









SN74LV540A

SCLS409J - MAY 1998 - REVISED MARCH 2023

SN74LV540A Octal Buffers/Drivers with 3-State Outputs

1 Features

- V_{CC} operation of 2 V to 5.5 V
- Max t_{pd} of 8.5 ns at 5 V
- Typical V_{OLP} (Output Ground Bounce) $< 0.8 \text{ V at V}_{CC} = 3.3 \text{ V}, T_{A} = 25^{\circ}\text{C}$
- Typical V_{OHV} (Output V_{OH} Undershoot) $> 2.3 \text{ V at V}_{CC} = 3.3 \text{ V}, T_A = 25^{\circ}\text{C}$
- Supports Mixed-Mode Voltage operation on all ports
- I_{off} supports Partial-Power-Down Mode operation
- Latch-up performance exceeds 250 mA per JESD 17

2 Applications

- Tests and Measurements
- **Industrial Transports**
- **Patient Monitoring**
- Wireless Infrastructure
- **Network Switches**
- Automotive Infotainment

3 Description

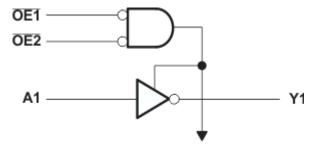
The SN74LV540A device is an octal buffer/driver designed for 2 V to 5.5 V V_{CC} operation.

This device is ideal for driving bus lines or buffer memory address registers. It features inputs and outputs on opposite sides of the package to facilitate printed circuit board layout.

Package Information

PART NUMBER	PACKAGE ⁽¹⁾	BODY SIZE (NOM)		
	RGY (VQFN, 20)	4.50 mm x 3.50 mm		
	DB (SSOP, 20)	7.50 mm x 5.30 mm		
SN74LV540A	PW (TSSOP, 20)	6.50 mm x 4.40 mm		
3N/4LV340A	DGV (TVSOP, 20)	5.00 mm x 4.40 mm		
	DW (SOIC, 20)	12.80 x 7.50 mm		
	NS (SOP, 20)	12.6 mm x 5.3 mm		

(1) For all available packages, see the orderable addendum at the end of the data sheet.



To Seven Other Channels

Figure 3-1. Simplified Schematic



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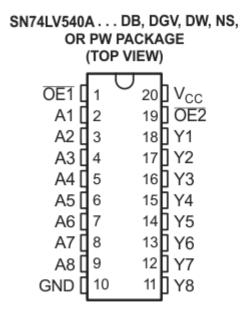
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4 Revision History		
Changes from Revision I (December 2014) to Revisi	on J (March 2023) Pa	ge
 Updated structural layout of document to current state 	ndard, updated <i>Features</i> section, and added NS packa	ge

C	Changes from Revision I (December 2014) to Revision J (March 2023)	Page
•	Updated structural layout of document to current standard, updated <i>Features</i> section, and a to <i>Package Information</i> table	
•	Added ± to values in ESD Ratings section	4
	Updated thermal values for PW package from R θ JA = 102.8 to 128.2, R θ JC(top) = 36.8 to 7 to 79.3, Ψ JT =2.5 to 23.4, Ψ JB = 53.3 to 78.9, all values in °C/W	$'0.5$, R θ JB = 53.8
С	changes from Revision H (April 2005) to Revision I (December 2014)	Page
•	Added Applications, Device Information table, Pin Functions table, ESD Ratings table, There	

table, Typical Characteristics, Feature Description section, Device Functional Modes, Application and Implementation section, Power Supply Recommendations section, Layout section, Device and



5 Pin Configuration and Functions



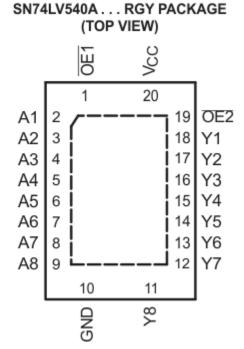


Table 5-1. Pin Functions

	PIN	TVDE	DEGODIDATION
NO.	NAME	TYPE	DESCRIPTION
1	ŌE1	I	Output Enable 1
2	A1	I	A1 Input
3	A2	I	A2 Input
4	A3	I	A3 Input
5	A4	I	A4 Input
6	A5	I	A5 Input
7	A6	I	A6 Input
8	A7	I	A7 Input
9	A8	I	A8 Input
10	GND	_	Ground Pin
11	Y8	0	Y8 Output
12	Y7	0	Y7 Output
13	Y6	0	Y6 Output
14	Y5	0	Y5 Output
15	Y4	0	Y4 Output
16	Y3	0	Y3 Output
17	Y2	0	Y2 Output
18	Y1	0	Y1 Output
19	ŌE2	I	Output Enable 2
20	V _{CC}	_	Power Pin



