

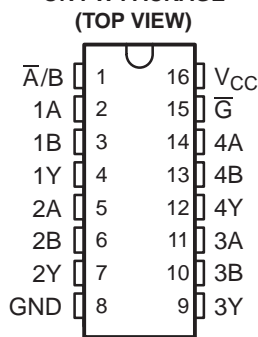
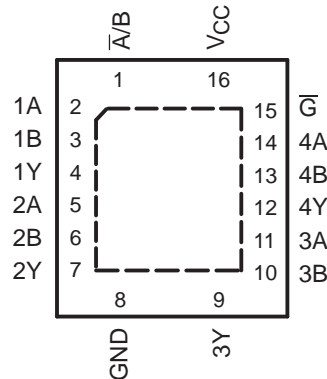
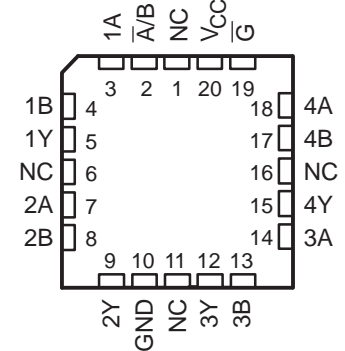


## QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS

 Check for Samples: [SN54LVC157A](#), [SN74LVC157A](#)

### FEATURES

- Operate From 1.65 V to 3.6 V
- Specified From  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$ ,  $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ , and  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$
- Inputs Accept Voltages to 5.5 V
- Max  $t_{pd}$  of 5.2 ns at 3.3 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)  $> 2\text{ V}$  at  $V_{CC} = 3.3\text{ V}$ ,  $T_A = 25^{\circ}\text{C}$
- Latch-Up Performance Exceeds 250 mA Per JESD 17
- ESD Protection Exceeds JESD 22
  - 2000-V Human-Body Model (A114-A)
  - 200-V Machine Model (A115-A)
  - 1000-V Charged-Device Model (C101)

 SN54LVC157A... J OR W PACKAGE  
 SN74LVC157A... D, DB, NS,  
 OR PW PACKAGE  
 (TOP VIEW)

 SN74LVC157A... RGY PACKAGE  
 (TOP VIEW)

 SN54LVC157A... FK PACKAGE  
 (TOP VIEW)


NC - No internal connection

### DESCRIPTION/ORDERING INFORMATION

These quadruple 2-line to 1-line data selectors/multiplexers are designed for 1.65-V to 3.6-V  $V_{CC}$  operation.

The 'LVC157A devices feature a common strobe ( $\overline{G}$ ) input. When  $\overline{G}$  is high, all outputs are low. When  $\overline{G}$  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.



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.

**ORDERING INFORMATION**

T <sub>A</sub>	PACKAGE <sup>(1)</sup>		ORDERABLE PART NUMBER	TOP-SIDE MARKING
-40°C to 85°C	QFN – RGY	Reel of 1000	SN74LVC157ARGYR	LC157A
-40°C to 125°C	SOIC – D	Tube of 40	SN74LVC157AD	LVC157A
		Reel of 2500	SN74LVC157ADRG3	
		Reel of 250	SN74LVC157ADT	
	SOP – NS	Reel of 2000	SN74LVC157ANSR	LVC157A
	SSOP – DB	Reel of 2000	SN74LVC157ADBR	LC157A
	TSSOP – PW	Tube of 90	SN74LVC157APW	LC157A
		Reel of 2000	SN74LVC157APWR	
Reel of 250		SN74LVC157APWT		
-55°C to 125°C	CDIP – J	Tube of 25	SNJ54LVC157AJ	SNJ54LVC157AJ
	CFP – W	Tube of 150	SNJ54LVC157AW	SNJ54LVC157AW
	LCCC – FK	Tube of 55	SNJ54LVC157AFK	SNJ54LVC157AFK

(1) 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).

