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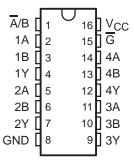
- 2-V to 5.5-V V_{CC} Operation
- Max t_{pd} of 7.5 ns at 5 V
- Typical V_{OLP} (Output Ground Bounce)
 <0.8 V at V_{CC}, T_A = 25°C
- Typical V_{OHV} (Output V_{OH} Undershoot)
 >2.3 V at V_{CC}, T_A = 25°C
- I_{off} Supports Partial-Power-Down-Mode Operation
- Latch-Up Performance Exceeds 100 mA Per JESD 78, Class II
- ESD Protection Exceeds JESD 22
 - 2000-V Human-Body Model (A114-A)
 - 200-V Machine Model (A115-A)
 - 1000-V Charged-Device Model (C101)

description/ordering information

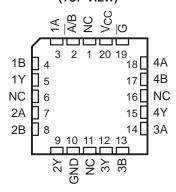
The 'LV157A devices are quadruple 2-line to 1-line data selectors/multiplexers designed for 2-V to 5.5-V $\rm V_{CC}$ operation.

These devices contain inverters and drivers to supply full data selection to the four output gates. A separate strobe (\overline{G}) input is provided. A 4-bit word is selected from one of two sources and is routed to the four outputs. The 'LV157A devices present true data.

SN54LV157A . . . J OR W PACKAGE SN74LV157A . . . D, DB, DGV, NS, OR PW PACKAGE (TOP VIEW)



SN54LV157A . . . FK PACKAGE (TOP VIEW)



NC - No internal connection

ORDERING INFORMATION

TA	PACKA	GEŤ	ORDERABLE PART NUMBER	TOP-SIDE MARKING
	colc p	Tube of 40	SN74LV157AD	11/4574
	SOIC - D	Reel of 2500	SN74LV157ADR	LV157A
	SOP – NS	Reel of 2000	SN74LV157ANSR	74LV157A
4000 to 0500	SSOP – DB	Reel of 2000	SN74LV157ADBR	LV157A
-40°C to 85°C	TSSOP – PW	Tube of 90	SN74LV157APW	
		Reel of 2000	SN74LV157APWR	LV157A
		Reel of 250	SN74LV157APWT	
	TVSOP - DGV	Reel of 2000	SN74LV157ADGVR	LV157A
	CDIP – J	Tube of 25	SNJ54LV157AJ	SNJ54LV157AJ
–55°C to 125°C	CFP – W	Tube of 150	SNJ54LV157AW	SNJ54LV157AW
	LCCC – FK	Tube of 55	SNJ54LV157AFK	SNJ54LV157AFK

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



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.



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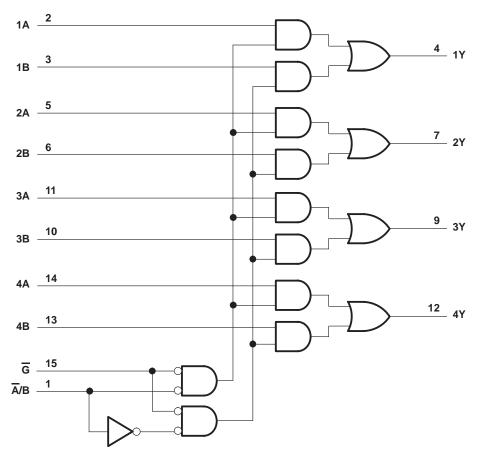
description/ordering information (continued)

These devices are fully specified for partial-power-down applications using I_{off} . The I_{off} circuitry disables the outputs, preventing damaging current backflow through the devices when they are powered down.

