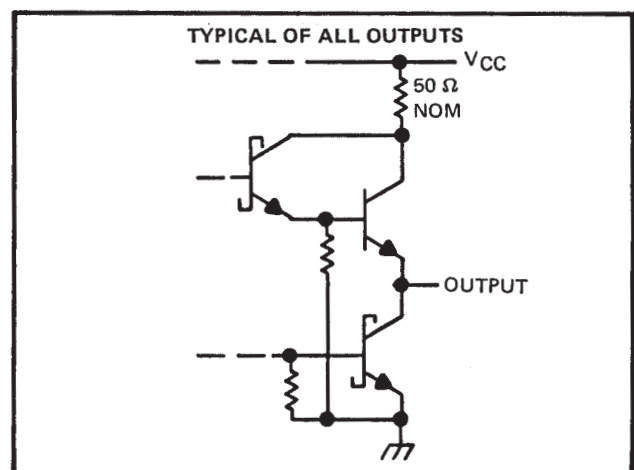
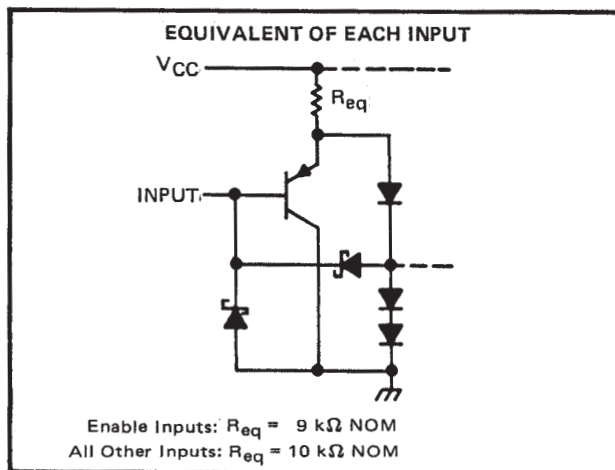
The three-state control gate is a 2-input NOR such that if either  $\overline{G1}$  or  $\overline{G2}$  are high, all eight outputs are in the high-impedance state.

The 'LS540 offers inverting data and the 'LS541 offers true data at the outputs.

The SN54LS540 and SN54LS541 are characterized for operation over the full military temperature range of  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ . The SN74LS540 and SN74LS541 are characterized for operation from  $0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .

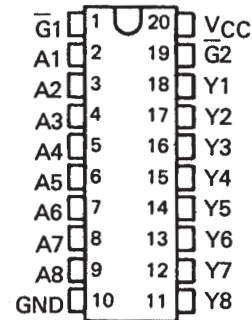
TYPE	RATED $I_{OL}$ (SINK CURRENT)	RATED $I_{OH}$ (SOURCE CURRENT)	TYPICAL POWER DISSIPATION (ENABLED)	
			'LS540	'LS541
SN54LS'	12 mA	-12 mA	92.5 mW	120 mW
SN74LS'	24 mA	-15 mA	92.5 mW	120 mW

## schematics of inputs and outputs



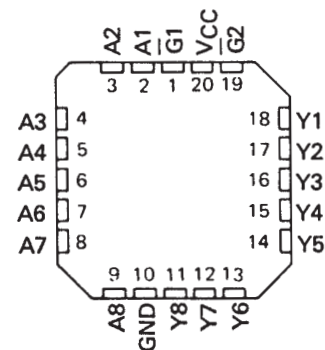
SN54LS540, SN54LS541 . . . J OR W PACKAGE  
SN74LS540, SN74LS541 . . . DW OR N PACKAGE

(TOP VIEW)



SN54LS540, SN54LS541 . . . FK PACKAGE

(TOP VIEW)



Orderable Device	Status <sup>(1)</sup>	Package Type	Package Drawing	Pins	Package Qty	Eco Plan <sup>(2)</sup>	Lead/Ball Finish	MSL Peak Temp <sup>(3)</sup>
SN74LS540NSR	ACTIVE	SO	NS	20	2000	Pb-Free (RoHS)	CU NIPDAU	Level-2-260C-1 YEAR/ Level-1-235C-UNLIM
SN74LS540NSR	ACTIVE	SO	NS	20	2000	Pb-Free (RoHS)	CU NIPDAU	Level-2-260C-1 YEAR/ Level-1-235C-UNLIM
SN74LS541DW	ACTIVE	SOIC	DW	20	25	Pb-Free (RoHS)	CU NIPDAU	Level-2-250C-1 YEAR/ Level-1-235C-UNLIM
SN74LS541DW	ACTIVE	SOIC	DW	20	25	Pb-Free (RoHS)	CU NIPDAU	Level-2-250C-1 YEAR/ Level-1-235C-UNLIM
SN74LS541DWR	ACTIVE	SOIC	DW	20	2000	Pb-Free (RoHS)	CU NIPDAU	Level-2-250C-1 YEAR/ Level-1-235C-UNLIM
SN74LS541DWR	ACTIVE	SOIC	DW	20	2000	Pb-Free (RoHS)	CU NIPDAU	Level-2-250C-1 YEAR/ Level-1-235C-UNLIM
SN74LS541N	ACTIVE	PDIP	N	20	20	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC
SN74LS541N	ACTIVE	PDIP	N	20	20	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC
SN74LS541N3	OBSOLETE	PDIP	N	20		TBD	Call TI	Call TI
SN74LS541N3	OBSOLETE	PDIP	N	20		TBD	Call TI	Call TI
SN74LS541NSR	ACTIVE	SO	NS	20	2000	Pb-Free (RoHS)	CU NIPDAU	Level-2-260C-1 YEAR/ Level-1-235C-UNLIM
SN74LS541NSR	ACTIVE	SO	NS	20	2000	Pb-Free (RoHS)	CU NIPDAU	Level-2-260C-1 YEAR/ Level-1-235C-UNLIM
SNJ54LS540FK	ACTIVE	LCCC	FK	20	1	TBD	Call TI	Level-NC-NC-NC
SNJ54LS540FK	ACTIVE	LCCC	FK	20	1	TBD	Call TI	Level-NC-NC-NC
SNJ54LS540J	ACTIVE	CDIP	J	20	1	TBD	Call TI	Level-NC-NC-NC
SNJ54LS540J	ACTIVE	CDIP	J	20	1	TBD	Call TI	Level-NC-NC-NC
SNJ54LS540W	OBSOLETE			20		TBD	Call TI	Call TI
SNJ54LS540W	OBSOLETE			20		TBD	Call TI	Call TI
SNJ54LS541FK	OBSOLETE	LCCC	FK	20		TBD	Call TI	Call TI
SNJ54LS541FK	OBSOLETE	LCCC	FK	20		TBD	Call TI	Call TI
SNJ54LS541J	ACTIVE	CDIP	J	20	1	TBD	Call TI	Level-NC-NC-NC
SNJ54LS541J	ACTIVE	CDIP	J	20	1	TBD	Call TI	Level-NC-NC-NC
SNJ54LS541W	ACTIVE	CFP	W	20	1	TBD	Call TI	Level-NC-NC-NC
SNJ54LS541W	ACTIVE	CFP	W	20	1	TBD	Call TI	Level-NC-NC-NC

<sup>(1)</sup> 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.

<sup>(2)</sup> Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS) or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

**TBD:** The Pb-Free/Green conversion plan has not been defined.

**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 (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)