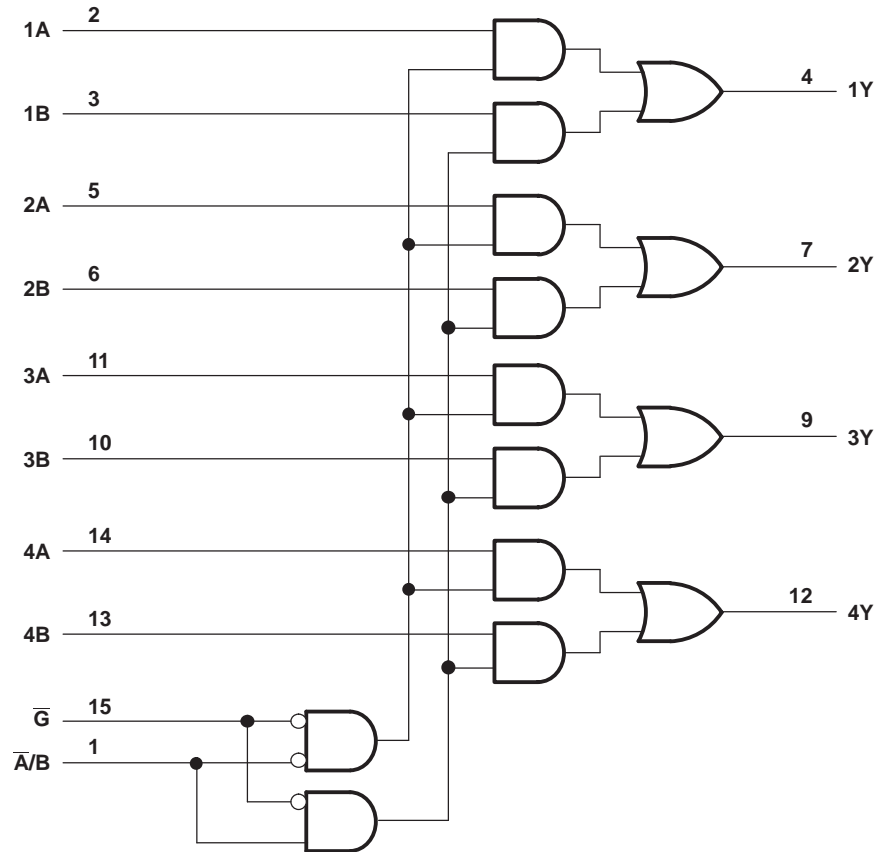
**DESCRIPTION/ORDERING INFORMATION (CONTINUED)**

Inputs can be driven from either 3.3-V or 5-V devices. This feature allows the use of these devices as translators in a mixed 3.3-V/5-V system environment.

**FUNCTION TABLE**

INPUTS				OUTPUT
$\bar{G}$	$\bar{A}/B$	A	B	Y
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

LOGIC DIAGRAM (POSITIVE LOGIC)



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

### Absolute Maximum Ratings<sup>(1)</sup>

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

		MIN	MAX	UNIT
V <sub>CC</sub>	Supply voltage range	-0.5	6.5	V
V <sub>I</sub>	Input voltage range <sup>(2)</sup>	-0.5	6.5	V
V <sub>O</sub>	Output voltage range <sup>(2) (3)</sup>	-0.5	V <sub>CC</sub> + 0.5	V
I <sub>IK</sub>	Input clamp current	V <sub>I</sub> < 0		-50 mA
I <sub>OK</sub>	Output clamp current	V <sub>O</sub> < 0		-50 mA
I <sub>O</sub>	Continuous output current			±50 mA
Continuous current through V <sub>CC</sub> or GND				±100 mA
θ <sub>JA</sub>	Package thermal impedance	D package <sup>(4)</sup>		73
		DB package <sup>(4)</sup>		82
		NS package <sup>(4)</sup>		64
		PW package <sup>(4)</sup>		108
		RGY package <sup>(5)</sup>		39
T <sub>stg</sub>	Storage temperature range	-65	150	°C
P <sub>tot</sub>	Power dissipation <sup>(6) (7)</sup>	T <sub>A</sub> = -40°C to 125°C		500 mW

- (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 negative-voltage ratings may be exceeded if the input and output current ratings are observed.
- (3) The value of V<sub>CC</sub> is provided in the recommended operating conditions table.
- (4) The package thermal impedance is calculated in accordance with JESD 51-7.
- (5) The package thermal impedance is calculated in accordance with JESD 51-5.
- (6) For the D package, above 70°C the value of P<sub>tot</sub> derates linearly with 8 mW/K.
- (7) For the DB, NS, and PW packages, above 60°C the value of P<sub>tot</sub> derates linearly with 5.5 mW/K.

### Recommended Operating Conditions<sup>(1)</sup>

		SN54LVC157A		UNIT
		-55 TO 125°C		
		MIN	MAX	
V <sub>CC</sub>	Supply voltage	Operating		2 3.6
		Data retention only		1.5
V <sub>IH</sub>	High-level input voltage	V <sub>CC</sub> = 2.7 V to 3.6 V		2 V
V <sub>IL</sub>	Low-level input voltage	V <sub>CC</sub> = 2.7 V to 3.6 V		0.8 V
V <sub>I</sub>	Input voltage	0	5.5	V
V <sub>O</sub>	Output voltage	0	V <sub>CC</sub>	V
I <sub>OH</sub>	High-level output current	V <sub>CC</sub> = 2.7 V		-12 mA
		V <sub>CC</sub> = 3 V		-24
I <sub>OL</sub>	Low-level output current	V <sub>CC</sub> = 2.7 V		12 mA
		V <sub>CC</sub> = 3 V		24

- (1) 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.