6 Specifications

6.1 Absolute Maximum Ratings

over operating free-air temperature range (unless otherwise noted)(1)

			MIN	MAX	UNIT
V _{CC}	Supply voltage range		-0.5	7	V
VI	Input voltage range ⁽²⁾		-0.5	7	V
Vo	Voltage range applied to any output in the high-impedance	or power-off state ⁽²⁾	-0.5	7	V
Vo	Output voltage range applied in the high or low state ^{(2) (3)}	-0.5	V _{CC} + 0.5	V	
I _{IK}	Input clamp current	V ₁ < 0		-20	mA
I _{OK}	Output clamp current	V _O < 0		-50	mA
Io	Continuous output current	$V_O = 0$ to V_{CC}		±35	mA
	Continuous current through V _{CC} or GND		±70	mA	
T _{stg}	Storage temperature range	-65	150	°C	

⁽¹⁾ 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.

6.2 ESD Ratings

			VALUE	UNIT
		Human body model (HBM), per ANSI/ESDA/JEDEC JS-001, all pins ⁽¹⁾	±2000	
V _(ESD)	Electrostatic discharge	Charged device model (CDM), per JEDEC specification JESD22-C101, all pins ⁽²⁾	±2000	V
		Machine Model (MM)	±200	

(1) JEDEC document JEP155 states that 500-V HBM allows safe manufacturing with a standard ESD control process.

(2) JEDEC document JEP157 states that 250-V CDM allows safe manufacturing with a standard ESD control process.

²⁾ The input and output negative-voltage ratings may be exceeded if the input and output current ratings are observed.

⁽³⁾ This value is limited to 5.5-V maximum.



6.3 Recommended Operating Conditions

over operating free-air temperature range (unless otherwise noted)(1)

			SN74LV54	IOA				
			MIN	MAX	UNIT			
V _{CC}	Supply voltage		2	5.5	V			
		V _{CC} = 2 V	1.5					
	I the bound to the second to the second	V _{CC} = 2.3 V to 2.7 V	V _{CC} × 0.7		V			
V_{IH}	High-level input voltage	V _{CC} = 3 V to 3.6 V	V _{CC} × 0.7	V _{CC} × 0.7				
		V _{CC} = 4.5 V to 5.5 V	V _{CC} × 0.7	V _{CC} × 0.7				
		V _{CC} = 2 V		0.5				
. ,	Lave lavel import valtage	V _{CC} = 2.3 V to 2.7 V		V _{CC} × 0.3	V			
V_{IL}	Low-level input voltage	V _{CC} = 3 V to 3.6 V						
		V _{CC} = 4.5 V to 5.5 V		V _{CC} × 0.3				
V _I	Input voltage		0	5.5	V			
.,	Outrout valte as	High or low state	0	V _{CC}	V			
Vo	Output voltage	3-state	0	5.5	v 			
		V _{CC} = 2 V		-50	μA			
		V _{CC} = 2.3 V to 2.7 V		-2				
l _{OH}	High-level output current	V _{CC} = 3 V to 3.6 V		-8	mA			
	High-level output current	V _{CC} = 4.5 V to 5.5 V		-16				
		$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V} \qquad V_{CC} \times 0.7$ $V_{CC} = 2 \text{ V}$ $V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$ $V_{CC} = 3 \text{ V to } 3.6 \text{ V}$ $V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$ 0 High or low state 0 3-state 0 $V_{CC} = 2 \text{ V}$ $V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$ $V_{CC} = 3 \text{ V to } 3.6 \text{ V}$ $V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$ $V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$ $V_{CC} = 3.3 \text{ V to } 2.7 \text{ V}$ $V_{CC} = 3.3 \text{ V to } 2.7 \text{ V}$ $V_{CC} = 3.3 \text{ V to } 3.6 \text{ V}$ $V_{CC} = 3.3 \text{ V to } 3.6 \text{ V}$ $V_{CC} = 3.3 \text{ V to } 5.5 \text{ V}$ tte $V_{CC} = 3.3 \text{ V to } 3.6 \text{ V}$ $V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$ $V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$	50	μA				
		V _{CC} = 2.3 V to 2.7 V		2				
l _{OL}	Low-level output current	V _{CC} = 3 V to 3.6 V		8	mA			
		V _{CC} = 4.5 V to 5.5 V		16				
	Δν Input transition rise or fall rate	V _{CC} = 2.3 V to 2.7 V		200				
Δt/Δν		V _{CC} = 3 V to 3.6 V		100				
		V _{CC} = 4.5 V to 5.5 V						
T _A	Operating free-air temperature	1	-40	125	°C			

⁽¹⁾ All unused inputs of the device must be held at V_{CC} or GND to ensure proper device operation. Refer to the TI application report, Implications of Slow or Floating CMOS Inputs (SCBA004).

