

# SNx4AHCT157 Automotive Quadruple 2-Line to 1-Line Data Selectors Multiplexers

## 1 Features

- Inputs are TTL-voltage compatible
- Latch-up performance exceeds 250mA per JESD 17

## 2 Description

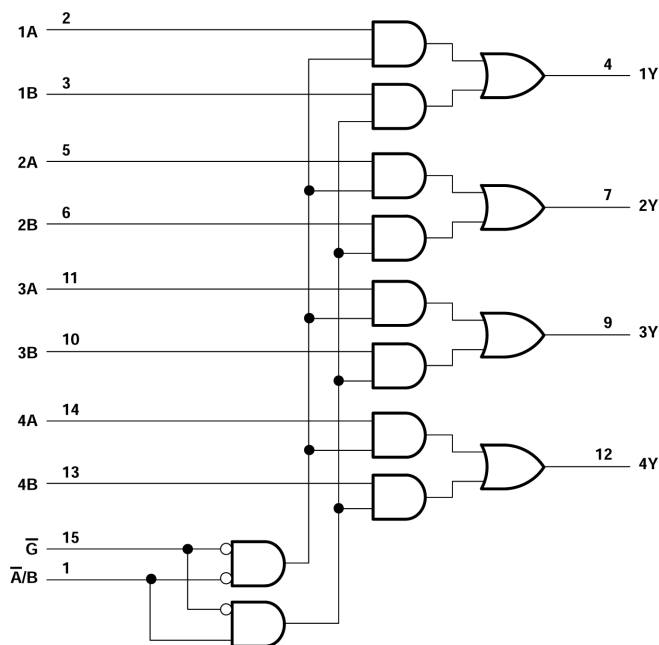
These quadruple 2-line to 1-line data selectors/multiplexers are designed for 4.5V to 5.5V  $V_{CC}$  operation.

The SNx4AHCT157 devices feature a common strobe ( $\bar{G}$ ) input. When the strobe is high, all outputs are low. When the strobe is low, a 4-bit word is selected from one of two sources and is routed to the four outputs. The devices provide true data.

### Package Information

PART NUMBER	PACKAGE <sup>(1)</sup>	PACKAGE SIZE <sup>(2)</sup>	BODY SIZE <sup>(3)</sup>
SNx4AHCT157	BQB (WQFN, 16)	3.5mm × 2.5mm	3.5mm × 2.5mm
	PW (TSSOP, 16)	5mm × 6.4mm	5mm × 4.4mm

- (1) For more information, see [Section 10](#)
- (2) The package size (length × width) is a nominal value and includes pins, where applicable.
- (3) The body size (length × width) is a nominal value and does not include pins.



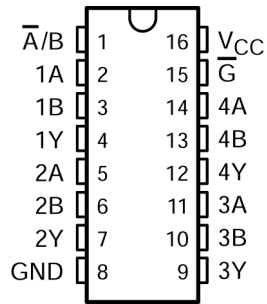
Logic Diagram (Positive Logic)



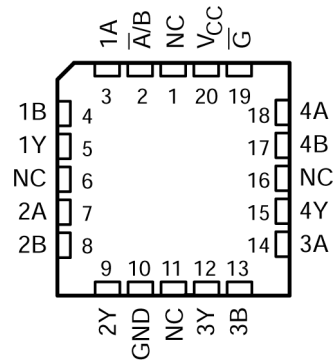
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### 3 Pin Configuration and Functions