**Recommended Operating Conditions<sup>(1)</sup>**

		SN74LVC157A						UNIT	
		T <sub>A</sub> = 25°C		–40 TO 85°C		–40 TO 125°C			
		MIN	MAX	MIN	MAX	MIN	MAX		
V <sub>CC</sub>	Supply voltage	Operating	1.65	3.6	1.65	3.6	1.65	3.6	V
		Data retention only	1.5		1.5		1.5		
V <sub>IH</sub>	High-level input voltage	V <sub>CC</sub> = 1.65 V to 1.95 V	0.65 × V <sub>CC</sub>		0.65 × V <sub>CC</sub>		0.65 × V <sub>CC</sub>		V
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.7		1.7		1.7		
		V <sub>CC</sub> = 2.7 V to 3.6 V	2		2		2		
V <sub>IL</sub>	Low-level input voltage	V <sub>CC</sub> = 1.65 V to 1.95 V	0.35 × V <sub>CC</sub>		0.35 × V <sub>CC</sub>		0.35 × V <sub>CC</sub>		V
		V <sub>CC</sub> = 2.3 V to 2.7 V	0.7		0.7		0.7		
		V <sub>CC</sub> = 2.7 V to 3.6 V	0.8		0.8		0.8		
V <sub>I</sub>	Input voltage	0	5.5	0	5.5	0	5.5	V	
V <sub>O</sub>	Output voltage	0	V <sub>CC</sub>	0	V <sub>CC</sub>	0	V <sub>CC</sub>	V	
I <sub>OH</sub>	High-level output current	V <sub>CC</sub> = 1.65 V	–4		–4		–4		mA
		V <sub>CC</sub> = 2.3 V	–8		–8		–8		
		V <sub>CC</sub> = 2.7 V	–12		–12		–12		
		V <sub>CC</sub> = 3 V	–24		–24		–24		
I <sub>OL</sub>	Low-level output current	V <sub>CC</sub> = 1.65 V	4		4		4		mA
		V <sub>CC</sub> = 2.3 V	8		8		8		
		V <sub>CC</sub> = 2.7 V	12		12		12		
		V <sub>CC</sub> = 3 V	24		24		24		
Δt/Δv	Input transition rise or fall rate		10		10		10	ns/V	

(1) 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>	SN54LVC157A		UNIT
			–55 TO 125°C		
			MIN	MAX	
V <sub>OH</sub>	I <sub>OH</sub> = –100 μA	2.7 V to 3.6 V	V <sub>CC</sub> – 0.2		V
	I <sub>OH</sub> = –12 mA	2.7 V	2.2		
		3 V	2.4		
	I <sub>OH</sub> = –24 mA	3 V	2.2		
V <sub>OL</sub>	I <sub>OL</sub> = 100 μA	2.7 V to 3.6 V	0.2		V
	I <sub>OL</sub> = 12 mA	2.7 V	0.4		
	I <sub>OL</sub> = 24 mA	3 V	0.55		
I <sub>I</sub>	All inputs V <sub>I</sub> = 5.5 V or GND	3.6 V	±5		μA
I <sub>CC</sub>	V <sub>I</sub> = V <sub>CC</sub> or GND I <sub>O</sub> = 0	3.6 V	10		μA
ΔI <sub>CC</sub>	One input at V <sub>CC</sub> – 0.6 V, Other inputs at V <sub>CC</sub> or GND	2.7 V to 3.6 V	500		μA

### Electrical Characteristics

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

PARAMETER	TEST CONDITIONS	V <sub>CC</sub>	SN74LVC157A						UNIT			
			T <sub>A</sub> = 25°C			–40 TO 85°C		–40 TO 125°C				
			MIN	TYP	MAX	MIN	MAX	MIN		MAX		
V <sub>OH</sub>	I <sub>OH</sub> = –100 μA	1.65 V to 3.6 V	V <sub>CC</sub> – 0.2			V <sub>CC</sub> – 0.2		V <sub>CC</sub> – 0.3		V		
	I <sub>OH</sub> = –4 mA	1.65 V	1.29			1.2		1.05				
	I <sub>OH</sub> = –8 mA	2.3 V	1.9			1.7		1.55				
	I <sub>OH</sub> = –12 mA	2.7 V	2.2			2.2		2.05				
		3 V	2.4			2.4		2.25				
I <sub>OH</sub> = –24 mA	3 V	2.3			2.2		2					
V <sub>OL</sub>	I <sub>OL</sub> = 100 μA	1.65 V to 3.6 V	0.1			0.2		0.3		V		
	I <sub>OL</sub> = 4 mA	1.65 V	0.24			0.45		0.6				
	I <sub>OL</sub> = 8 mA	2.3 V	0.3			0.7		0.75				
	I <sub>OL</sub> = 12 mA	2.7 V	0.4			0.4		0.6				
	I <sub>OL</sub> = 24 mA	3 V	0.55			0.55		0.8				
I <sub>I</sub>	All inputs	V <sub>I</sub> = 5.5 V or GND	3.6 V			±1		±5		±20	μA	
I <sub>CC</sub>	V <sub>I</sub> = V <sub>CC</sub> or GND	I <sub>O</sub> = 0	3.6 V			1		10		40		μA
ΔI <sub>CC</sub>	One input at V <sub>CC</sub> – 0.6 V, Other inputs at V <sub>CC</sub> or GND		2.7 V to 3.6 V			500		500		5000		μA
C <sub>i</sub>	V <sub>I</sub> = V <sub>CC</sub> or GND		3.3 V			5						pF

