

SN74LV157A クワッド、2ライン入力1ライン出力、データ・セクタ/マルチプレクサ

1 特長

- 2V~5.5V の V_{CC} で動作
- 5.5V までの入力電圧に対応
- 最大 t_{pd} 7.5ns (5V 時)
- 標準 V_{OLP} (出力グラウンド・バウンス) $< 0.8V$ ($V_{CC} = 3.3V$, $T_A = 25^\circ C$)
- 標準 V_{OHV} (出力 V_{OH} アンダーシュート) $> 2V$ (V_{CC} , $T_A = 25^\circ C$)
- JESD 78, Class II 準拠で 100mA 超のラッチアップ性能

2 アプリケーション

- サーバー
- LED ディスプレイ
- ネットワーク・スイッチ
- 通信インフラ
- モーター・ドライバ
- I/O エクスパンダ

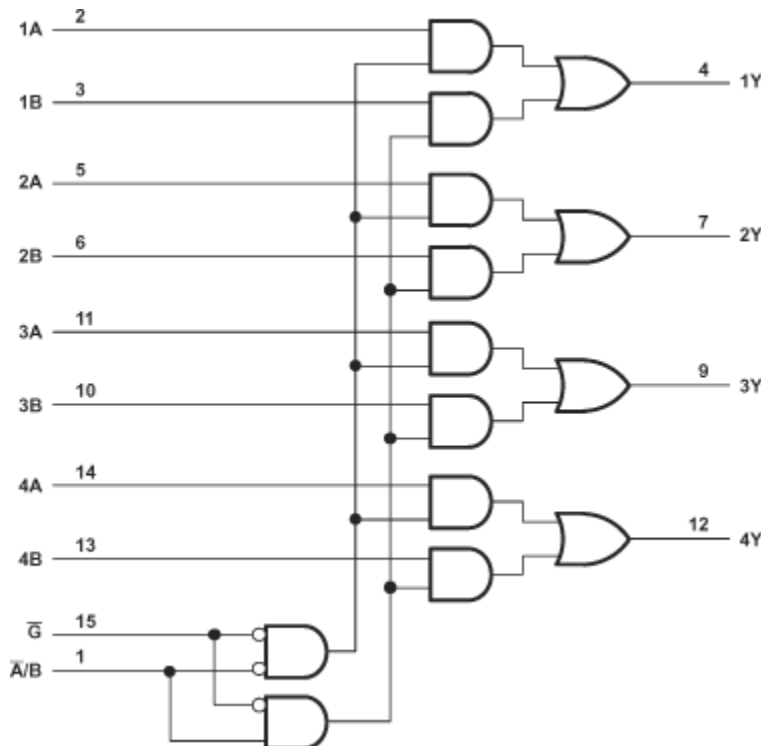
3 説明

LV157A デバイスは、2V~5.5V の V_{CC} で動作するよう設計されたクワッド、2ライン入力1ライン出力、データ・セクタ/マルチプレクサです。

パッケージ情報⁽¹⁾

部品番号	パッケージ	本体サイズ (公称)
SN74LV157A	DB (SSOP, 16)	6.2mm × 5.3mm
	DGV (TVSOP, 16)	3.6mm × 4.4mm
	DW (SOIC, 16)	10.3mm × 7.5mm
	NS (SOP, 16)	10.3mm × 5.3mm
	PW (TSSOP, 16)	5mm × 4.4mm

(1) 利用可能なすべてのパッケージについては、このデータシートの末尾にある注文情報を参照してください。



論理図 (正論理)



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4 Revision History

資料番号末尾の英字は改訂を表しています。その改訂履歴は英語版に準じています。

Changes from Revision F (April 1998) to Revision G (March 2023)	Page
<ul style="list-style-type: none"> 「アプリケーション」、「パッケージ情報」表、「ピンの機能」表、「ESD 定格」表、「熱に関する情報」表、「デバイスの機能モード」、「アプリケーションと実装」セクション、「電源に関する推奨事項」セクション、「レイアウト」セクション、「デバイスおよびドキュメントのサポート」セクション、および「メカニカル、パッケージ、および注文情報」セクションを追加 	1