**Figure 3-1. SN54AHCT157 J or W Package;  
SN74AHCT157 D, DB, DGV, N, NS, or PW Package  
(Top View)**



NC – No internal connection  
**Figure 3-2. SN54AHCT157 FK Package (Top View)**

**Table 3-1. Pin Functions**

PIN		TYPE <sup>(1)</sup>	DESCRIPTION
NAME	NO.		
A/B	1	I	Address select
1A	2	I	Channel 1, data input A
1B	3	I	Channel 1, data input B
1Y	4	O	Channel 1, data output
2A	5	I	Channel 2, data input A
2B	6	I	Channel 2, data input B
2Y	7	O	Channel 2, data output
GND	8	G	Ground
3Y	9	O	Channel 3, data output
3B	10	I	Channel 3, data input B
3A	11	I	Channel 3, data input A
4Y	12	O	Channel 4, data output
4B	13	I	Channel 4, data input B
4A	14	I	Channel 4, data input A
G	15	I	Output strobe, active low
V <sub>CC</sub>	16	P	Positive supply

(1) Signal Types: I = Input, O = Output, I/O = Input or Output.

## 4 Specifications

### 4.1 Absolute Maximum Ratings

over operating free-air temperature range (unless otherwise noted)<sup>(1)</sup>

		MIN	MAX	UNIT
V <sub>CC</sub>	Supply voltage range	-0.5	7	V
V <sub>I</sub> <sup>(2)</sup>	Input voltage range	-0.5	7	V
V <sub>O</sub> <sup>(2)</sup>	Output voltage range	-0.5	V <sub>CC</sub> + 0.5	V
I <sub>IK</sub>	Input clamp current	(V <sub>I</sub> < 0)		-20 mA
I <sub>OK</sub>	Output clamp current	(V <sub>O</sub> < 0 or V <sub>O</sub> > V <sub>CC</sub> )		±20 mA
I <sub>O</sub>	Continuous output current	(V <sub>O</sub> = 0 to V <sub>CC</sub> )		±25 mA
Continuous current through V <sub>CC</sub> or GND				±50 mA
T <sub>stg</sub>	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.
- (2) The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

### 4.2 Recommended Operating Conditions

over operating free-air temperature range (unless otherwise noted)<sup>(1)</sup>

		SN54AHCT157		SN74AHCT157		UNIT
		MIN	MAX	MIN	MAX	
V <sub>CC</sub>	Supply voltage			4.5	5.5	V
V <sub>IH</sub>	High-level input voltage	2		2		V
V <sub>IL</sub>	Low-level input voltage		0.8		0.8	V
V <sub>I</sub>	Input voltage	0	5.5	0	5.5	V
V <sub>O</sub>	Output voltage	0	V <sub>CC</sub>	0	V <sub>CC</sub>	V
I <sub>OH</sub>	High-level output current		-8		-8	mA
I <sub>OL</sub>	Low-level output current		8		8	mA
Δt/Δv	Input transition rise or fall time		20		20	ns/V
T <sub>A</sub>	Operating free-air temperature	-55	125	-40	85	°C

- (1) All unused inputs of the device must be held at V<sub>CC</sub> or GND for proper device operation. Refer to the TI application report, *Implications of Slow or Floating CMOS Inputs*, literature number SCBA004.

### 4.3 Thermal Information

THERMAL METRIC <sup>(1)</sup>		SN74AHCT157						UNIT
		D	DB	DGV	N	NS	PW	
		16 PINS						
R <sub>θJA</sub> <sup>(2)</sup>	Junction-to-ambient thermal resistance	73	82	120	67	64	135.9	°C/W

- (1) For more information about traditional and new thermal metrics, see the [Semiconductor and IC package thermal metrics](#) application report.
- (2) The package thermal impedance is calculated in accordance with JESD 51-7.