### Switching Characteristics

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

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V <sub>CC</sub>	SN54LVC157A		UNIT
				–55 TO 125°C		
				MIN	MAX	
t <sub>pd</sub>	A or B	Y	2.7 V	6.2		ns
			3.3 V ± 0.3 V	0.8	5.4	
	A̅/B		2.7 V	8.2		
			3.3 V ± 0.3 V	0.8	7	
	G̅		2.7 V	7.8		
			3.3 V ± 0.3 V	0.8	6.5	

## Switching Characteristics

 over recommended operating free-air temperature range (unless otherwise noted) (see [Figure 1](#))

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V <sub>CC</sub>	SN74LVC157A						UNIT	
				T <sub>A</sub> = 25°C			–40 TO 85°C		–40 TO 125°C		
				MIN	TYP	MAX	MIN	MAX	MIN		MAX
t <sub>pd</sub>	A or B	Y	1.8 V ± 0.15 V	1	5.5	13.5	1	14	1	15.5	ns
			2.5 V ± 0.2 V	1	3.2	7.4	1	7.9	1	10	
			2.7 V	1	3.6	5.7	1	5.9	1	7.4	
			3.3 V ± 0.3 V	1	3	5	1	5.2	1	6.4	
	A/B		1.8 V ± 0.15 V	1	6	15.5	1	16	1	17.5	
			2.5 V ± 0.2 V	1	3.7	9.6	1	10.1	1	12.2	
			2.7 V	1	4.1	7.9	1	8.1	1	10	
			3.3 V ± 0.3 V	1	3.4	6.6	1	6.8	1	8.4	
	G		1.8 V ± 0.15 V	1	5.9	13.5	1	14	1	15.5	
			2.5 V ± 0.2 V	1	3.5	9.3	1	9.8	1	11.9	
			2.7 V	1	3.9	7.6	1	7.8	1	9.3	
			3.3 V ± 0.3 V	1	3.3	6.3	1	6.5	1	7.9	
t <sub>sk(o)</sub>			1.8 V ± 0.15 V					2	2.5	ns	
			3.3 V ± 0.3 V					1	1.5		

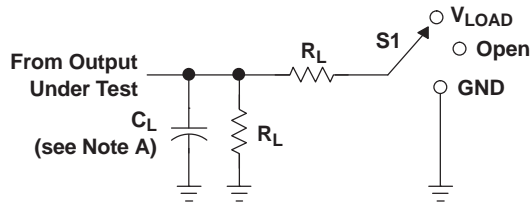
## Operating Characteristics

 T<sub>A</sub> = 25°C

PARAMETER		TEST CONDITIONS	V <sub>CC</sub>	TYP	UNIT
C <sub>pd</sub>	Power dissipation capacitance	f = 10 MHz	1.8 V	14 <sup>(1)</sup>	pF
			2.5 V	15 <sup>(1)</sup>	
			3.3 V	16	

(1) On products compliant to MIL-PRF-38535, this parameter does not apply.

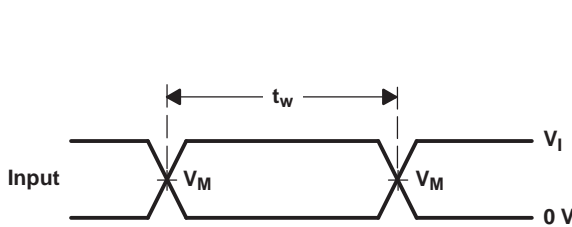
PARAMETER MEASUREMENT INFORMATION



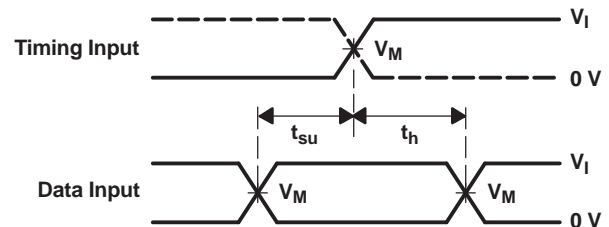
TEST	S1
$t_{PLH}/t_{PHL}$	Open
$t_{PLZ}/t_{PZL}$	$V_{LOAD}$
$t_{PHZ}/t_{PZH}$	GND