5 Pin Configuration and Functions

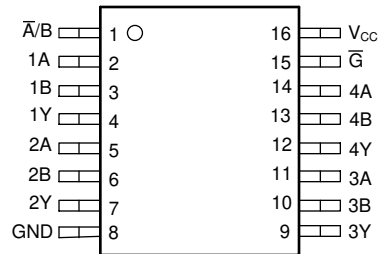


图 5-1. D, DB, DGV, NS, or PW Package (Top View)

表 5-1. Pin Functions

PIN		I/O ⁽¹⁾	DESCRIPTION
NO.	NAME		
1	\bar{A}/B	I	Address select
2	1A	I	Channel 1, data input A
3	1B	I	Channel 1, data input B
4	1Y	I	Channel 1, data output
5	2A	O	Channel 2, data input A
6	2B	O	Channel 2, data input B
7	2Y	I	Channel 2, data output
8	GND	—	Ground
9	3Y	I	Channel 3, data output
10	3B	I	Channel 3, data input B
11	3A	I	Channel 3, data input A
12	4Y	I	Channel 4, data output
13	4B	I	Channel 4, data input B
14	4A	I	Channel 4, data input A
15	\bar{G}	I	Output strobe, active low
16	V _{CC}	—	Positive supply

6 Specifications

6.1 Absolute Maximum Ratings

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

		MIN	MAX	UNIT
V _{CC}	Supply voltage	-0.5	7	V
V _I	Input voltage ¹	-0.5	7	V
V _O	Output voltage range applied in high or low state ^{1 (2)}	-0.5	V _{CC} + 0.5	V
V _O	Output voltage range applied in power-off state ¹	-0.5	7	V
I _{IK}	Input clamp current	V _I < 0	-20	mA
I _{OK}	Output clamp current	V _O < 0	-50	mA
I _O	Continuous output current	V _O = 0 to V _{CC}	±25	mA
	Continuous current through V _{CC} or GND		±50	mA
T _{stg}	Storage temperature	-65	150	°C

(1) This value is limited to 5.5 V maximum.

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
V _(ESD)	Electrostatic discharge	Human-Body Model (A114-A) ⁽¹⁾	V
		Machine Model (A115-A)	
		Charged-Device Model (C101) ⁽²⁾	

(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.

6.3 Recommended Operating Conditions

			MIN	MAX	UNIT
V _{CC}	Supply voltage		2	5.5	V
V _{IH}	High-level input voltage	V _{CC} = 2 V	1.5		V
		V _{CC} = 2.3 V to 2.7 V	$V_{CC} \times 0.7$		
		V _{CC} = 3 V to 3.6 V	$V_{CC} \times 0.7$		
		V _{CC} = 4.5 V to 5.5 V	$V_{CC} \times 0.7$		
V _{IL}	Low-level input voltage	V _{CC} = 2 V		0.5	V
		V _{CC} = 2.3 V to 2.7 V		$V_{CC} \times 0.3$	
		V _{CC} = 3 V to 3.6 V		$V_{CC} \times 0.3$	
		V _{CC} = 4.5 V to 5.5 V		$V_{CC} \times 0.3$	
V _I	Input voltage		0	5.5	V
V _O	Output voltage		0	V _{CC}	V
I _{OH}	High-level output current	V _{CC} = 2 V		-50	μA
		V _{CC} = 2.3 V to 2.7 V		-2	mA
		V _{CC} = 3 V to 3.6 V		6	
		V _{CC} = 4.5 V to 5.5 V		-12	
I _{OL}	Low-level output current	V _{CC} = 2 V		50	
		V _{CC} = 2.3 V to 2.7 V		2	mA
		V _{CC} = 3 V to 3.6 V		6	
		V _{CC} = 4.5 V to 5.5 V		12	
Δt/Δv	Input transition rise or fall rate	V _{CC} = 2.3 V to 2.7 V	0	200	
		V _{CC} = 3 V to 3.6 V	0	100	
		V _{CC} = 4.5 V to 5.5 V	0	20	
T _A	Operating free-air temperature		-40	85	°C