### 4.4 Electrical Characteristics

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

PARAMETER	TEST CONDITIONS	V <sub>CC</sub>	T <sub>A</sub> = 25°C			SN54AHCT157		SN74AHCT157		UNIT
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
V <sub>OH</sub>	I <sub>OH</sub> = -50μA	4.5V	4.4	4.5		4.4		4.4	V	
	I <sub>OH</sub> = -8mA		3.94			3.8		3.8		

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

PARAMETER	TEST CONDITIONS	V <sub>CC</sub>	T <sub>A</sub> = 25°C			SN54AHCT157		SN74AHCT157		UNIT
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
V <sub>OL</sub>	I <sub>OL</sub> = 50µA	4.5V	0.1			0.1		0.1		V
	I <sub>OL</sub> = 8mA		0.36			0.44		0.44		
I <sub>I</sub>	V <sub>I</sub> = 5.5V or GND	0V to 5.5V	±0.1			±1 <sup>(1)</sup>		±1		µA
I <sub>CC</sub>	V <sub>I</sub> = V <sub>CC</sub> or GND, I <sub>O</sub> = 0	5.5V	2			20		20		µA
ΔI <sub>CC</sub> <sup>(2)</sup>	One input at 3.4V, Other inputs at V <sub>CC</sub> or GND	5.5V	1.35			1.5		1.5		mA
C <sub>i</sub>	V <sub>I</sub> = V <sub>CC</sub> or GND	5V	2 10					10		pF

(1) On products compliant to MIL-PRF-38535, this parameter is not production tested at V<sub>CC</sub> = 0V.

(2) This is the increase in supply current for each input at one of the specified TTL voltage levels rather than 0V or V<sub>CC</sub>.

## 4.5 Switching Characteristics

over recommended operating free-air temperature range, V<sub>CC</sub> = 5V ± 0.5V (unless otherwise noted) (see [Load Circuit and Voltage Waveforms](#))

PARAMETER	FROM (INPUT)	TO (OUTPUT)	LOAD CAPACITANCE	T <sub>A</sub> = 25°C			SN54AHCT157		SN74AHCT157		UNIT
				MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t <sub>PLH</sub>	A or B	Y	C <sub>L</sub> = 15pF	4.1 <sup>(1)</sup>	6.4 <sup>(1)</sup>	1 <sup>(1)</sup>	7.5 <sup>(1)</sup>	1	7.5	ns	
t <sub>PHL</sub>				4.1 <sup>(1)</sup>	6.4 <sup>(1)</sup>	1 <sup>(1)</sup>	7.5 <sup>(1)</sup>	1	7.5		
t <sub>PLH</sub>	A̅/B	Y	C <sub>L</sub> = 15pF	5.3 <sup>(1)</sup>	8.1 <sup>(1)</sup>	1 <sup>(1)</sup>	9.5 <sup>(1)</sup>	1	9.5	ns	
t <sub>PHL</sub>				5.3 <sup>(1)</sup>	8.1 <sup>(1)</sup>	1 <sup>(1)</sup>	9.5 <sup>(1)</sup>	1	9.5		
t <sub>PLH</sub>	G̅	Y	C <sub>L</sub> = 15pF	5.6 <sup>(1)</sup>	8.6 <sup>(1)</sup>	1 <sup>(1)</sup>	10 <sup>(1)</sup>	1	10	ns	
t <sub>PHL</sub>				5.6 <sup>(1)</sup>	8.6 <sup>(1)</sup>	1 <sup>(1)</sup>	10 <sup>(1)</sup>	1	10		
t <sub>PLH</sub>	A or B	Y	C <sub>L</sub> = 50pF	5.6	8.7	1	10.8	1	9.8	ns	
t <sub>PHL</sub>				5.6	8.7	1	10.8	1	9.8		
t <sub>PLH</sub>	A̅/B	Y	C <sub>L</sub> = 50pF	6.8	10.4	1	13.2	1	12	ns	
t <sub>PHL</sub>				6.8	10.4	1	13.2	1	12		
t <sub>PLH</sub>	G̅	Y	C <sub>L</sub> = 50pF	7.1	11	1	13.5	1	12	ns	
t <sub>PHL</sub>				7.1	11	1	13.5	1	12		