LOAD CIRCUIT

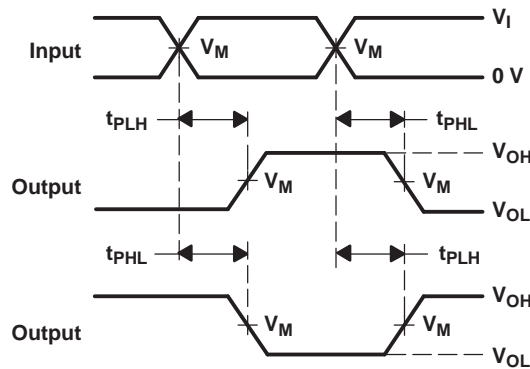
$V_{CC}$	INPUTS		$V_M$	$V_{LOAD}$	$C_L$	$R_L$	$V_{\Delta}$
	$V_I$	$t_r/t_f$					
$1.8\text{ V} \pm 0.15\text{ V}$	$V_{CC}$	$\leq 2\text{ ns}$	$V_{CC}/2$	$2 \times V_{CC}$	30 pF	1 k $\Omega$	0.15 V
$2.5\text{ V} \pm 0.2\text{ V}$	$V_{CC}$	$\leq 2\text{ ns}$	$V_{CC}/2$	$2 \times V_{CC}$	30 pF	500 $\Omega$	0.15 V
2.7 V	2.7 V	$\leq 2.5\text{ ns}$	1.5 V	6 V	50 pF	500 $\Omega$	0.3 V
$3.3\text{ V} \pm 0.3\text{ V}$	2.7 V	$\leq 2.5\text{ ns}$	1.5 V	6 V	50 pF	500 $\Omega$	0.3 V



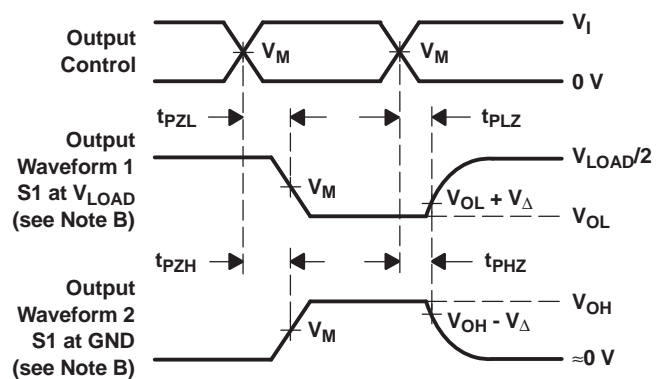
VOLTAGE WAVEFORMS PULSE DURATION



VOLTAGE WAVEFORMS SETUP AND HOLD TIMES



VOLTAGE WAVEFORMS PROPAGATION DELAY TIMES INVERTING AND NONINVERTING OUTPUTS



VOLTAGE WAVEFORMS ENABLE AND DISABLE TIMES LOW- AND HIGH-LEVEL ENABLING

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

Figure 1. Load Circuit and Voltage Waveforms

**PACKAGING INFORMATION**

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
5962-0050601QEA	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type	-55 to 125	5962-0050601QE A SNJ54LVC157AJ	<a href="#">Samples</a>
5962-0050601QFA	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type	-55 to 125	5962-0050601QF A SNJ54LVC157AW	<a href="#">Samples</a>
SN74LVC157AD	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	LVC157A	<a href="#">Samples</a>
SN74LVC157ADBR	ACTIVE	SSOP	DB	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	LC157A	<a href="#">Samples</a>
SN74LVC157ADE4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	LVC157A	<a href="#">Samples</a>
SN74LVC157ADG4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	LVC157A	<a href="#">Samples</a>
SN74LVC157ADR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU   CU SN	Level-1-260C-UNLIM	-40 to 125	LVC157A	<a href="#">Samples</a>
SN74LVC157ADRE4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	LVC157A	<a href="#">Samples</a>
SN74LVC157ADRG3	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU SN	Level-1-260C-UNLIM	-40 to 125	LVC157A	<a href="#">Samples</a>
SN74LVC157ADRG4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	LVC157A	<a href="#">Samples</a>
SN74LVC157ADT	ACTIVE	SOIC	D	16	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	LVC157A	<a href="#">Samples</a>
SN74LVC157ANSR	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	LVC157A	<a href="#">Samples</a>
SN74LVC157ANSRE4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	LVC157A	<a href="#">Samples</a>
SN74LVC157APW	ACTIVE	TSSOP	PW	16	90	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	LC157A	<a href="#">Samples</a>
SN74LVC157APWE4	ACTIVE	TSSOP	PW	16	90	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	LC157A	<a href="#">Samples</a>
SN74LVC157APWG4	ACTIVE	TSSOP	PW	16	90	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	LC157A	<a href="#">Samples</a>