6.4 Thermal Information

THERMAL METRIC ⁽¹⁾		SN74LV157A					UNIT
		D	DB	DGV	NS	PW	
		16 PINS	16 PINS	16 PINS	16 PINS	16 PINS	
R _{θJA}	Junction-to-ambient thermal resistance	73	82	120	64	108	°C/W

(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)

PARAMETER	TEST CONDITIONS	V _{CC}	MIN	TYP	MAX	UNIT
V _{OH}	I _{OH} = -50 μA	2 V to 5.5 V	V _{CC} -0.1			V
	I _{OH} = -2 mA	2.3 V	2			
	I _{OH} = -6 mA	3 V	2.48			
	I _{OH} = -12 mA	4.5 V	3.8			

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

PARAMETER	TEST CONDITIONS	V_{CC}	MIN	TYP	MAX	UNIT
V_{OL}	$I_{OL} = 50 \mu A$	2 V to 5.5 V			0.1	V
	$I_{OL} = 2 \text{ mA}$	2.3 V			0.4	
	$I_{OL} = 6 \text{ mA}$	3 V			0.44	
	$I_{OL} = 12 \text{ mA}$	4.5 V			0.55	
I_I	$V_I = 5.5 \text{ V}$ or GND	0 to 5.5 V			± 1	μA
I_{CC}	$V_I = V_{CC}$ or GND, $I_O = 0$	5.5 V			20	μA
I_{off}	V_I or $V_O = 0$ to 5.5 V	0			5	μA
C_i	$V_I = V_{CC}$ or GND	3.3 V		1.7		pF

6.6 Switching Characteristics, $V_{CC} = 2.5 \text{ V} \pm 0.2 \text{ V}$

over recommended operating free-air temperature range, $V_{CC} = 2.5 \text{ V} \pm 0.2 \text{ V}$ (unless otherwise noted) (see [Load Circuit and Voltage Waveforms](#))

PARAMETER	FROM (INPUT)	TO (OUTPUT)	LOAD CAPACITANCE	TA = 25°C			SN74LV157A		UNIT
				MIN	TYP	MAX	MIN	MAX	
t_{pd}	A or B	Y	$C_L = 15 \text{ pF}$		7.4 ¹	15.9 ¹	1	19.5	ns
	\bar{A}/B	Y			7.9 ¹	19.4 ¹	1	23.5	
	\bar{C}	Y			7.8 ¹	19.8 ¹	1	24	
t_{pd}	A or B	Y	$C_L = 50 \text{ pF}$		9.4	18.8	1	22	ns
	\bar{A}	Y			10.8	22.3	1	26	
	\bar{C}	Y			9.6	22.7	1	26.5	

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, $V_{CC} = 3.3 \text{ V} \pm 0.3 \text{ V}$ (unless otherwise noted) (see [Load Circuit and Voltage Waveforms](#))

PARAMETER	FROM (INPUT)	TO (OUTPUT)	LOAD CAPACITANCE	TA = 25°C			SN74LV157A		UNIT
				MIN	TYP	MAX	MIN	MAX	
t_{pd}	A or B	Y	$C_L = 15 \text{ pF}$		5.2 ¹	9.7 ¹	1	11.5	ns
	\bar{A}/B	Y			5.8 ¹	13.2 ¹	1	15.5	
	\bar{C}	Y			5.5 ¹	13.6 ¹	1	16	
t_{pd}	A or B	Y	$C_L = 50 \text{ pF}$		6.7	13.2	1	15	ns
	\bar{A}	Y			7.6	16.7	1	19	
	\bar{C}	Y			7	17.1	1	19.5	

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

6.8 Switching Characteristics, $V_{CC} = 5 \text{ V} \pm 0.5 \text{ V}$

over recommended operating free-air temperature range, $V_{CC} = 5 \text{ V} \pm 0.5 \text{ V}$ (unless otherwise noted) (see [Load Circuit and Voltage Waveforms](#))