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

## 4.6 Noise Characteristics

V<sub>CC</sub> = 5V, C<sub>L</sub> = 50pF, T<sub>A</sub> = 25°C<sup>(1)</sup>

PARAMETER		SN74AHCT157			UNIT
		MIN	TYP	MAX	
V <sub>OL(P)</sub>	Quiet output, maximum dynamic V <sub>OL</sub>		0.4	0.8	V
V <sub>OL(V)</sub>	Quiet output, minimum dynamic V <sub>OL</sub>		-0.4	-0.8	V
V <sub>OH(V)</sub>	Quiet output, minimum dynamic V <sub>OH</sub>		1.8		V
V <sub>IH(D)</sub>	High-level dynamic input voltage	2			V
V <sub>IL(D)</sub>	Low-level dynamic input voltage	0.8			V

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

## 4.7 Operating Characteristics

V<sub>CC</sub> = 5V, T<sub>A</sub> = 25°C

PARAMETER	TEST CONDITIONS	TYP	UNIT
C <sub>pd</sub>	Power dissipation capacitance No load, f = 1MHz	11	pF

### 4.8 Typical Characteristics

T<sub>A</sub> = 25°C (unless otherwise noted)

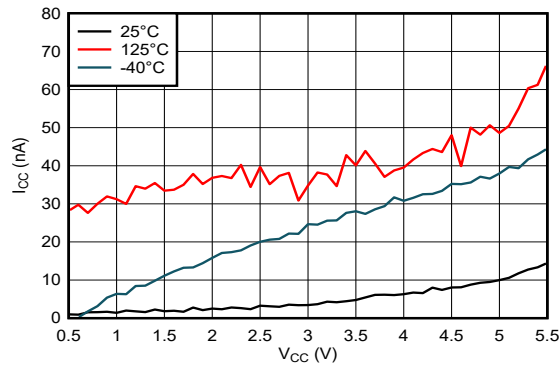


