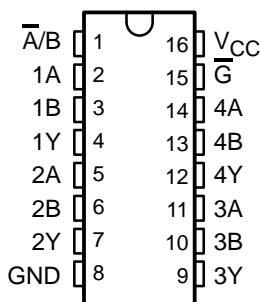


# SN54HCT157, SN74HCT157 QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MUXES

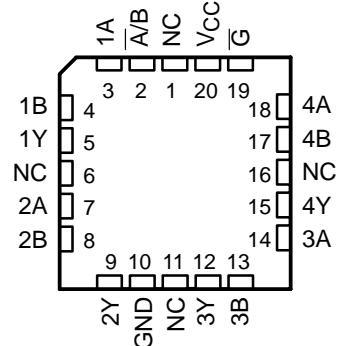
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- Operating Voltage Range of 4.5 V to 5.5 V
- High-Current Outputs Drive Up To 15 LSTTL Loads
- Typical  $t_{pd} = 15$  ns
- Low Power Consumption, 80- $\mu$ A Max  $I_{CC}$
- $\pm 6$ -mA Output Drive at 5 V
- Low Input Current of 1  $\mu$ A Max
- Inputs Are TTL-Voltage Compatible
- Buffered Inputs and Outputs

SN54HCT157 . . . J OR W PACKAGE  
SN74HCT157 . . . D OR N PACKAGE  
(TOP VIEW)



SN54HCT157 . . . FK PACKAGE  
(TOP VIEW)



NC – No internal connection

## description/ordering information

These data selectors/multiplexers contain inverters and drivers to supply full data selection to the four output gates. A separate strobe (G) input is provided. A 4-bit word is selected from one of two sources and is routed to the four outputs.

## ORDERING INFORMATION

TA	PACKAGE†		ORDERABLE PART NUMBER	TOP-SIDE MARKING
−40°C to 85°C	PDIP – N	Tube	SN74HCT157N	SN74HCT157N
	SOIC – D	Tube	SN74HCT157D	HCT157
		Tape and reel	SN74HCT157DR	
−55°C to 125°C	CDIP – J	Tube	SNJ54HCT157J	SNJ54HCT157J
	CFP – W	Tube	SNJ54HCT157W	SNJ54HCT157W
	LCCC – FK	Tube	SNJ54HCT157FK	SNJ54HCT157FK

† Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at [www.ti.com/sc/package](http://www.ti.com/sc/package).

## FUNCTION TABLE

INPUTS		DATA		OUTPUT Y
STROBE G	SELECT 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

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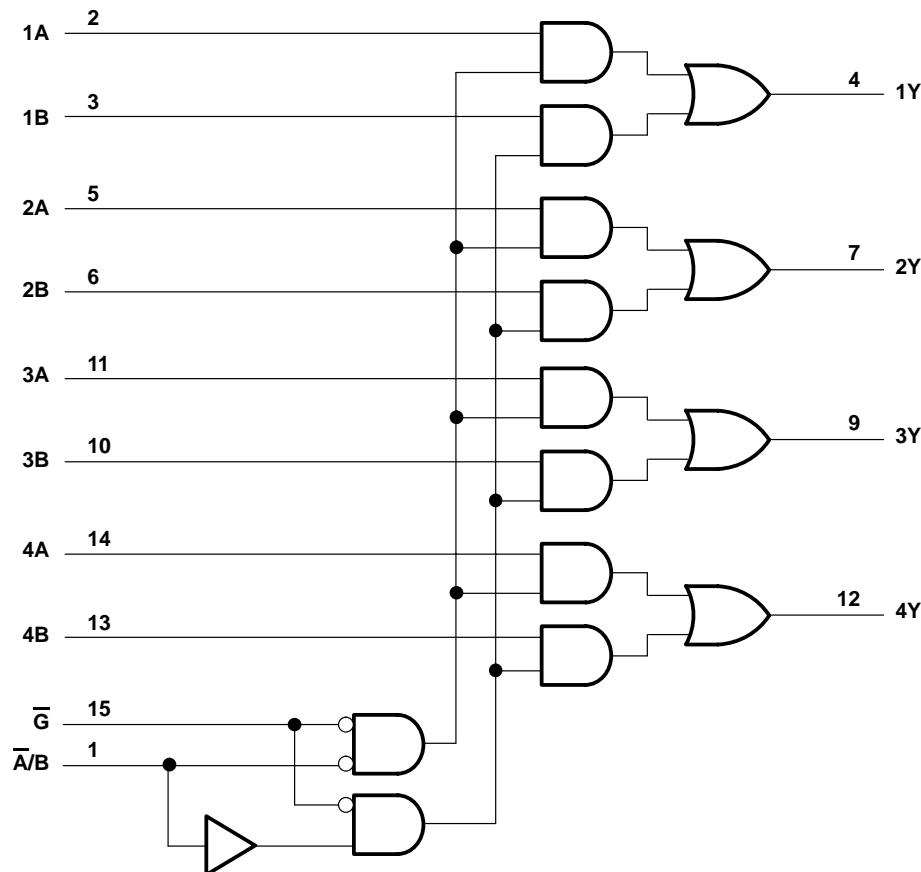