PARAMETER	FROM (INPUT)	TO (OUTPUT)	LOAD CAPACITANCE	TA = 25°C			SN74LV157A		UNIT
				MIN	TYP	MAX	MIN	MAX	
t_{pd}	A or B	Y	$C_L = 15 \text{ pF}$		3.6 ¹	6.4 ¹	1	7.5	ns
	\bar{A}/B	Y			4.1 ¹	8.1 ¹	1	9.5	
	\bar{C}	Y			3.8 ¹	8.6 ¹	1	10	

over recommended operating free-air temperature range, $V_{CC} = 5\text{ V} \pm 0.5\text{ V}$ (unless otherwise noted) (see [Load Circuit and Voltage Waveforms](#))

PARAMETER	FROM (INPUT)	TO (OUTPUT)	LOAD CAPACITANCE	TA = 25°C			SN74LV157A		UNIT
				MIN	TYP	MAX	MIN	MAX	
t _{pd}	A or B	Y	C _L = 50 pF		4.8	8.4	1	9.5	ns
	\bar{A}	Y			5.4	10.1	1	11.5	
	\bar{B}	Y			5	10.6	1	12	

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

6.9 Noise Characteristics

$V_{CC} = 3.3\text{ V}$, $C_L = 50\text{ pF}$, $T_A = 25^\circ\text{C}$ ⁽¹⁾

PARAMETER		MIN	TYP	MAX	UNIT
V _{OL(P)}	Quiet output, maximum dynamic V _{OL}		0.3	0.8	V
V _{OL(V)}	Quiet output, minimum dynamic V _{OL}		-0.1	-0.8	V
V _{OH(V)}	Quiet output, minimum dynamic V _{OH}		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

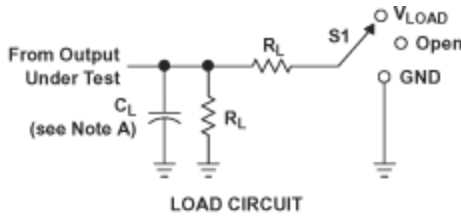
(1) Characteristics are for surface-mount packages only.

6.10 Operating Characteristics

T_A = 25°C

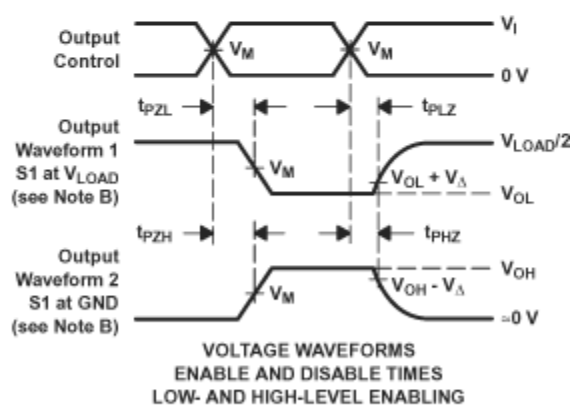
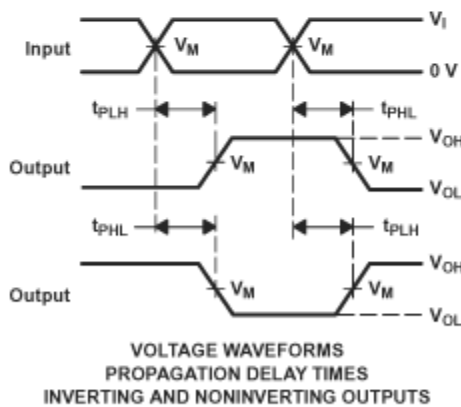
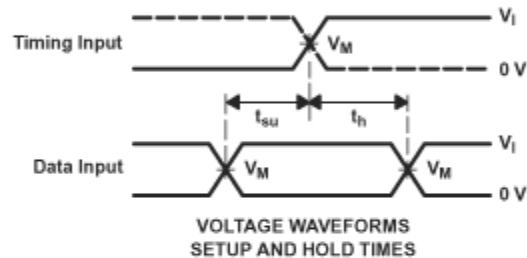
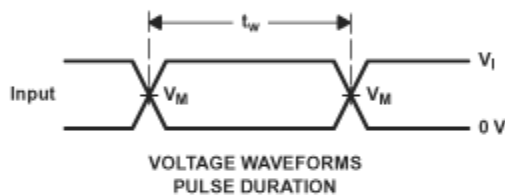
PARAMETER		TEST CONDITIONS		V _{CC}	TYP	UNIT
C _{pd}	Power dissipation capacitance	C _L = 50 pF	f = 10 MHz	3.3 V 5 V	12.1 13.1	pF