Figure 4-1. Supply Current Across Supply Voltage

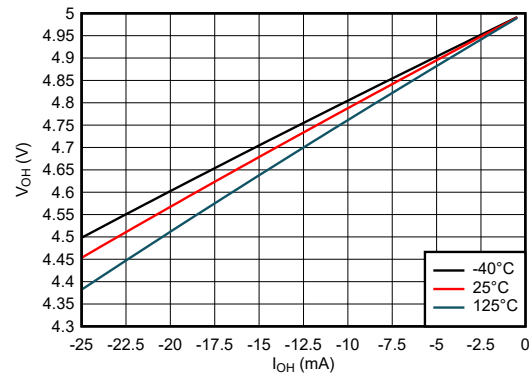


Figure 4-2. Output Voltage vs Current in HIGH State; 5V Supply

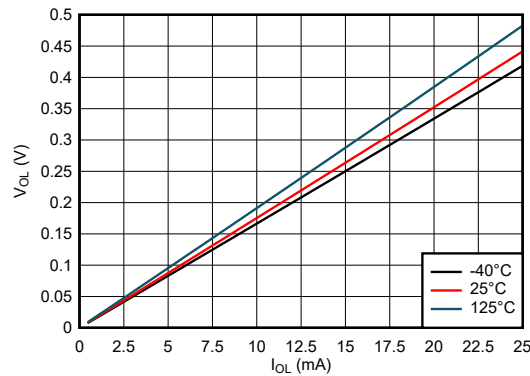
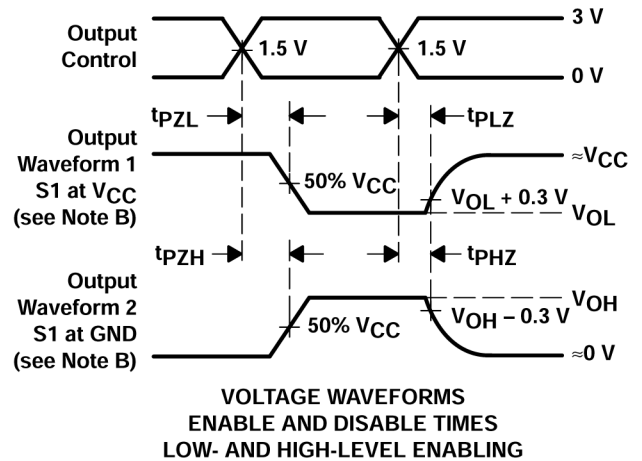
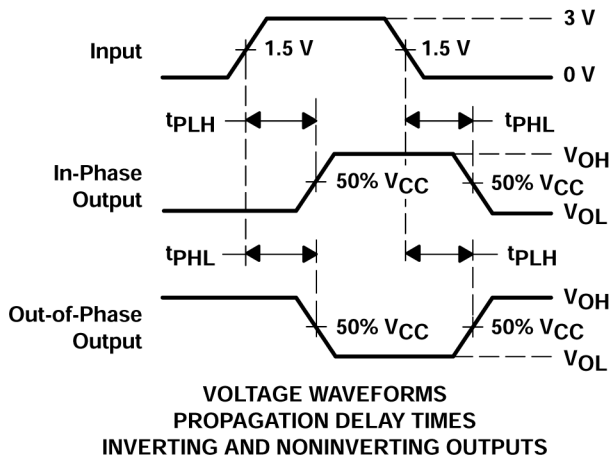
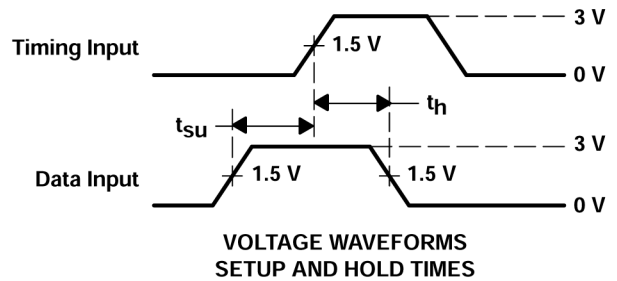
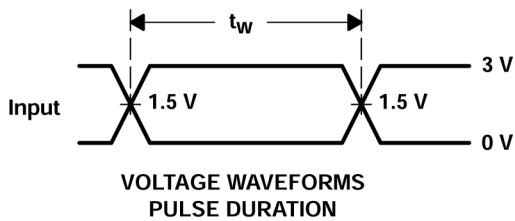
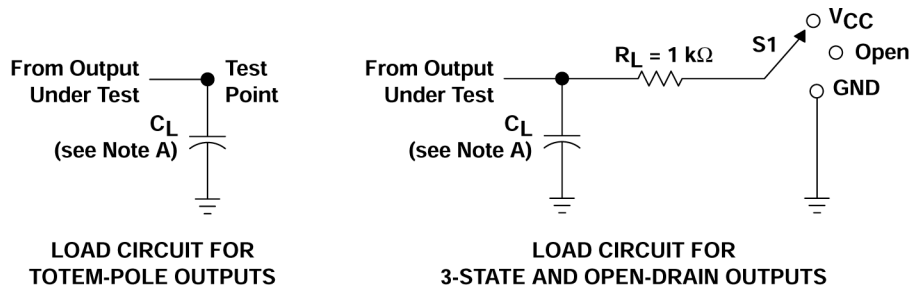


Figure 4-3. Output Voltage vs Current in LOW State; 5V Supply

## 5 Parameter Measurement Information



- $C_L$  includes probe and jig capacitance.
- 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.
- All input pulses are supplied by generators having the following characteristics:  $PRR \leq 1\text{MHz}$ ,  $Z_O = 50\ \Omega$ ,  $t_r \leq 3\text{ns}$ ,  $t_f \leq 3\text{ns}$ .
- The outputs are measured one at a time with one input transition per measurement.
- All parameters and waveforms are not applicable to all devices.