FUNCTION TABLE

	INPU			
G	SELECT	DA	·ΤΑ	OUTPUT
G	A/B	Α	В	·
Н	Х	Х	Х	L
L	L	L	X	L
L	L	Н	X	Н
L	Н	Х	L	L
L	Н	Χ	Н	Н

logic diagram (positive logic)



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



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

Supply voltage range, V _{CC}		-0.5 V to 7 V
Input voltage range, V _I (see Note 1)		-0.5 V to 7 V
Output voltage range applied in high or low sta	ate, V _O (see Notes 1 and 2)0.5	V to V_{CC} + 0.5 V
Output voltage range applied in power-off state	e, V _O (see Note 1)	0.5 V to 7 V
Input clamp current, I _{IK} (V _I < 0)		–20 mA
Output clamp current, I _{OK} (V _O < 0)		–50 mA
Continuous output current, I_O ($V_O = 0$ to V_{CC})		±25 mA
Continuous current through V _{CC} or GND		
Package thermal impedance, θ _{JA} (see Note 3)	: D package	73°C/W
, , , , , , , , , , , , , , , , , , , ,	DB package	
	DGV package	120°C/W
	NS package	64°C/W
	PW package	108°C/W
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. The input and output negative-voltage ratings may be exceeded if the input and output current ratings are observed.

- 2. This value is limited to 5.5 V maximum.
- 3. The package thermal impedance is calculated in accordance with JESD 51-7.



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recommended operating conditions (see Note 4)

			SN54L\	/157A	SN74L	V157A	
			MIN	MAX	MIN	MAX	UNIT
Vcc	Supply voltage		2	5.5	2	5.5	V
		V _{CC} = 2 V	1.5		1.5		
.,	LPak Java Carata attana	$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$	V _{CC} ×0.7		V _{CC} ×0.7	7	.,
VIH	High-level input voltage	$V_{CC} = 3 \text{ V to } 3.6 \text{ V}$	V _{CC} × 0.7		$V_{CC} \times 0.7$	7	V
		$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$	V _{CC} × 0.7		$V_{CC} \times 0.7$	7	
		V _{CC} = 2 V		0.5		0.5	
.,	Law law lianut waltana	$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$	V	CC × 0.3	,	√CC × 0.3	V
V _{IL}	Low-level input voltage	$V_{CC} = 3 \text{ V to } 3.6 \text{ V}$	V	CC × 0.3	,	√CC × 0.3	V
		$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$	V	CC × 0.3	,	√CC × 0.3	
VI	Input voltage		0	5.5	0	5.5	V
VO	Output voltage		0 5	Vcc	0	VCC	V
		V _{CC} = 2 V	3	5 -50		-50	μΑ
	High lavel autout august	$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$	90	-2		-2	
ЮН	High-level output current	V _{CC} = 3 V to 3.6 V	Q	-6		-6	mA
		$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$		-12		-12	
		V _{CC} = 2 V		50		50	μΑ
	Level bear Level and and an order	$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$		2		2	
loL	Low-level output current	$V_{CC} = 3 \text{ V to } 3.6 \text{ V}$		6		6	mA
		$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$		12		12	
		V _{CC} = 2.3 V to 2.7 V		200	0	200	
$\Delta t/\Delta v$	Input transition rise or fall rate	$V_{CC} = 3 \text{ V to } 3.6 \text{ V}$		100	0	100	ns/V
		V _{CC} = 4.5 V to 5.5 V		20	0	20	
TA	Operating free-air temperature		-55	125	-40	85	°C

NOTE 4: 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*, literature number SCBA004.

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

24244555		.,	SN54LV157A	SN74LV157A	UNIT	
PARAMETER	TEST CONDITIONS	VCC	MIN TYP MAX	MIN TYP MAX	UNII	
	I _{OH} = -50 μA	2 V to 5.5 V	V _{CC} -0.1	V _{CC} -0.1		
.,	$I_{OH} = -2 \text{ mA}$	2.3 V	2	2	.,	
VOH	$I_{OH} = -6 \text{ mA}$	3 V	2.48	2.48	V	
	I _{OH} = −12 mA	4.5 V	3.8	3.8		
	I _{OL} = 50 μA	2 V to 5.5 V	0.1	0.1		
	I _{OL} = 2 mA	2.3 V	0.4	0.4	V	
VOL	I _{OL} = 6 mA	3 V	0.44	0.44	V	
	I _{OL} = 12 mA	4.5 V	0.55	0.55		
lį	V _I = 5.5 V or GND	0 to 5.5 V	±1	±1	μΑ	
Icc	$V_I = V_{CC}$ or GND, $I_O = 0$	5.5 V	20	20	μΑ	
l _{off}	V_I or $V_O = 0$ to 5.5 V	0	5	5	μΑ	
Ci	V _I = V _{CC} or GND	3.3 V	1.7	1.7	pF	