6.4 Thermal Information

				SN74I	_V540A				
	THERMAL METRIC(1)	THERMAL METRIC ⁽¹⁾ DB DGV DW NS PW RG					RGY	UNIT	
		20 PINS							
$R_{\theta JA}$	Junction-to-ambient thermal resistance	96.0	116.1	79.8	77.1	128.2	35.1		
R _{0JC(top)}	Junction-to-case (top) thermal resistance	57.7	31.3	45.8	43.6	70.5	43.3	1	
$R_{\theta JB}$	Junction-to-board thermal resistance	51.2	57.6	47.4	44.6	79.3	12.9		
ΨЈТ	Junction-to-top characterization parameter	19.4	1.0	18.5	17.2	23.4	0.9	°C/W	
ΨЈВ	Junction-to-board characterization parameter	50.8	56.9	47.0	44.2	78.9	12.9		
R _{θJC(bot)}	Junction-to-case (bottom) thermal resistance	N/A	N/A	N/A	N/A	N/A	7.9		

⁽¹⁾ For more information about traditional and new thermal metrics, see the IC Package Thermal Metrics application report (SPRA953).



6.5 Electrical Characteristics

over recommended operating free-air temperature range (unless otherwise noted)

DADAMETED	TEST CONDITIONS	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	T _A =	= 25°C		-40°C to 8	5°C	-40°C to 1	LINUT	
PARAMETER V _{OH} V _{OL}	TEST CONDITIONS	V _{cc}	MIN	TYP	MAX	MIN	MAX	MIN	MAX	UNIT
	I _{OH} = -50 μA	2 V to 5.5 V	V _{CC} - 0.1			V _{CC} - 0.1		V _{CC} – 0.1		
V _{OH}	I _{OH} = -2 mA	2.3 V	2			2		2		V
	I _{OH} = –8 mA	3 V	2.48			2.48		2.48		
	I _{OH} = -16 mA	4.5 V	3.8			3.8		3.8		
	I _{OL} = 50 μA	2 V to 5.5 V			0.1		0.1		0.1	
V _{OL}	I _{OL} = 2 mA	2.3 V			0.4		0.4		0.4	V
	I _{OL} = 8 mA	3 V			0.44		0.44		0.44	
	I _{OL} = 16 mA	4.5 V		-	0.55		0.55		0.55	
I _I	V _I = 5.5 V or GND	0 to 5.5 V			±1		±1		±1	μΑ
I _{OZ}	V _O = V _{CC} or GND	5.5 V		-	±5		±5		±5	μΑ
I _{CC}	$V_I = V_{CC}$ or GND, $I_O = 0$	5.5 V			20		20		20	μΑ
I _{off}	V_{I} or $V_{O} = 0$ to 5.5 V	0			5		5		5	μΑ
C	V = V or GND	3.3 V		2.5						nE
C _i	$V_I = V_{CC}$ or GND	5 V		2.5						pF

6.6 Switching Characteristics, V_{CC} = 2.5 V ± 0.2 V

over recommended operating free-air temperature range (unless otherwise noted) (see Load Circuit and Voltage Waveforms)

PARAMETER	FROM	то	LOAD	T _A = 25°C			–40°C to	85°C	-40°C to 125°C		UNIT
PARAMETER	(INPUT) (OUTI	(OUTPUT)	CAPACITANCE	MIN	TYP	MAX	MIN	MAX	MIN	MAX	UNII
t _{pd}	А	Y	C _L = 15 pF		5.6 ⁽¹⁾	12 ⁽¹⁾	1	14.5	1	16	
t _{en}	ŌĒ	Y			7.8 ⁽¹⁾	17.4 ⁽¹⁾	1	21	1	22.5	ns
t _{dis}	ŌE	Y			5.7 ⁽¹⁾	16 ⁽¹⁾	1	19	1	20	
t _{pd}	Α	Y			7.9	16.8	1	18.5	1	20	
t _{en}	ŌĒ	Y	C _L = 50 pF		10.1	22.2	1	25.5	1	27	ns
t _{dis}	ŌĒ	Y			8.1	22.3	1	25.5	1	26.5	115
t _{sk(o)}						2		2		3	

⁽¹⁾ On products compliant to MIL-PRF-38535, this parameter is not production tested.