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# **SN54HCT157, SN74HCT157 QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS**

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## logic diagram (positive logic)



Pin numbers shown are for the D, J, N, and W packages.

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

† 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. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.  
2. The package thermal impedance is calculated in accordance with JEDEC 51-7.

# SN54HCT157, SN74HCT157 QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MUXES

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## recommended operating conditions (see Note 3)

			SN54HCT157			SN74HCT157			UNIT
			MIN	NOM	MAX	MIN	NOM	MAX	
V <sub>CC</sub>	Supply voltage		4.5	5	5.5	4.5	5	5.5	V
V <sub>IH</sub>	High-level input voltage	V <sub>CC</sub> = 4.5 V to 5.5 V	2			2			V
V <sub>IL</sub>	Low-level input voltage	V <sub>CC</sub> = 4.5 V to 5.5 V			0.8			0.8	V
V <sub>I</sub>	Input voltage		0	V <sub>CC</sub>		0	V <sub>CC</sub>		V
V <sub>O</sub>	Output voltage		0	V <sub>CC</sub>		0	V <sub>CC</sub>		V
t <sub>t</sub>	Input transition (rise and fall) time				500			500	ns
T <sub>A</sub>	Operating free-air temperature		-55	125		-40		85	°C

NOTE 3: All unused inputs of the device must be held at V<sub>CC</sub> or GND to ensure proper device operation. Refer to the TI application report, *Implications of Slow or Floating CMOS Inputs*, literature number SCBA004.

## 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			SN54HCT157		SN74HCT157		UNIT
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
V <sub>OH</sub>	V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub>	4.5 V	4.4	4.499		4.4		4.4		V
			3.98	4.3		3.7		3.84		
V <sub>OL</sub>	V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub>	4.5 V		0.001	0.1		0.1		0.1	V
				0.17	0.26		0.4		0.33	
I <sub>I</sub>	V <sub>I</sub> = V <sub>CC</sub> or 0	5.5 V		±0.1	±100		±1000		±1000	nA
I <sub>CC</sub>	V <sub>I</sub> = V <sub>CC</sub> or 0, I <sub>O</sub> = 0	5.5 V			8		160		80	µA
ΔI <sub>CC</sub> <sup>†</sup>	One input at 0.5 V or 2.4 V, Other inputs at 0 or V <sub>CC</sub>	5.5 V		1.4	2.4		3		2.9	mA
C <sub>i</sub>		4.5 V to 5.5 V		3	10		10*		10	pF

