











SN74LVC1G07

SCES296AD - FEBRUARY 2000 - REVISED MAY 2016

SN74LVC1G07 Single Buffer/Driver With Open-Drain Output

Features

- Available in the Ultra Small 0.64-mm² Package (DPW) With 0.5-mm Pitch
- Supports 5-V V_{CC} Operation
- Input and Open-Drain Output Accept Voltages up to 5.5 V
- Can Translate Up or Down
- Max t_{pd} of 4.2 ns at 3.3 V
- Low Power Consumption, 10-μA Max I_{CC}
- ±24-mA Output Drive at 3.3 V
- Ioff Supports Live Insertion, Partial-Power-Down Mode, and Back-Drive Protection
- 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)

2 Applications

- **AV Receiver**
- Blu-ray Player and Home Theater
- **DVD** Recorder and Player
- Desktop or Notebook PC
- Digital Radio or Internet Radio Player
- Digital Video Camera (DVC)
- Embedded PC
- **GPS: Personal Navigation Device**
- Mobile Internet Device
- Network Projector Front End
- Portable Media Player
- Pro Audio Mixer
- **Smoke Detector**
- Solid State Drive (SSD): Enterprise
- High-Definition (HDTV)
- Tablet: Enterprise
- Audio Dock: Portable
- **DLP Front Projection System**
- DVR and DVS
- Digital Picture Frame (DPF)
- Digital Still Camera

3 Description

This single buffer/driver is designed for 1.65-V to 5.5-V V_{CC} operation.

The output of the SN74LVC1G07 device is open drain and can be connected to other open-drain outputs to implement active-low wired-OR or activehigh wired-AND functions. The maximum sink current is 32 mA.

The SN74LVC1G07 is available in a variety of packages, including the ultra-small DPW package with a body size of $0.8 \text{ mm} \times 0.8 \text{ mm}$.

Device Information⁽¹⁾

DEVICE NAME	PACKAGE	BODY SIZE
SN74LVC1G07DBV	SOT-23 (5)	2.9mm × 1.6mm
SN74LVC1G07DCK	SC70 (5)	2.0mm × 1.25mm
SN74LVC1G07DPW	X2SON (5)	0.8mm × 0.8mm
SN74LVC1G07DRY	SON (6)	1.45mm × 1.0mm
SN74LVC1G07DSF	SON (6)	1.0mm × 1.0mm
SN74LVC1G07DRL	SOT (5)	1.6mm x 1.2mm
SN74LVC1G07YZP	DSBGA (6)	1.38mm x 0.88mm
SN74LVC1G07YZV	DSBGA (4)	0.88mm x 0.88mm

(1) For all available packages, see the orderable addendum at the end of the datasheet.





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С	ges from Revision AC (April 2014) to Revision AD hanged 4 pin to 5 pin on DPW package in Device Inform			
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	oved "T _{stg} Storage temperature range" from ESD Rating			
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U	pdated Features			

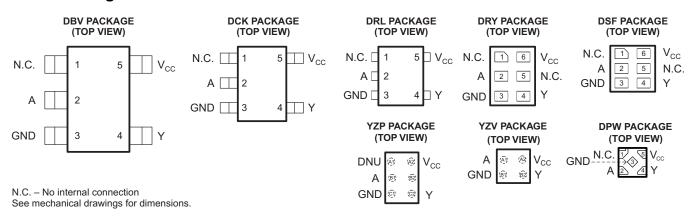


Changes from Revision Z (November 2012) to Revision AA	Page
Extended maximum temperature operating range from 85°C to 125°C	5
Changes from Revision Y (June 2011) to Revision Z	Page
Removed Ordering Information table.	4
Changes from Revision W (June 2008) to Revision X	Page
Added DSF Package to data sheet.	4