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
SN74LVC157APWR	ACTIVE	TSSOP	PW	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU   CU SN	Level-1-260C-UNLIM	-40 to 125	LC157A	<a href="#">Samples</a>
SN74LVC157APWRE4	ACTIVE	TSSOP	PW	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	LC157A	<a href="#">Samples</a>
SN74LVC157APWRG4	ACTIVE	TSSOP	PW	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	LC157A	<a href="#">Samples</a>
SN74LVC157APWT	ACTIVE	TSSOP	PW	16	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	LC157A	<a href="#">Samples</a>
SN74LVC157ARGYR	ACTIVE	VQFN	RGY	16	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 85	LC157A	<a href="#">Samples</a>
SN74LVC157ARGYRG4	ACTIVE	VQFN	RGY	16	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 85	LC157A	<a href="#">Samples</a>
SNJ54LVC157AJ	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type	-55 to 125	5962-0050601QE A SNJ54LVC157AJ	<a href="#">Samples</a>
SNJ54LVC157AW	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type	-55 to 125	5962-0050601QF A SNJ54LVC157AW	<a href="#">Samples</a>

(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.

<sup>(5)</sup> 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.

<sup>(6)</sup> Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

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**OTHER QUALIFIED VERSIONS OF SN54LVC157A, SN74LVC157A :**

- Catalog: [SN74LVC157A](#)
  
- Automotive: [SN74LVC157A-Q1](#), [SN74LVC157A-Q1](#)
  
- Enhanced Product: [SN74LVC157A-EP](#), [SN74LVC157A-EP](#)
  
- Military: [SN54LVC157A](#)

NOTE: Qualified Version Definitions:

- Catalog - TI's standard catalog product
  
- Automotive - Q100 devices qualified for high-reliability automotive applications targeting zero defects
  
- Enhanced Product - Supports Defense, Aerospace and Medical Applications
  
- Military - QML certified for Military and Defense Applications

**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
SN74LVC157ADR	SOIC	D	16	2500	330.0	16.8	6.5	10.3	2.1	8.0	16.0	Q1
SN74LVC157ADR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1
SN74LVC157ADRG3	SOIC	D	16	2500	330.0	16.8	6.5	10.3	2.1	8.0	16.0	Q1
SN74LVC157ADRG4	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1
SN74LVC157ANSR	SO	NS	16	2000	330.0	16.4	8.2	10.5	2.5	12.0	16.0	Q1
SN74LVC157APWR	TSSOP	PW	16	2000	330.0	12.4	6.9	5.6	1.6	8.0	12.0	Q1
SN74LVC157APWR	TSSOP	PW	16	2000	330.0	12.4	6.9	5.6	1.6	8.0	12.0	Q1
SN74LVC157APWRG4	TSSOP	PW	16	2000	330.0	12.4	6.9	5.6	1.6	8.0	12.0	Q1
SN74LVC157APWT	TSSOP	PW	16	250	330.0	12.4	6.9	5.6	1.6	8.0	12.0	Q1
SN74LVC157ARGYR	VQFN	RGY	16	3000	330.0	12.4	3.8	4.3	1.5	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)
SN74LVC157ADR	SOIC	D	16	2500	364.0	364.0	27.0
SN74LVC157ADR	SOIC	D	16	2500	333.2	345.9	28.6
SN74LVC157ADRG3	SOIC	D	16	2500	364.0	364.0	27.0
SN74LVC157ADRG4	SOIC	D	16	2500	333.2	345.9	28.6
SN74LVC157ANSR	SO	NS	16	2000	367.0	367.0	38.0
SN74LVC157APWR	TSSOP	PW	16	2000	364.0	364.0	27.0
SN74LVC157APWR	TSSOP	PW	16	2000	367.0	367.0	35.0
SN74LVC157APWRG4	TSSOP	PW	16	2000	367.0	367.0	35.0
SN74LVC157APWT	TSSOP	PW	16	250	367.0	367.0	35.0
SN74LVC157ARGYR	VQFN	RGY	16	3000	367.0	367.0	35.0

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



4220204/A 02/2017

NOTES: (continued)