6.7 Switching Characteristics, $V_{CC} = 3.3 \text{ V} \pm 0.3 \text{ V}$

over recommended operating free-air temperature range (unless otherwise noted) (see Load Circuit and Voltage Waveforms)

PARAMETER	FROM TO		LOAD	T _A = 25°C			−40°C to	85°C	–40°C to	UNIT	
PARAMETER	(INPUT) (OL	(OUTPUT)	CAPACITANCE	MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t _{pd}	А	Y			4.1 ⁽¹⁾	7 ⁽¹⁾	1	8.5	1	9.5	
t _{en}	ŌĒ	Y	$C_{L} = 15 \text{ pF}$		5.6 ⁽¹⁾	10.5 ⁽¹⁾	1	12.5	1	14	ns
t _{dis}	ŌĒ	Y			4.2 ⁽¹⁾	10.5 ⁽¹⁾	1	12.5	1	13.5	
t _{pd}	Α	Y			5.8	10.5	1	12	1	13	
t _{en}	ŌĒ	Y	C ₁ = 50 pF		7.3	14	1	16	1	17.5	
t _{dis}	ŌĒ	Y	C _L = 30 μr		5.8	15.4	1	17.5	1	18.5	ns
t _{sk(o)}						1.5		1.5		2	

¹⁾ On products compliant to MIL-PRF-38535, this parameter is not production tested.



6.8 Switching Characteristics, V_{CC} = 5 V ± 0.5 V

over recommended operating free-air temperature range (unless otherwise noted) (see Load Circuit and Voltage Waveforms)

PARAMETER	FROM	то	LOAD	T _A = 25°C			-40°C to	85°C	-40°C to 125°C		UNIT
PARAMETER	(INPUT)	(OUTPUT)	CAPACITANCE	MIN	TYP	MAX	MIN	MAX	MIN	MAX	UNIT
t _{pd}	Α	Y	C _L = 15 pF		3 ⁽¹⁾	5 ⁽¹⁾	1	6	1	7	
t _{en}	ŌĒ	Y			4.1 ⁽¹⁾	7.2 ⁽¹⁾	1	8.5	1		ns
t _{dis}	ŌĒ	Y			2.9 ⁽¹⁾	7 ⁽¹⁾	1	8	1	9	
t _{pd}	Α	Y			4.2	7	1	8	1	9	
t _{en}	ŌĒ	Y	C _L = 50 pF		5.3	9.2	1	10.5	1	11.5	
t _{dis}	ŌĒ	Y			3.5	8.8	1	10	1	11	ns
t _{sk(o)}						1		1		1.5	

⁽¹⁾ On products compliant to MIL-PRF-38535, this parameter is not production tested.

6.9 Noise Characteristics

 $V_{CC} = 3.3 \text{ V}, C_1 = 50 \text{ pF}, T_A = 25^{\circ}\text{C}$

	PARAMETER ⁽¹⁾	SN7	SN74LV540A			
	PARAMETER	MIN	TYP	MAX	UNIT	
V _{OL(P)}	Quiet output, maximum dynamic V _{OL}		0.5	0.8	V	
V _{OL(V)}	Quiet output, minimum dynamic V _{OL}		-0.3	-0.8	V	
V _{OH(V)}	Quiet output, minimum dynamic V _{OH}		3		V	
V _{IH(D)}	High-level dynamic input voltage	2.3			V	
V _{IL(D)}	Low-level dynamic input voltage			0.97	V	

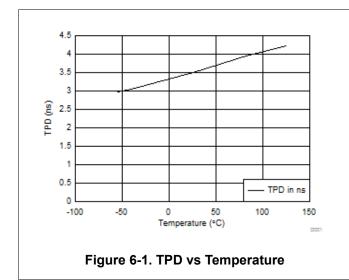
⁽¹⁾ Characteristics are for surface-mount packages only.