**Figure 5-1. Load Circuit and Voltage Waveforms**

TEST	S1
$t_{PLH}/t_{PHL}$	Open
$t_{PLZ}/t_{PZL}$	$V_{CC}$
$t_{PHZ}/t_{PZH}$	GND
Open Drain	$V_{CC}$

## 6 Detailed Description

### 6.1 Functional Block Diagram

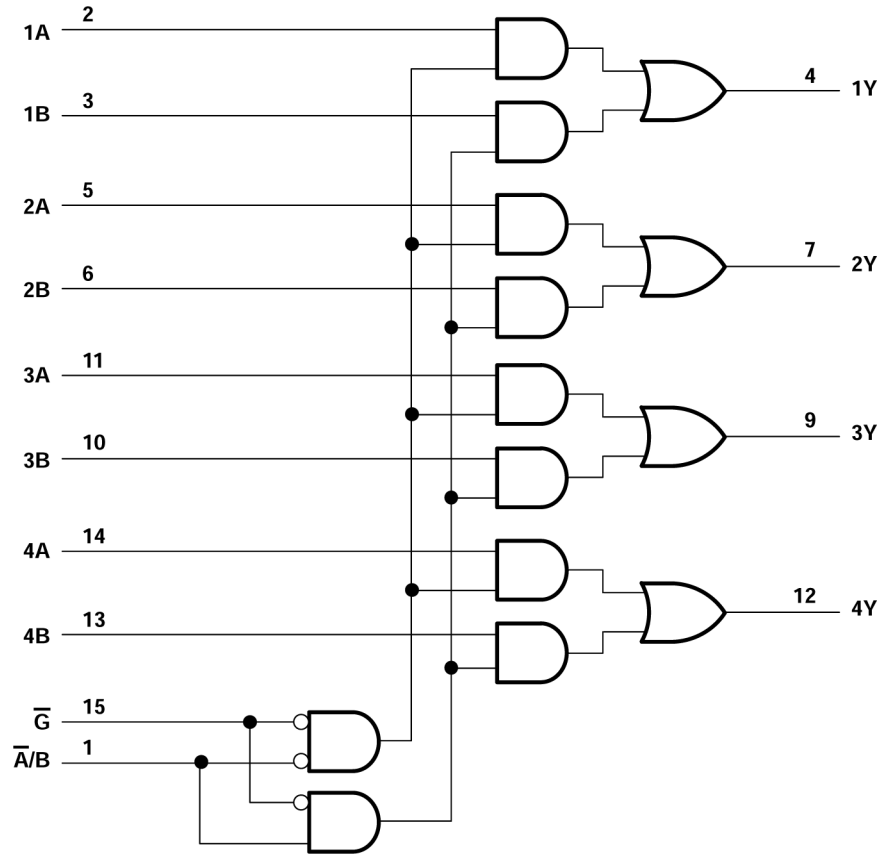


Figure 6-1. Logic Diagram (Positive Logic)

Pin numbers shown are for the D, DB, DGV, J, N, NS, PW, and W packages.

### 6.2 Device Functional Modes

Table 6-1. Function Table

INPUTS				OUTPUT Y
G	A/B	A	B	
H	X	X	X	L
L	L	L	X	L
L	L	H	X	H
L	H	X	L	L
L	H	X	H	H



## 7 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.

### 7.1 Power Supply Recommendations

The power supply can be any voltage between the MIN and MAX supply voltage rating located in the [Section 4.2](#) table.

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

### 7.2 Layout

#### 7.2.1 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 Layout Diagram 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.