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switching characteristics over recommended operating free-air temperature range, V_{CC} = 2.5 V \pm 0.2 V (unless otherwise noted) (see Figure 1)

DADAMETER	FROM TO		LOAD	T _A = 25°C			SN54LV157A		SN74LV157A		
PARAMETER	(INPUT)	(OUTPUT)	CAPACITANCE	MIN	TYP	MAX	MIN	MAX	MIN	MAX	UNIT
	A or B	Υ			7.4*	15.9*	1*	19.5*	1	19.5	
t _{pd}	Ā/B	Υ	C _L = 15 pF		7.9*	19.4*	1*	23.5*	1	23.5	ns
·	G	Y			7.8*	19.8*	1*	24*	1	24	
	A or B	Υ			9.4	18.8	\$ 1¢	22	1	22	
t _{pd}	Ā/B	Υ	C _L = 50 pF		10.8	22.3	Q1	26	1	26	ns
·	G	Y			9.6	22.7	1	26.5	1	26.5	

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

switching characteristics over recommended operating free-air temperature range, V_{CC} = 3.3 V \pm 0.3 V (unless otherwise noted) (see Figure 1)

DADAMETER	FROM TO		LOAD	T _A = 25°C		SN54LV157A		SN74LV157A			
PARAMETER	(INPUT)	(OUTPUT)	CAPACITANCE	MIN	TYP	MAX	MIN	MAX	MIN	MAX	UNIT
	A or B	Υ	C _L = 15 pF		5.2*	9.7*	1*	11.5*	1	11.5	
t _{pd}	Ā/B	Υ			5.8*	13.2*	1*	15.5*	1	15.5	ns
	G	Υ			5.5*	13.6*	1*	16*	1	16	
	A or B	Υ			6.7	13.2	\$ 1¢	15	1	15	
^t pd	Ā/B	Υ	C _L = 50 pF		7.6	16.7	Q1	19	1	19	ns
	G	Y			7	17.1	1	19.5	1	19.5	

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

switching characteristics over recommended operating free-air temperature range, V_{CC} = 5 V \pm 0.5 V (unless otherwise noted) (see Figure 1)

	•		, ,	•	•						
	FROM	то	LOAD CAPACITANCE	T _A = 25°C			SN54LV157A		SN74LV157A		
PARAMETER	(INPUT)	(OUTPUT)		MIN	TYP	MAX	MIN	MAX	MIN	MAX	UNIT
	A or B	Υ			3.6*	6.4*	1*	7.5*	1	7.5	
t _{pd}	Ā/B	Y	C _L = 15 pF		4.1*	8.1*	1*	9.5*	1	9.5	ns
İ '	G	Υ			3.8*	8.6*	1*	10*	1	10	
	A or B	Υ			4.8	8.4	P-10	9.5	1	9.5	
^t pd	Ā/B	Y	$C_L = 50 pF$		5.4	10.1	\Q1	11.5	1	11.5	ns
	G	Y]		5	10.6	1	12	1	12	

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

noise characteristics, $V_{CC} = 3.3 \text{ V}$, $C_L = 50 \text{ pF}$, $T_A = 25^{\circ}\text{C}$ (see Note 5)

	DADAMETED		SN74LV157A				
	PARAMETER	MIN	TYP	MAX	UNIT		
V _{OL(P)}	Quiet output, maximum dynamic V _{OL}		0.3	8.0	V		
V _{OL(V)}	Quiet output, minimum dynamic V _{OL}		-0.1	-0.8	V		
VOH(V)	Quiet output, minimum dynamic VOH		3.2		V		
V _{IH(D)}	High-level dynamic input voltage	2.31			V		
V _{IL(D)}	Low-level dynamic input voltage			0.99	V		

NOTE 5: Characteristics are for surface-mount packages only.