Product Folder Links: SN74LVC1G07



5 Pin Configuration and Functions



Pin Functions

		PI	N			
NAME	DBV, DCK, DRL	DRY, DSF	DPW	YZP	YZV	DESCRIPTION
NC	1	1, 5	1	A1, B2	-	Not connected
Α	2	2	2	B1	A1	Input
GND	3	3	3	C1	B1	Ground
Υ	4	4	4	C2	B2	Output
V _{cc}	5	6	5	A2	A2	Power pin

6 Specifications

6.1 Absolute Maximum Ratings

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

				MIN	MAX	UNIT
V_{CC}	Supply voltage range			-0.5	6.5	V
V_{I}	Input voltage range ⁽²⁾			-0.5	6.5	V
V_{O}	Voltage range applied to any output in the high-impedance	or power-off state ⁽²⁾		-0.5	6.5	V
Vo	Voltage range applied to any output in the high or low state (2)(3)		-0.5	6.5	V	
I _{IK}	Input clamp current	V _I < 0			-50	mA
I _{OK}	Output clamp current	V _O < 0			-50	mA
Io	Continuous output current	·			±50	mA
	Continuous current through V _{CC} or GND				±100	mA
T _{stg}	Storage temperature range			-65	150	°C
Tj	Junction temperature range				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 negative-voltage ratings may be exceeded if the input and output current ratings are observed.

(3) The value of V_{CC} is provided in the *Recommended Operating Conditions* table.

6.2 ESD Ratings

<u> </u>	OD Italingo				
			MIN	MAX	UNIT
	Clastroptotic discharge	Human body model (HBM), per ANSI/ESDA/JEDEC JS-001, all pins ⁽¹⁾	0	2000	V
V(ESD)	Electrostatic discharge	Charged device model (CDM), per JEDEC specification JESD22-C101, all pins (2)	0	1000	V

(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.

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6.3 Recommended Operating Conditions

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

			MIN	MAX	UNIT				
.,	Ownelland	Operating	1.65	5.5					
V_{CC}	Supply voltage	Data retention only	1.5		V				
		V _{CC} = 1.65 V to 1.95 V	0.65 × V _{CC}						
.,	Supply voltage High-level input voltage Low-level input voltage Input voltage Output voltage Low-level output current	V _{CC} = 2.3 V to 2.7 V	1.7		V				
VIH	High-level input voltage	V _{CC} = 3 V to 3.6 V	2		V				
		V _{CC} = 4.5 V to 5.5 V	0.7 × V _{CC}						
		V _{CC} = 1.65 V to 1.95 V	1.65 5.5 1.5 0.65 × V _{CC} 1.7						
.,	Lave laved Samuel valle on	V _{CC} = 2.3 V to 2.7 V		0.7	V				
V_{IL}	Low-level input voltage	V _{CC} = 3 V to 3.6 V	$V_{CC} = 3 \text{ V to } 3.6 \text{ V}$ 0.6						
		V _{CC} = 4.5 V to 5.5 V		0.3 × V _{CC}					
VI	Input voltage		0	5.5	V				
Vo	Output voltage		0	5.5	V				
		V _{CC} = 1.65 V		4					
	Low-level input voltage Input voltage Output voltage Low-level output current Δt/Δν Input transition rise or fall rate	V _{CC} = 2.3 V		8					
I_{OL}	Low-level output current	V 0 V		16	mA				
		V _{CC} = 3 V		24					
		V _{CC} = 4.5 V		32					
		$V_{CC} = 1.8 \text{ V} \pm 0.15 \text{ V}, 2.5 \text{ V} \pm 0.2 \text{ V}$		20					
Δt/Δν	/ Input transition rise or fall rate	$V_{CC} = 3.3 \text{ V} \pm 0.3 \text{ V}$		10	ns/V				
		V _{CC} = 5 V ± 0.5 V		5					
_	0	DSBGA package	-40	85	20				
T_A	Operating free-air temperature	All other packages	-40	125	°C				

⁽¹⁾ 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.