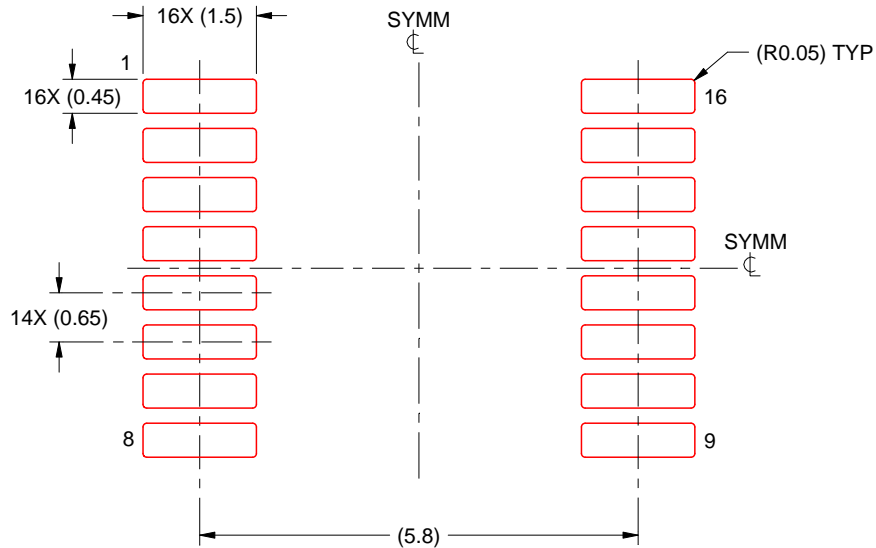
- 6. Publication IPC-7351 may have alternate designs.
- 7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