6.10 Operating Characteristics

 $T_A = 25^{\circ}C$

	PARAMETER	TEST CO	V _{CC}	TYP	UNIT		
	Power dissipation capacitance	Outputs enabled	C = 50 pE	f = 10 MHz	3.3 V	10	pF
C _{pd} Power d	rower dissipation capacitance	Outputs enabled	$C_L = 50 \text{ pF},$	1 - 10 101112	5 V	11	

6.11 Typical Characteristics



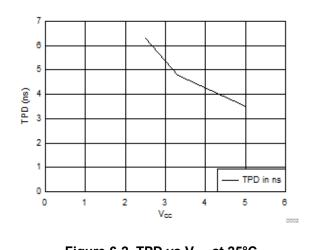
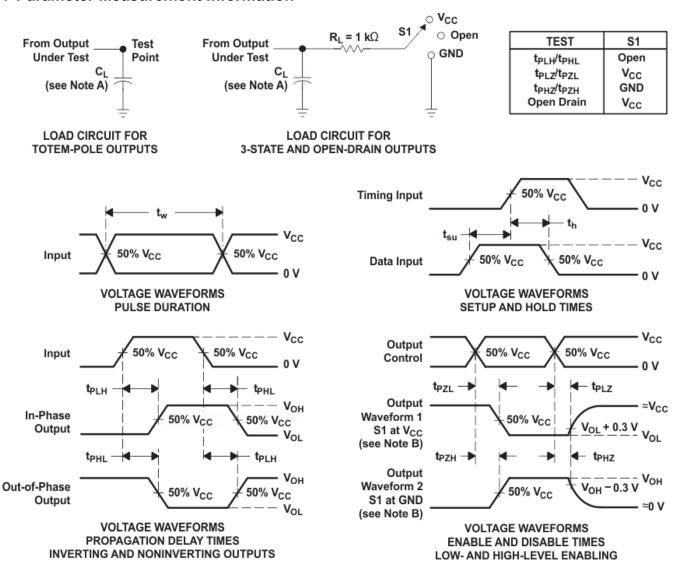


Figure 6-2. TPD vs V_{CC} at 25°C



7 Parameter Measurement Information



NOTES: A. C_I includes probe and jig capacitance.

- B. Waveform 1 is for an output with internal conditions such that the output is low, except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high, except when disabled by the output control.
- C. All input pulses are supplied by generators having the following characteristics: PRR \leq 1 MHz, $Z_O = 50 \Omega$, $t_f \leq$ 3 ns, $t_f \leq$ 3 ns.
- D. The outputs are measured one at a time, with one input transition per measurement.
- E. t_{PLZ} and t_{PHZ} are the same as t_{dis}.
- F. t_{PZL} and t_{PZH} are the same as t_{en}.
- G. t_{PHL} and t_{PLH} are the same as t_{pd}.
- H. All parameters and waveforms are not applicable to all devices.

Figure 7-1. Load Circuit and Voltage Waveforms

8 Detailed Description

8.1 Overview

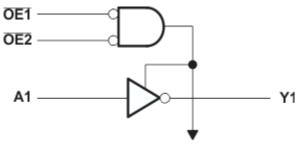
The SN74LV540A device is an octal buffer/driver designed for 2 V to 5.5 V V_{CC} operation.

This device is ideal for driving bus lines or buffer memory address registers. It features inputs and outputs on opposite sides of the package to facilitate printed circuit board layout.

The 3-state control gate is a two-input AND gate with active-low inputs so that, if either output enable ($\overline{OE1}$ or $\overline{OE2}$) input is high, all corresponding outputs are in the high-impedance state. The outputs provide inverted data when they are not in the high-impedance state.

To ensure the high-impedance state during power up or power down, \overline{OE} should be tied to V_{CC} through a pull-up resistor; the minimum value of the resistor is determined by the current-sinking capability of the driver.

8.2 Functional Block Diagram



To Seven Other Channels

8.3 Feature Description

- · Wide operating voltage range
 - Operates from 2 V to 5.5 V
- Allows down-voltage translation
 - Inputs accept voltages to 5.5 V
- · Slow edges reduce output ringing
- I_{off} feature
 - Allows voltages on the inputs and outputs when V_{CC} is 0 V

8.4 Device Functional Modes

Table 8-1. Function Table (Each Buffer/Driver)

	INPUTS						
OE1	OE2	Α	Y				
L	L	L	Н				
L	L	Н	L				
Н	X	X	Z				
Х	Н	X	Z				

9 Application and Implementation

Note

Information in the following applications sections is not part of the TI component specification, and TI does not warrant its accuracy or completeness. TI's customers are responsible for determining suitability of components for their purposes, as well as validating and testing their design implementation to confirm system functionality.