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

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

## switching characteristics over recommended operating free-air temperature range, C<sub>L</sub> = 50 pF (unless otherwise noted) (see Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V <sub>CC</sub>	T <sub>A</sub> = 25°C			SN54HCT157		SN74HCT157		UNIT
				MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t <sub>pd</sub>	A or B	Y	4.5 V		18	28		42		35	ns
			5.5 V		15	25		38		32	
	Ā/B	Y	4.5 V		20	32		48		40	
			5.5 V		17	29		43		36	
	Ā	Y	4.5 V		18	26		39		33	
			5.5 V		15	23		35		30	
t <sub>t</sub>		Any	4.5 V		8	15		22		19	ns
			5.5 V		7	14		21		17	

PRODUCT PREVIEW information concerns products in the formative or design phase of development. Characteristic data and other specifications are design goals. Texas Instruments reserves the right to change or discontinue these products without notice.



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**SN54HCT157, SN74HCT157  
QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS**

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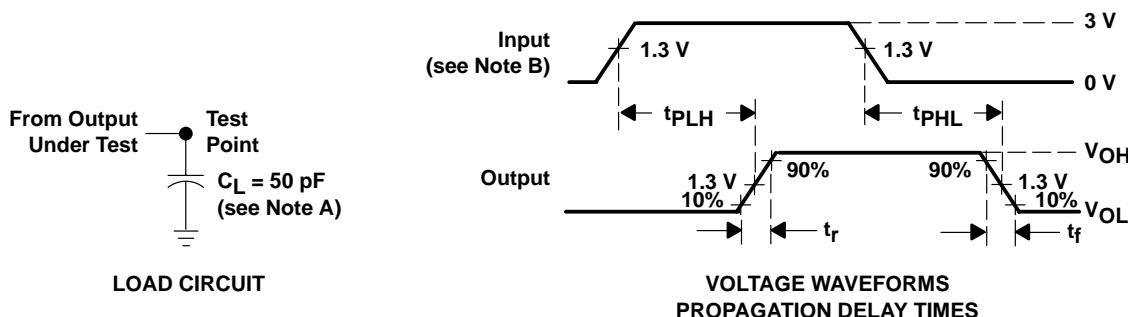
**switching characteristics over recommended operating free-air temperature range,  $C_L = 150 \text{ pF}$  (unless otherwise noted) (see Figure 1)**

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC}$	$T_A = 25^\circ\text{C}$			SN54HCT157	SN74HCT157	UNIT
				MIN	TYP	MAX	MIN	MAX	
$t_{pd}$	A or B	Y	4.5 V	23	42	63	52	52	ns
			5.5 V	19	38	52	46	46	
	$\bar{A}/B$	Y	4.5 V	24	46	72	58	58	
			5.5 V	21	41	61	52	52	
	$\bar{G}$	Y	4.5 V	21	39	58	48	48	
			5.5 V	19	35	49	43	43	
$t_t$		Any	4.5 V	17	42	63	53	53	ns
			5.5 V	14	38	57	48	48	

**operating characteristics,  $T_A = 25^\circ\text{C}$**

PARAMETER	TEST CONDITIONS	TYP	UNIT
$C_{pd}$ Power dissipation capacitance	No load	12	pF

PARAMETER MEASUREMENT INFORMATION



NOTES:

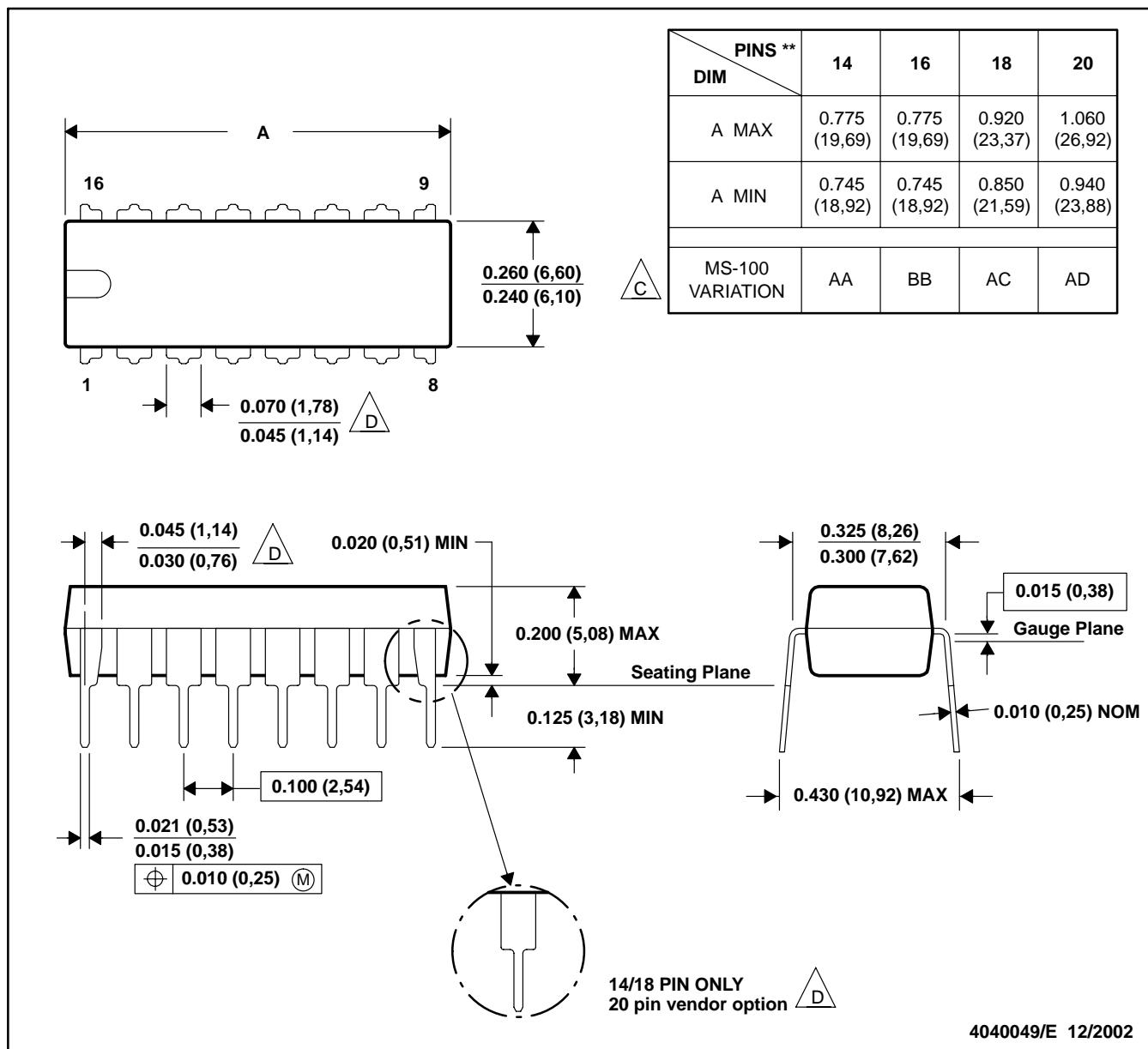
- $C_L$  includes probe and test-fixture capacitance.
- Phase relationships between waveforms were chosen arbitrarily. All input pulses are supplied by generators having the following characteristics: PRR  $\leq$  1 MHz,  $Z_O = 50 \Omega$ ,  $t_r = 6$  ns,  $t_f = 6$  ns.
- The outputs are measured one at a time with one input transition per measurement.
- $t_{PLH}$  and  $t_{PHL}$  are the same as  $t_{pd}$ .

Figure 1. Load Circuit and Voltage Waveforms

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.