# 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.

# MECHANICAL DATA

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

PLASTIC SMALL-OUTLINE PACKAGE

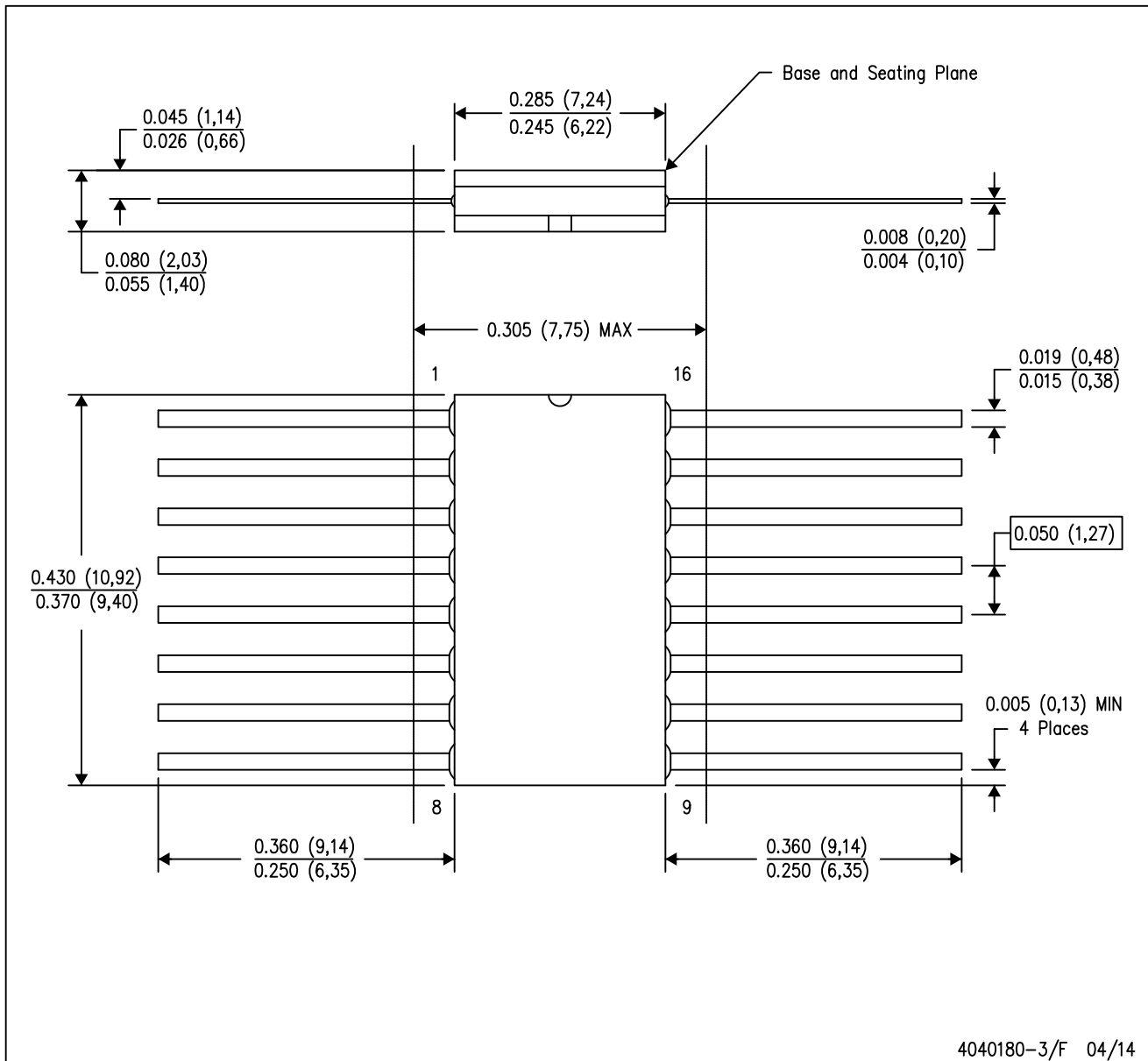
14-PINS SHOWN



- 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.

W (R-GDFP-F16)

CERAMIC DUAL FLATPACK



- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - C. This package can be hermetically sealed with a ceramic lid using glass frit.
  - D. Index point is provided on cap for terminal identification only.
  - E. Falls within MIL STD 1835 GDFP2-F16

# J (R-GDIP-T\*\*)

14 LEADS SHOWN

# CERAMIC DUAL IN-LINE PACKAGE



DIM \ PINS **	14	16	18	20
A	0.300 (7,62) BSC	0.300 (7,62) BSC	0.300 (7,62) BSC	0.300 (7,62) BSC
B MAX	0.785 (19,94)	.840 (21,34)	0.960 (24,38)	1.060 (26,92)
B MIN	—	—	—	—
C MAX	0.300 (7,62)	0.300 (7,62)	0.310 (7,87)	0.300 (7,62)
C MIN	0.245 (6,22)	0.245 (6,22)	0.220 (5,59)	0.245 (6,22)



4040083/F 03/03

- NOTES:
- All linear dimensions are in inches (millimeters).
  - This drawing is subject to change without notice.
  - This package is hermetically sealed with a ceramic lid using glass frit.
  - Index point is provided on cap for terminal identification only on press ceramic glass frit seal only.
  - Falls within MIL STD 1835 GDIP1-T14, GDIP1-T16, GDIP1-T18 and GDIP1-T20.

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

RGY (R-PVQFN-N16)

PLASTIC QUAD FLATPACK NO-LEAD



4203539-3/1 06/2011

- NOTES:
- All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M-1994.
  - This drawing is subject to change without notice.
  - QFN (Quad Flatpack No-Lead) package configuration.
  - The package thermal pad must be soldered to the board for thermal and mechanical performance.
  - See the additional figure in the Product Data Sheet for details regarding the exposed thermal pad features and dimensions.
  - Pin 1 identifiers are located on both top and bottom of the package and within the zone indicated. The Pin 1 identifiers are either a molded, marked, or metal feature.
  - Package complies to JEDEC MO-241 variation BA.

RGY (R-PVQFN-N16)

PLASTIC QUAD FLATPACK NO-LEAD

**THERMAL INFORMATION**

This package incorporates an exposed thermal pad that is designed to be attached directly to an external heatsink. The thermal pad must be soldered directly to the printed circuit board (PCB). After soldering, the PCB can be used as a heatsink. In addition, through the use of thermal vias, the thermal pad can be attached directly to the appropriate copper plane shown in the electrical schematic for the device, or alternatively, can be attached to a special heatsink structure designed into the PCB. This design optimizes the heat transfer from the integrated circuit (IC).

For information on the Quad Flatpack No-Lead (QFN) package and its advantages, refer to Application Report, QFN/SON PCB Attachment, Texas Instruments Literature No. SLUA271. This document is available at [www.ti.com](http://www.ti.com).

The exposed thermal pad dimensions for this package are shown in the following illustration.



Bottom View

Exposed Thermal Pad Dimensions

4206353-3/P 03/14

NOTE: All linear dimensions are in millimeters

RGY (R-PVQFN-N16)

PLASTIC QUAD FLATPACK NO-LEAD



- NOTES:
- 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. This package is designed to be soldered to a thermal pad on the board. Refer to Application Note, Quad Flat-Pack QFN/SON PCB Attachment, Texas Instruments Literature No. SLUA271, and also the Product Data Sheets for specific thermal information, via requirements, and recommended board layout. These documents are available at [www.ti.com](http://www.ti.com) <<http://www.ti.com>>.
  - E. 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 stencil design considerations.
  - F. Customers should contact their board fabrication site for minimum solder mask web tolerances between signal pads.

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