9.1 Application Information

The SN74LV540A is a low-drive CMOS device that can be used for a multitude of bus interface type applications where output ringing is a concern. The low drive and slow edge rates will minimize overshoot and undershoot on the outputs. The inputs are tolerant to 5.5 V at any valid V_{CC} . This feature makes it Ideal for translating down to the V_{CC} level. Figure 9-2 shows the reduction in ringing compared to higher drive parts such as AC.

9.2 Typical Application

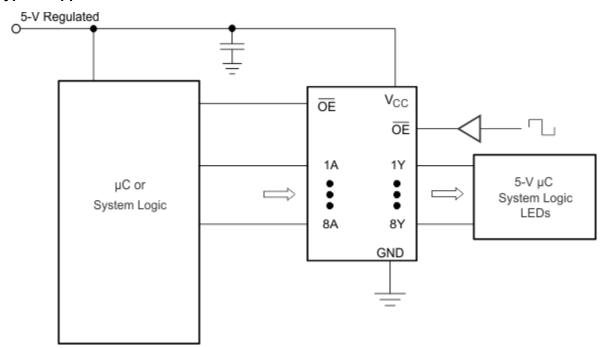


Figure 9-1. Typical Application Schematic

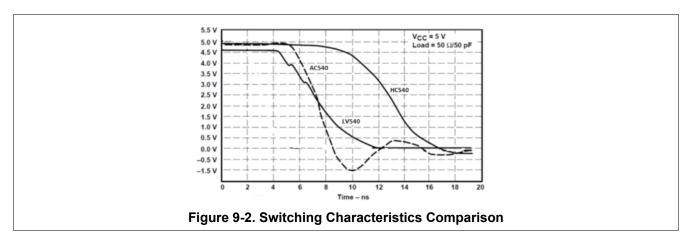
9.2.1 Design Requirements

This device uses CMOS technology and has balanced output drive. Care should be taken to avoid bus contention because it can drive currents that would exceed maximum limits. The high drive will also create fast edges into light loads, so routing and load conditions should be considered to prevent ringing.

9.2.2 Detailed Design Procedure

- 1. Recommended Input Conditions
 - For rise time and fall time specifications, see $\Delta t/\Delta V$ in the *Recommended Operating Conditions* table.
 - For specified High and low levels, see V_{IH} and V_{IL} in the Recommended Operating Conditions table.
 - Inputs are overvoltage tolerant allowing them to go as high as 5.5 V at any valid V_{CC}.
- 2. Recommend Output Conditions
 - Load currents should not exceed 35 mA per output and 70 mA total for the part.
 - Outputs should not be pulled above V_{CC}.

9.2.3 Application Curves



9.3 Power Supply Recommendations

The power supply can be any voltage between the MIN and MAX supply voltage rating located in the *Recommended Operating Conditions* table.

Each V_{CC} pin should have a good bypass capacitor to prevent power disturbance. For devices with a single supply, 0.1 μ F is recommended. If there are multiple V_{CC} pins, 0.01 μ F or 0.022 μ F is recommended for each power pin. It is acceptable to parallel multiple bypass caps to reject different frequencies of noise. A 0.1 μ F and 1 μ F are commonly used in parallel. The bypass capacitor should be installed as close to the power pin as possible for best results.

9.4 Layout

9.4.1 Layout Guidelines

When using multiple bit logic devices, inputs should not float. In many cases, functions or parts of functions of digital logic devices are unused. Some examples are when only two inputs of a triple-input AND gate are used, or when only 3 of the 4-buffer gates are used. Such input pins should not be left unconnected because the undefined voltages at the outside connections result in undefined operational states.

Specified in Figure 9-3 are rules that must be observed under all circumstances. All unused inputs of digital logic devices must be connected to a high or low bias to prevent them from floating. The logic level that should be applied to any particular unused input depends on the function of the device. Generally they will be tied to GND or V_{CC} , whichever makes more sense or is more convenient. It is acceptable to float outputs unless the part is a transceiver. If the transceiver has an output enable pin, it will disable the outputs section of the part when asserted. This will not disable the input section of the I/Os so they also cannot float when disabled.

9.4.2 Layout Example

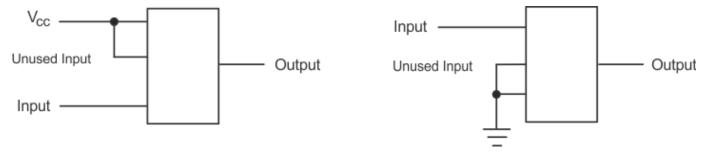


Figure 9-3. Layout Diagram

10 Device and Documentation Support

10.1 Documentation Support

10.1.1 Related Links

The table below lists quick access links. Categories include technical documents, support and community resources, tools and software, and quick access to sample or buy.