6.4 Thermal Information

				SN74L	VC1G07			
	THERMAL METRIC (1)	DBV	DCK	DRL	DRY	YZP	DPW	UNIT
		5 PINS	5 PINS	5 PINS	6 PINS	5 PINS	4 PINS	
$R_{\theta JA}$	Junction-to-ambient thermal resistance	229	278	243	439	130	340	
$R_{\theta JC(top)}$	Junction-to-case (top) thermal resistance	164	93	78	277	54	215	
$R_{\theta JB}$	Junction-to-board thermal resistance	62	65	78	271	51	294	°C/W
Ψ_{JT}	Junction-to-top characterization parameter	44	2	10	84	1	41	10/00
Ψ_{JB}	Junction-to-board characterization parameter	62	64	77	271	50	294	
R _{θJC(bot)}	Junction-to-case (bottom) thermal resistance	-	-	-	_	-	250	

(1) For more information about traditional and new thermal metrics, see the *IC Package Thermal Metrics* application report, SPRA953.

Product Folder Links: SN74LVC1G07



6.5 Electrical Characteristics

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

PAR	AMETER	TEST CONDITION	DNS	V _{CC}	-40°C TO 8	5°C	-40°C TO 125°C RECOMMENDED		UNIT	
					TYP ⁽¹⁾	MAX	TYP	MAX		
		I _{OL} = 100 μA		1.65 V to 5.5 V		0.1		0.1		
ı		I _{OL} = 4 mA		1.65 V		0.45		0.45		
		I _{OL} = 8 mA		2.3 V		0.3		0.3	V	
V _{OL}		I _{OL} = 16 mA		3 V		0.4		0.4		
		I _{OL} = 24 mA	3 V		0.55		0.55			
		I _{OL} = 32 mA		4.5 V		0.55		0.55		
I	A input	V _I = 5.5 V or GND		0 to 5.5 V		±5		±5	μA	
I _{off}		V_I or $V_O = 5.5 \text{ V}$		0		±10		±10	μA	
I _{CC}		$V_I = 5.5 \text{ V or GND}, \qquad I_O = 0$)	1.65 V to 5.5 V		10		10	μA	
ΔI_{CC}		One input at V _{CC} - 0.6 V, Other	rinputs at V _{CC} or GND	3 V to 5.5 V		500		500	μA	
Ci		V _I = V _{CC} or GND		3.3 V	4		4		pF	
Co	<u> </u>	$V_O = V_{CC}$ or GND		3.3 V	5		5		pF	

⁽¹⁾ All typical values are at V_{CC} = 3.3 V, T_A = 25°C.

6.6 Switching Characteristics, -40°C to 85°C

over recommended operating free-air temperature range (unless otherwise noted) (see Figure 3)

			−40°C TO 85°C								
PARAMETER	FROM (INPUT)	TO (OUTPUT)	V _{CC} = 1.8 V ± 0.15 V		V _{CC} = 2.5 V ± 0.2 V		V _{CC} = 3.3 V ± 0.3 V		V _{CC} = 5 V ± 0.5 V		UNIT
			MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
t _{pd}	A	Y	2.4	8.3	1	5.5	1.5	4.2	1	3.5	ns

6.7 Switching Characteristics, -40°C to 125°C

over recommended operating free-air temperature range (unless otherwise noted) (see Figure 3)

		FROM TO (OUTPUT)	-40°C TO 125°C RECOMMENDED								
PARAMETER			V _{CC} = 1.8 V ± 0.15 V		V _{CC} = 2.5 V ± 0.2 V		V _{CC} = 3.3 V ± 0.3 V		V _{CC} = 5 V ± 0.5 V		UNIT
			MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
t _{pd}	A	Υ	2.4	8.6	1	6	1.5	4.7	1	4	ns