7 Parameter Measurement Information



TEST	S1
t_{PLH}/t_{PHL}	Open
t_{PLZ}/t_{PZL}	V_{LOAD}
t_{PHZ}/t_{PZH}	GND

V_{CC}	INPUTS		V_M	V_{LOAD}	C_L	R_L	V_{Δ}
	V_I	t_r/t_f					
2.7 V	2.7 V	≤ 2.5 ns	1.5 V	6 V	50 pF	500 Ω	0.3 V
$3.3 V \pm 0.3 V$	2.7 V	≤ 2.5 ns	1.5 V	6 V	50 pF	500 Ω	0.3 V



- 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 ≤ 10 MHz, $Z_O = 50 \Omega$.
 D. The outputs are measured one at a time, with one transition per measurement.
 E. t_{PLZ} and t_{PHZ} are the same as t_{dS} .
 F. t_{PZL} and t_{PZH} are the same as t_{dS} .
 G. t_{PLH} and t_{PHL} are the same as t_{pd} .
 H. All parameters and waveforms are not applicable to all devices.

8 Detailed Description

8.1 Overview

The 'LV157A devices contain inverters and drivers to supply full data selection to the four output gates. A separate strobe (\bar{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.

8.2 Functional Block Diagram

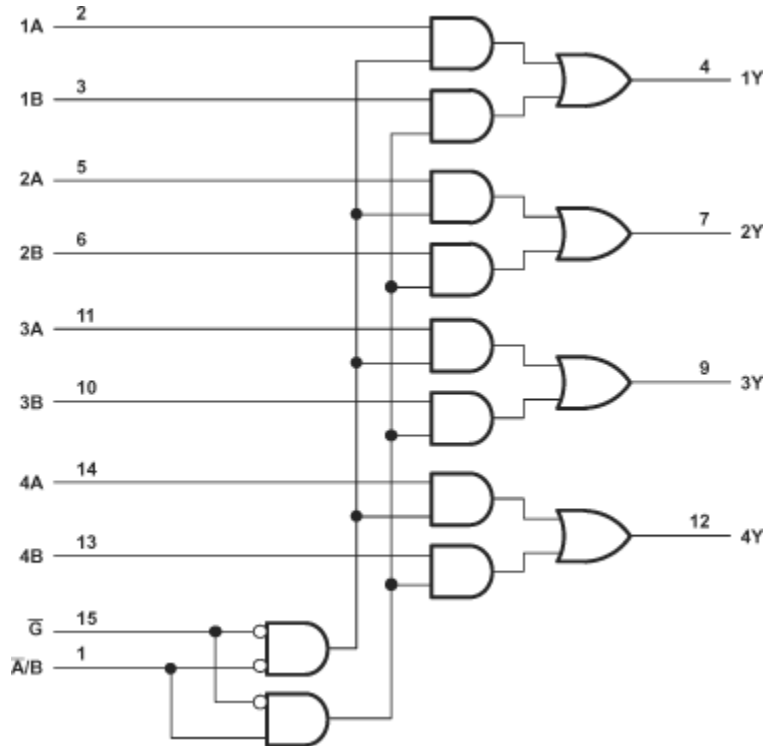


图 8-1. Logic Diagram (Positive Logic)

8.3 Device Functional Modes

表 8-1. Function Table

INPUTS ⁽¹⁾		DATA		OUTPUT Y
\bar{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

(1) H = High Voltage Level, L = Low Voltage Level, X = Do not Care, Z = High Impedance

9 Application and Implementation

注

以下のアプリケーション情報は、TI の製品仕様に含まれるものではなく、TI ではその正確性または完全性を保証いたしません。個々の目的に対する製品の適合性については、お客様の責任で判断していただくこととなります。お客様は自身の設計実装を検証しテストすることで、システムの機能を確認する必要があります。

9.1 Power Supply Recommendations

The power supply can be any voltage between the min and max supply voltage rating located in [セクション 6.3](#).