##### 7.2.1.1 Layout Example

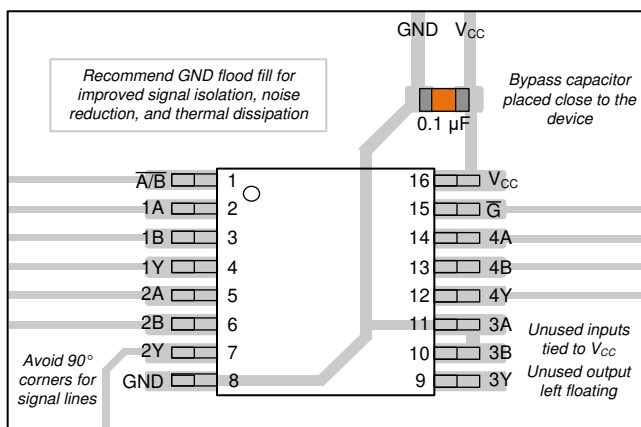


Figure 7-1. Example Layout for the SNx4AHCT157

## 8 Device and Documentation Support

TI offers an extensive line of development tools. Tools and software to evaluate the performance of the device, generate code, and develop solutions are listed below.

### 8.1 Documentation Support

#### 8.1.1 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 8-1. Related Links**

PARTS	PRODUCT FOLDER	SAMPLE & BUY	TECHNICAL DOCUMENTS	TOOLS & SOFTWARE	SUPPORT & COMMUNITY
SN54AHCT157	<a href="#">Click here</a>	<a href="#">Click here</a>	<a href="#">Click here</a>	<a href="#">Click here</a>	<a href="#">Click here</a>
SN74AHCT157	<a href="#">Click here</a>	<a href="#">Click here</a>	<a href="#">Click here</a>	<a href="#">Click here</a>	<a href="#">Click here</a>

### 8.2 Receiving Notification of Documentation Updates

To receive notification of documentation updates, navigate to the device product folder on [ti.com](http://ti.com). Click on *Notifications* 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.

### 8.3 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.

Linked content is provided "AS IS" by the respective contributors. They do not constitute TI specifications and do not necessarily reflect TI's views; see TI's [Terms of Use](#).

### 8.4 Trademarks

TI E2E™ is a trademark of Texas Instruments.  
 All trademarks are the property of their respective owners.

### 8.5 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.

### 8.6 Glossary

[TI Glossary](#) This glossary lists and explains terms, acronyms, and definitions.

## 9 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

Changes from Revision K (July 2003) to Revision L (April 2024)	Page
• Added <i>Device Information</i> table, <i>Pin Functions</i> table, <i>Thermal Information</i> table, <i>Device Functional Modes</i> , <i>Application and Implementation</i> section, <i>Device and Documentation Support</i> section, and <i>Mechanical, Packaging, and Orderable Information</i> section .....	1
• Updated thermal values for PW package from RθJA = 108 to 135.9, all values in °C/W .....	4

## 10 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.

**PACKAGING INFORMATION**

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead finish/ Ball material (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
SN74AHCT157D	OBSOLETE	SOIC	D	16		TBD	Call TI	Call TI	-40 to 85	AHCT157	
SN74AHCT157DBR	ACTIVE	SSOP	DB	16	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	HB157	Samples
SN74AHCT157DGVR	ACTIVE	TVSOP	DGV	16	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	HB157	Samples
SN74AHCT157DR	ACTIVE	SOIC	D	16	2500	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	AHCT157	Samples
SN74AHCT157N	ACTIVE	PDIP	N	16	25	RoHS & Green	NIPDAU	N / A for Pkg Type	-40 to 85	SN74AHCT157N	Samples
SN74AHCT157PW	OBSOLETE	TSSOP	PW	16		TBD	Call TI	Call TI	-40 to 85	HB157	
SN74AHCT157PWR	ACTIVE	TSSOP	PW	16	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	HB157	Samples

(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) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".

**RoHS Exempt:** TI defines "RoHS Exempt" to mean products that contain lead but are compliant with EU RoHS pursuant to a specific EU RoHS exemption.

**Green:** TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of <=1000ppm threshold. Antimony trioxide based flame retardants must also meet the <=1000ppm threshold requirement.

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

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead finish/Ball material - Orderable Devices 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.