6.8 Operating Characteristics

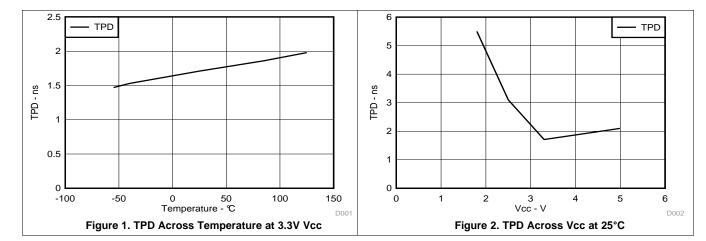
 $T_A = 25^{\circ}C$

PARAMETER	TEST CONDITIONS	V _{CC} = 1.8 V	V _{CC} = 2.5 V	$V_{CC} = 3.3 \text{ V}$	V _{CC} = 5 V	UNIT	
FARAMETER	TEST CONDITIONS	TYP	TYP	TYP	TYP	UNII	
C _{pd} Power dissipation capacitance	f = 10 MHz	3	3	4	6	pF	

Product Folder Links: SN74LVC1G07



6.9 Typical Characteristics

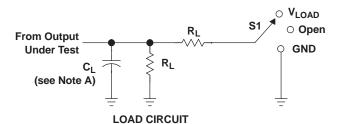


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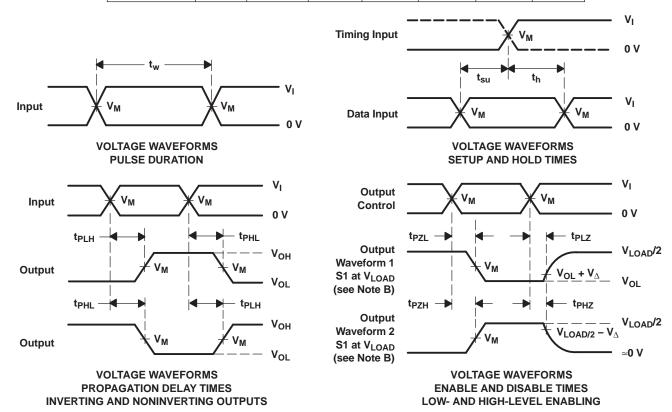
7 Parameter Measurement Information

7.1 (Open Drain)



TEST	S1
t _{PZL} (see Notes E and F)	V_{LOAD}
t _{PLZ} (see Notes E and G)	V_{LOAD}
t _{PHZ} /t _{PZH}	V_{LOAD}

	IN	INPUT					
V _{CC}	VI	t _r /t _f	V _M	V _{LOAD}	CL	R _L	V_{Δ}
1.8 V ± 0.15 V	V _{CC}	≤ 2 ns	V _{CC} /2	2×V _{CC}	30 pF	1 k Ω	0.15 V
2.5 V \pm 0.2 V	V _{CC}	≤ 2 ns	V _{CC} /2	2×V _{CC}	30 pF	500 Ω	0.15 V
3.3 V \pm 0.3 V	3 V	≤ 2.5 ns	1.5 V	6 V	50 pF	500 Ω	0.3 V
5 V \pm 0.5 V	V _{CC}	≤ 2.5 ns	V _{CC} /2	2×V _{CC}	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 \leq 10 MHz, $Z_O = 50 \ \Omega$.
- D. The outputs are measured one at a time, with one transition per measurement.
- E. Since this device has open-drain outputs, t_{PLZ} and t_{PZL} are the same as t_{pd}.
- F. t_{PZL} is measured at V_{M} .
- G. t_{PLZ} is measured at $V_{OL} + V_{\Delta}$.
- H. All parameters and waveforms are not applicable to all devices.

Figure 3. Load Circuit and Voltage Waveforms



8 Detailed Description

8.1 Overview

The SN74LVC1G07 device contains one open-drain buffer with a maximum sink current of 32 mA. This device is fully specified for partial-power-down applications using I_{off} . The I_{off} circuitry disables the outputs, preventing damaging current backflow through the device when it is powered down.

The DPW package technology is a major breakthrough in IC packaging. The DPW 0.64 mm square footprint saves significant board space over other package options while still retaining the traditional manufacturing friendly lead pitch of 0.5 mm.