Each V_{CC} terminal should have a good bypass capacitor to prevent power disturbance. For devices with a single supply, a 0.1 μF capacitor is recommended. If there are multiple V_{CC} terminals then 0.01 μF or 0.022 μF capacitors are recommended for each power terminal. It is ok to parallel multiple bypass capacitors to reject different frequencies of noise. 0.1 μF and 1.0 μF capacitors are commonly used in parallel. The bypass capacitor should be installed as close to the power terminal as possible for the best results.

9.2 Layout

9.2.1 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 unused input pins must not be left unconnected because the undefined voltages at the outside connections result in undefined operational states. All unused inputs of digital logic devices must be connected to a logic high or logic low voltage, as defined by the input voltage specifications, to prevent them from floating. The logic level that must be applied to any particular unused input depends on the function of the device. Generally, the inputs are tied to GND or V_{CC} , whichever makes more sense for the logic function or is more convenient.

9.2.1.1 Layout Example

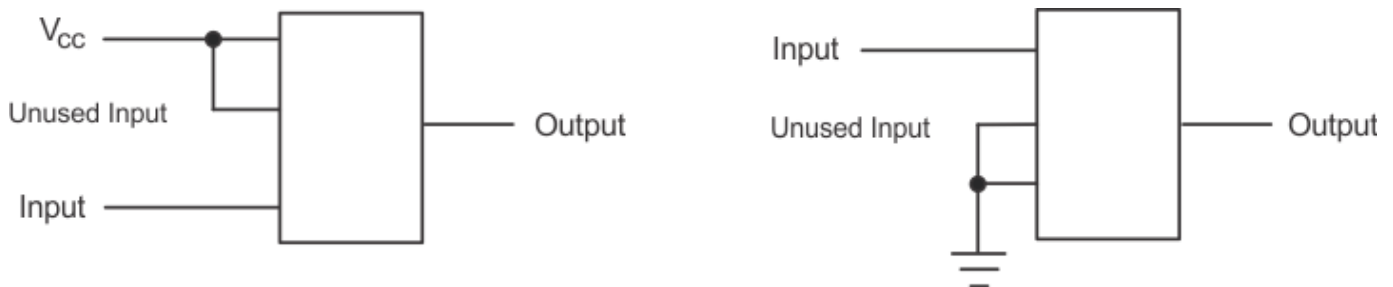


図 9-1. Layout Diagram

10 Device and Documentation Support

10.1 Documentation Support

10.1.1 Related Documentation

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.

表 10-1. Related Links

PARTS	PRODUCT FOLDER	SAMPLE & BUY	TECHNICAL DOCUMENTS	TOOLS & SOFTWARE	SUPPORT & COMMUNITY
SN74LV157A	Click here	Click here	Click here	Click here	Click here

10.2 ドキュメントの更新通知を受け取る方法

ドキュメントの更新についての通知を受け取るには、[ti.com](#) のデバイス製品フォルダを開いてください。「更新の通知を受け取る」をクリックして登録すると、変更されたすべての製品情報に関するダイジェストを毎週受け取れます。変更の詳細については、修正されたドキュメントに含まれている改訂履歴をご覧ください。

10.3 サポート・リソース

[TI E2E™ サポート・フォーラム](#)は、エンジニアが検証済みの回答と設計に関するヒントをエキスパートから迅速かつ直接得ることができる場所です。既存の回答を検索したり、独自の質問をしたりすることで、設計に必要な支援を迅速に得ることができます。

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Trademarks

TI E2E™ is a trademark of Texas Instruments.

すべての商標は、それぞれの所有者に帰属します。

10.4 静電気放電に関する注意事項



この IC は、ESD によって破損する可能性があります。テキサス・インスツルメンツは、IC を取り扱う際には常に適切な注意を払うことを推奨します。正しい取り扱いおよび設置手順に従わない場合、デバイスを破損するおそれがあります。

ESD による破損は、わずかな性能低下からデバイスの完全な故障まで多岐にわたります。精密な IC の場合、パラメータがわずかに変化するだけで公表されている仕様から外れる可能性があるため、破損が発生しやすくなっています。

10.5 用語集

[テキサス・インスツルメンツ用語集](#) この用語集には、用語や略語の一覧および定義が記載されています。

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.