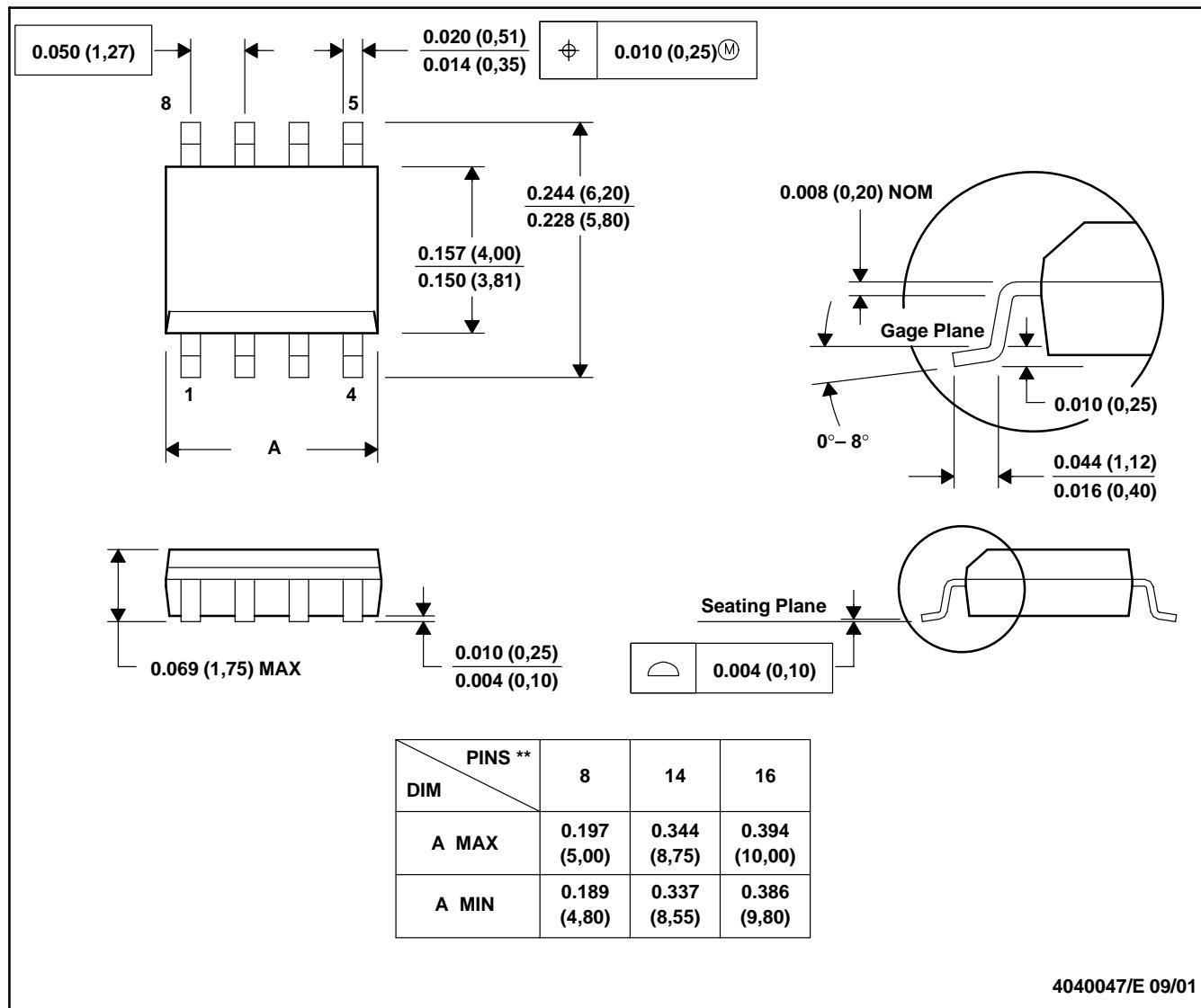
C. Falls within JEDEC MS-001, except 18 and 20 pin minimum body length (Dim A).

D. The 20 pin end lead shoulder width is a vendor option, either half or full width.

## D (R-PDSO-G\*\*)

## PLASTIC SMALL-OUTLINE PACKAGE

8 PINS SHOWN



4040047/E 09/01

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

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