Table 10-1. Related Links

PARTS	PRODUCT FOLDER	SAMPLE & BUY	TECHNICAL DOCUMENTS	TOOLS & SOFTWARE	SUPPORT & COMMUNITY	
SN74LV540A	Click here	Click here	Click here	Click here	Click here	

10.2 Receiving Notification of Documentation Updates

To receive notification of documentation updates, navigate to the device product folder on ti.com. Click on *Subscribe to updates* to register and receive a weekly digest of any product information that has changed. For change details, review the revision history included in any revised document.

10.3 Support Resources

TI E2E[™] support forums are an engineer's go-to source for fast, verified answers and design help — straight from the experts. Search existing answers or ask your own question to get the quick design help you need.

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10.4 Trademarks

TI E2E™ is a trademark of Texas Instruments.

All trademarks are the property of their respective owners.

10.5 Electrostatic Discharge Caution



This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

10.6 Glossary

TI Glossary This glossary lists and explains terms, acronyms, and definitions.

11 Mechanical, Packaging, and Orderable Information

The following pages include mechanical, packaging, and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

Submit Document Feedback

www.ti.com 31-Oct-2025

PACKAGING INFORMATION

Orderable part number	Status	Material type	Package Pins	Package qty Carrier	RoHS	Lead finish/ Ball material	MSL rating/ Peak reflow	Op temp (°C)	Part marking
	(.,	(=)			(8)	(4)	(5)		(0)
SN74LV540ADBR	Active	Production	SSOP (DB) 20	2000 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	LV540A
SN74LV540ADBR.A	Active	Production	SSOP (DB) 20	2000 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	LV540A
SN74LV540ADGVR	Active	Production	TVSOP (DGV) 20	2000 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	LV540A
SN74LV540ADGVR.A	Active	Production	TVSOP (DGV) 20	2000 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	LV540A
SN74LV540ADW	Obsolete	Production	SOIC (DW) 20	-	-	Call TI	Call TI	-40 to 125	LV540A
SN74LV540ADWR	Active	Production	SOIC (DW) 20	2000 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	LV540A
SN74LV540ADWR.A	Active	Production	SOIC (DW) 20	2000 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	LV540A
SN74LV540ANSR	Active	Production	SOP (NS) 20	2000 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	74LV540A
SN74LV540ANSR.A	Active	Production	SOP (NS) 20	2000 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	74LV540A
SN74LV540APW	Obsolete	Production	TSSOP (PW) 20	-	-	Call TI	Call TI	-40 to 125	LV540A
SN74LV540APWR	Active	Production	TSSOP (PW) 20	2000 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	LV540A
SN74LV540APWR.A	Active	Production	TSSOP (PW) 20	2000 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	LV540A
SN74LV540ARGYR	Active	Production	VQFN (RGY) 20	3000 LARGE T&R	Yes	NIPDAU	Level-2-260C-1 YEAR	-40 to 125	LV540A
SN74LV540ARGYR.A	Active	Production	VQFN (RGY) 20	3000 LARGE T&R	Yes	NIPDAU	Level-2-260C-1 YEAR	-40 to 125	LV540A

⁽¹⁾ Status: For more details on status, see our product life cycle.

⁽²⁾ Material type: When designated, preproduction parts are prototypes/experimental devices, and are not yet approved or released for full production. Testing and final process, including without limitation quality assurance, reliability performance testing, and/or process qualification, may not yet be complete, and this item is subject to further changes or possible discontinuation. If available for ordering, purchases will be subject to an additional waiver at checkout, and are intended for early internal evaluation purposes only. These items are sold without warranties of any kind.

⁽³⁾ RoHS values: Yes, No, RoHS Exempt. See the TI RoHS Statement for additional information and value definition.

⁽⁴⁾ Lead finish/Ball material: Parts may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

⁽⁵⁾ MSL rating/Peak reflow: The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will be used to mount the part to the printed circuit board.

⁽⁶⁾ Part marking: There may be an additional marking, which relates to the logo, the lot trace code information, or the environmental category of the part.