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
SN74LV157ADBR	ACTIVE	SSOP	DB	16	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	LV157A	Samples
SN74LV157ADGVR	ACTIVE	TVSOP	DGV	16	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	LV157A	Samples
SN74LV157ADR	ACTIVE	SOIC	D	16	2500	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	LV157A	Samples
SN74LV157ANSR	ACTIVE	SO	NS	16	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	74LV157A	Samples
SN74LV157APWR	ACTIVE	TSSOP	PW	16	2000	RoHS & Green	NIPDAU SN	Level-1-260C-UNLIM	-40 to 85	LV157A	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.

OBSELETE: 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.

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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
SN74LV157ADBR	SSOP	DB	16	2000	330.0	16.4	8.35	6.6	2.4	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	12.4	3.75	3.75	1.15	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
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
SN74LV157APWR	TSSOP	PW	16	2000	330.0	12.4	6.9	5.6	1.6	8.0	12.0	Q1
SN74LV157APWR	TSSOP	PW	16	2000	330.0	12.4	6.85	5.45	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)
SN74LV157ADBR	SSOP	DB	16	2000	356.0	356.0	35.0
SN74LV157ADGVR	TVSOP	DGV	16	2000	356.0	356.0	35.0
SN74LV157ADR	SOIC	D	16	2500	340.5	336.1	32.0
SN74LV157ADR	SOIC	D	16	2500	356.0	356.0	35.0
SN74LV157ADR	SOIC	D	16	2500	340.5	336.1	32.0
SN74LV157ANSR	SO	NS	16	2000	356.0	356.0	35.0
SN74LV157APWR	TSSOP	PW	16	2000	356.0	356.0	35.0
SN74LV157APWR	TSSOP	PW	16	2000	356.0	356.0	35.0
SN74LV157APWR	TSSOP	PW	16	2000	366.0	364.0	50.0



PACKAGE OUTLINE

NS0016A

SOP - 2.00 mm max height

SOP



4220735/A 12/2021

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 0.25 mm, per side.

EXAMPLE BOARD LAYOUT

NS0016A

SOP - 2.00 mm max height

SOP



SOLDER MASK DETAILS

4220735/A 12/2021

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

NS0016A

SOP - 2.00 mm max height

SOP



SOLDER PASTE EXAMPLE
BASED ON 0.125 mm THICK STENCIL
SCALE:7X

4220735/A 12/2021

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.

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.



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:

- All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
- This drawing is subject to change without notice.
- 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.
- Reference JEDEC registration MO-150.

EXAMPLE BOARD LAYOUT

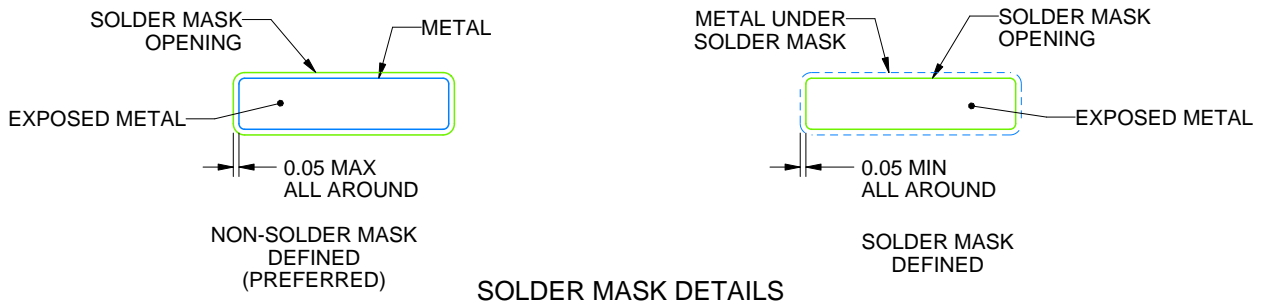
DB0016A

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.

MECHANICAL DATA

NS (R-PDSO-G**)

PLASTIC SMALL-OUTLINE PACKAGE

14-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.

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

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