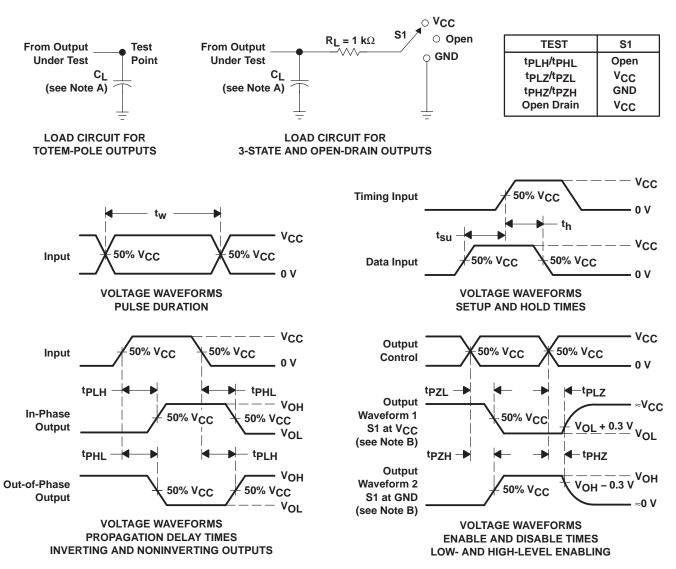


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operating characteristics, $T_A = 25^{\circ}C$

	PARAMETER	TEST CO	VCC	TYP	UNIT	
<u> </u>	Dower dissipation conscitance	C 50 pE	f _ 10 M⊔-	3.3 V	12.1	PΓ
Cpd	Power dissipation capacitance	$C_L = 50 \text{ pF},$	f = 10 MHz	5 V	13.1	pr

PARAMETER MEASUREMENT INFORMATION



NOTES: A. C_L 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, $Z_Q = 50 \Omega$, $t_f \leq 3$ ns, $t_f \leq 3$ ns.
- D. The outputs are measured one at a time, with one input transition per measurement.
- E. tpLZ and tpHZ are the same as tdis.
- F. tpzi and tpzH are the same as ten.
- G. tpHL and tpLH are the same as tpd.
- H. All parameters and waveforms are not applicable to all devices.

Figure 1. Load Circuit and Voltage Waveforms





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PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	e Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾
SN74LV157AD	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV157ADBR	ACTIVE	SSOP	DB	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV157ADBRE4	ACTIVE	SSOP	DB	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV157ADBRG4	ACTIVE	SSOP	DB	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV157ADE4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV157ADG4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV157ADGVR	ACTIVE	TVSOP	DGV	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV157ADGVRE4	ACTIVE	TVSOP	DGV	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV157ADGVRG4	ACTIVE	TVSOP	DGV	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV157ADR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV157ADRE4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV157ADRG4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV157ANSR	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV157ANSRE4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV157ANSRG4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV157APW	ACTIVE	TSSOP	PW	16	90	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV157APWE4	ACTIVE	TSSOP	PW	16	90	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV157APWG4	ACTIVE	TSSOP	PW	16	90	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV157APWR	ACTIVE	TSSOP	PW	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV157APWRE4	ACTIVE	TSSOP	PW	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LV157APWRG4	ACTIVE	TSSOP	PW	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM

(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.



PACKAGE OPTION ADDENDUM

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(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), 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.

Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

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)

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

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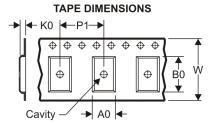
In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

PACKAGE MATERIALS INFORMATION

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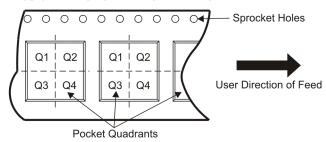
TAPE AND REEL INFORMATION





	Dimension designed to accommodate the component width
B0	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

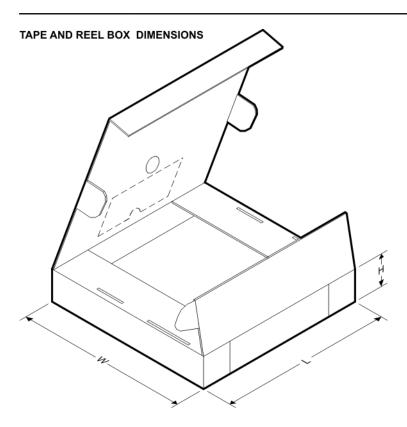
QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*All dimensions are nominal

"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
SN74LV157ADBR	SSOP	DB	16	2000	330.0	16.4	8.2	6.6	2.5	12.0	16.0	Q1
SN74LV157ADGVR	TVSOP	DGV	16	2000	330.0	12.4	6.8	4.0	1.6	8.0	12.0	Q1
SN74LV157ADR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1
SN74LV157ANSR	SO	NS	16	2000	330.0	16.4	8.2	10.5	2.5	12.0	16.0	Q1
SN74LV157APWR	TSSOP	PW	16	2000	330.0	12.4	6.9	5.6	1.6	8.0	12.0	Q1

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*All dimensions are nominal

7 til diffictioiono are nominal							
Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74LV157ADBR	SSOP	DB	16	2000	346.0	346.0	33.0
SN74LV157ADGVR	TVSOP	DGV	16	2000	346.0	346.0	29.0
SN74LV157ADR	SOIC	D	16	2500	333.2	345.9	28.6
SN74LV157ANSR	SO	NS	16	2000	346.0	346.0	33.0
SN74LV157APWR	TSSOP	PW	16	2000	346.0	346.0	29.0

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



D (R-PDSO-G16)

PLASTIC SMALL OUTLINE



- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- 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.
- 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.



PW (R-PDSO-G16)

PLASTIC SMALL OUTLINE

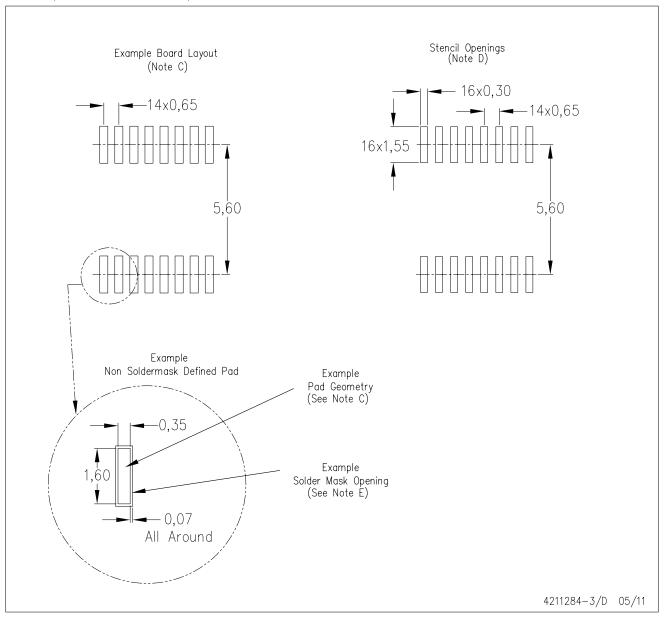


- A. All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M—1994.
- B. This drawing is subject to change without notice.
- Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0,15 each side.
- Body width does not include interlead flash. Interlead flash shall not exceed 0,25 each side.
- E. Falls within JEDEC MO-153



PW (R-PDSO-G16)

PLASTIC SMALL OUTLINE



- A. All linear dimensions are in millimeters.
- B. This drawing is subject to change without notice.
- C. Publication IPC-7351 is recommended for alternate designs.
- D. 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.
- E. Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.



MECHANICAL DATA

NS (R-PDSO-G**)

14-PINS SHOWN

PLASTIC SMALL-OUTLINE PACKAGE



- 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.



DB (R-PDSO-G**)

PLASTIC SMALL-OUTLINE

28 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.

D. Falls within JEDEC MO-150

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