**Important Information and Disclaimer:** The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. TI has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

**OTHER QUALIFIED VERSIONS OF SN74AHCT157 :**

- Automotive : [SN74AHCT157-Q1](#)

NOTE: Qualified Version Definitions:

- Automotive - Q100 devices qualified for high-reliability automotive applications targeting zero defects

**TAPE AND REEL INFORMATION**

**QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE**


\*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SN74AHCT157DBR	SSOP	DB	16	2000	330.0	16.4	8.35	6.6	2.4	12.0	16.0	Q1
SN74AHCT157DGVR	TVSOP	DGV	16	2000	330.0	12.4	6.8	4.0	1.6	8.0	12.0	Q1
SN74AHCT157DR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1
SN74AHCT157PWR	TSSOP	PW	16	2000	330.0	12.4	6.9	5.6	1.6	8.0	12.0	Q1

## TAPE AND REEL BOX DIMENSIONS



\*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74AHCT157DBR	SSOP	DB	16	2000	356.0	356.0	35.0
SN74AHCT157DGVR	TVSOP	DGV	16	2000	356.0	356.0	35.0
SN74AHCT157DR	SOIC	D	16	2500	340.5	336.1	32.0
SN74AHCT157PWR	TSSOP	PW	16	2000	356.0	356.0	35.0

**TUBE**


\*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (μm)	B (mm)
SN74AHCT157N	N	PDIP	16	25	506	13.97	11230	4.32
SN74AHCT157N	N	PDIP	16	25	506	13.97	11230	4.32



D (R-PDSO-G16)

PLASTIC SMALL OUTLINE



- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - C. Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.006 (0,15) each side.
  - D. Body width does not include interlead flash. Interlead flash shall not exceed 0.017 (0,43) each side.
  - E. Reference JEDEC MS-012 variation AC.

D (R-PDSO-G16)

PLASTIC SMALL OUTLINE



- NOTES:
- All linear dimensions are in millimeters.
  - This drawing is subject to change without notice.
  - Publication IPC-7351 is recommended for alternate designs.
  - Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525 for other stencil recommendations.
  - Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.



4220204/A 02/2017

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.

# EXAMPLE BOARD LAYOUT

PW0016A

TSSOP - 1.2 mm max height

SMALL OUTLINE PACKAGE



LAND PATTERN EXAMPLE  
EXPOSED METAL SHOWN  
SCALE: 10X



SOLDER MASK DETAILS

4220204/A 02/2017

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.

# EXAMPLE STENCIL DESIGN

PW0016A

TSSOP - 1.2 mm max height

SMALL OUTLINE PACKAGE



SOLDER PASTE EXAMPLE  
BASED ON 0.125 mm THICK STENCIL  
SCALE: 10X

4220204/A 02/2017

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.

# DB0016A



# PACKAGE OUTLINE

## SSOP - 2 mm max height

SMALL OUTLINE PACKAGE



4220763/A 05/2022

### 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. Reference JEDEC registration MO-150.

# EXAMPLE BOARD LAYOUT

DB0016A

SSOP - 2 mm max height

SMALL OUTLINE PACKAGE



LAND PATTERN EXAMPLE  
EXPOSED METAL SHOWN  
SCALE: 10X



4220763/A 05/2022

NOTES: (continued)

- 5. Publication IPC-7351 may have alternate designs.
- 6. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

# EXAMPLE STENCIL DESIGN

DB0016A

SSOP - 2 mm max height

SMALL OUTLINE PACKAGE



SOLDER PASTE EXAMPLE  
BASED ON 0.125 mm THICK STENCIL  
SCALE: 10X

4220763/A 05/2022

NOTES: (continued)

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



DGV (R-PDSO-G\*\*)

PLASTIC SMALL-OUTLINE

24 PINS SHOWN



- 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

N (R-PDIP-T\*\*)

PLASTIC DUAL-IN-LINE PACKAGE

16 PINS SHOWN



- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - Falls within JEDEC MS-001, except 18 and 20 pin minimum body length (Dim A).
  - The 20 pin end lead shoulder width is a vendor option, either half or full width.

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