PACKAGE OPTION ADDENDUM

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Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "~" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

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PACKAGE MATERIALS INFORMATION

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TAPE AND REEL INFORMATION





A0	Dimension designed to accommodate the component width
В0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*All dimensions are nominal

Device	Package Type	Package Drawing		SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SN74LV540ADBR	SSOP	DB	20	2000	330.0	16.4	8.2	7.5	2.5	12.0	16.0	Q1
SN74LV540ADGVR	TVSOP	DGV	20	2000	330.0	12.4	6.9	5.6	1.6	8.0	12.0	Q1
SN74LV540ADWR	SOIC	DW	20	2000	330.0	24.4	10.8	13.3	2.7	12.0	24.0	Q1
SN74LV540ANSR	SOP	NS	20	2000	330.0	24.4	8.4	13.0	2.5	12.0	24.0	Q1
SN74LV540APWR	TSSOP	PW	20	2000	330.0	16.4	6.95	7.0	1.4	8.0	16.0	Q1
SN74LV540ARGYR	VQFN	RGY	20	3000	330.0	12.4	3.71	4.71	1.1	8.0	12.0	Q1



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*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74LV540ADBR	SSOP	DB	20	2000	353.0	353.0	32.0
SN74LV540ADGVR	TVSOP	DGV	20	2000	353.0	353.0	32.0
SN74LV540ADWR	SOIC	DW	20	2000	356.0	356.0	45.0
SN74LV540ANSR	SOP	NS	20	2000	356.0	356.0	45.0
SN74LV540APWR	TSSOP	PW	20	2000	353.0	353.0	32.0
SN74LV540ARGYR	VQFN	RGY	20	3000	353.0	353.0	32.0

DGV (R-PDSO-G**)

24 PINS SHOWN

PLASTIC SMALL-OUTLINE



NOTES: A. All linear dimensions are in millimeters.

B. This drawing is subject to change without notice.

C. Body dimensions do not include mold flash or protrusion, not to exceed 0,15 per side.

D. Falls within JEDEC: 24/48 Pins – MO-153 14/16/20/56 Pins – MO-194 3.5 x 4.5, 0.5 mm pitch

PLASTIC QUAD FGLATPACK - NO LEAD

This image is a representation of the package family, actual package may vary. Refer to the product data sheet for package details.





PLASTIC QUAD FLATPACK - NO LEAD



NOTES:

- 1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
 2. This drawing is subject to change without notice.
- 3. The package thermal pad must be soldered to the printed circuit board for thermal and mechanical performance.



PLASTIC QUAD FLATPACK - NO LEAD



NOTES: (continued)

- 4. This package is designed to be soldered to a thermal pad on the board. For more information, see Texas Instruments literature number SLUA271 (www.ti.com/lit/slua271).
- Vias are optional depending on application, refer to device data sheet. If any vias are implemented, refer to their locations shown on this view. It is recommended that vias under paste be filled, plugged or tented.



PLASTIC QUAD FLATPACK - NO LEAD



NOTES: (continued)

6. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.





SOIC



NOTES:

- 1. All linear dimensions are in millimeters. Dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.

 2. This drawing is subject to change without notice.

 3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not
- exceed 0.15 mm per side.
- 4. This dimension does not include interlead flash. Interlead flash shall not exceed 0.43 mm per side.
- 5. Reference JEDEC registration MS-013.



SOIC



NOTES: (continued)

6. Publication IPC-7351 may have alternate designs.

7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.



SOIC



NOTES: (continued)

- 8. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.
- 9. Board assembly site may have different recommendations for stencil design.







NOTES:

- 1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.

 2. This drawing is subject to change without notice.

 3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not
- exceed 0.15 mm per side.
- 4. This dimension does not include interlead flash. Interlead flash shall not exceed 0.25 mm per side.
- 5. Reference JEDEC registration MO-153.





NOTES: (continued)

6. Publication IPC-7351 may have alternate designs.

7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.





NOTES: (continued)

- 8. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.
- 9. Board assembly site may have different recommendations for stencil design.







NOTES:

- 1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.

 2. This drawing is subject to change without notice.

 3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not
- exceed 0.15 mm per side.
- 4. This dimension does not include interlead flash. Interlead flash shall not exceed 0.25 mm per side.
- 5. Reference JEDEC registration MO-150.





NOTES: (continued)

6. Publication IPC-7351 may have alternate designs.

7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.





NOTES: (continued)

- 8. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.
- 9. Board assembly site may have different recommendations for stencil design.



MECHANICAL DATA

NS (R-PDSO-G**)

14-PINS SHOWN

PLASTIC SMALL-OUTLINE PACKAGE



NOTES:

- A. All linear dimensions are in millimeters.
- B. This drawing is subject to change without notice.
- C. Body dimensions do not include mold flash or protrusion, not to exceed 0,15.



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