8.2 Functional Block Diagram



8.3 Feature Description

- Wide operating voltage range.
 - Operates from 1.65 V to 5.5 V.
- Allows down voltage translation.
- Inputs and outputs accept voltages to 5.5 V.
- I_{off} feature allows voltages on the inputs and outputs, when V_{CC} is 0 V.

8.4 Device Functional Modes

Function Table

INPUT A	OUTPUT Y
L	L
Н	Z

Product Folder Links: SN74LVC1G07

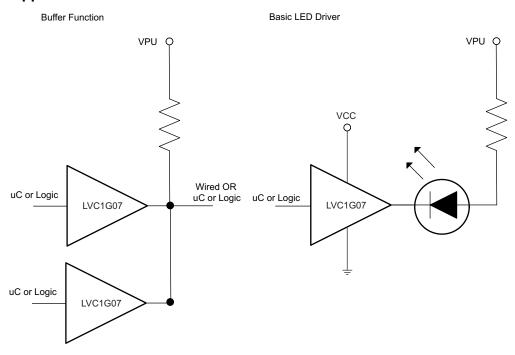


9 Application and Implementation

9.1 Application Information

The SN74LVC1G07 is a high drive CMOS device that can be used to implement a high output drive buffer, such as an LED application. It can sink 32 mA of current at 4.5 V making it ideal for high drive and wired-OR/AND functions. It is good for high speed applications up to 100 MHz. The inputs are 5.5 V tolerant allowing it to translate up/down to $V_{\rm CC}$.

9.2 Typical Application



9.2.1 Design Requirements

This device uses CMOS technology and has balanced output drive. Care should be taken to avoid bus contention because it may drive currents that would exceed maximum limits. The high drive will also create fast edges into light loads so routing and load conditions should be considered to prevent ringing.

9.2.2 Detailed Design Procedure

- 1. Recommended Input Conditions
 - Rise time and fall time specs. See (Δt/ΔV) in the Recommended Operating Conditions table.
 - Specified high and low levels. See (V_{IH} and V_{IL}) in the Recommended Operating Conditions table.
 - Inputs are over-voltage tolerant allowing them to go as high as (V_I max) in the Recommended Operating
 Conditions table at any valid V_{CC}.

2. Recommend Output Conditions

- Load currents should not exceed (I_O max) per output and should not exceed (Continuous current through V_{CC} or GND) total current for the part. These limits are located in the *Absolute Maximum Ratings* table.
- Outputs should not be pulled above 5.5 V.

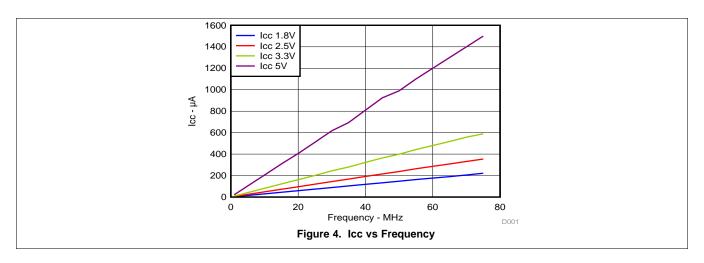
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Typical Application (continued)

9.2.3 Application Curves



10 Power Supply Recommendations

The power supply can be any voltage between the min and max supply voltage rating located in the *Recommended Operating Conditions* table.

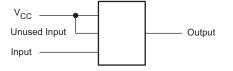
Each Vcc pin should have a good bypass capacitor to prevent power disturbance. A $0.1-\mu F$ capacitor is recommended for devices with a single supply. If there are multiple Vcc pins then a $0.01-\mu F$ or $0.022-\mu F$ capacitor is recommended for each power pin. It is acceptable to parallel multiple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

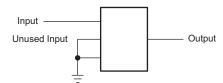
11 Layout

11.1 Layout Guidelines

When using multiple bit logic devices inputs should not ever float. In many cases, functions or parts of functions of digital logic devices are unused; for example, when only two inputs of a triple-input AND gate are used or 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 below are the 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 Vcc, whichever is more convenient.

11.2 Layout Example





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12 Device and Documentation Support

12.1 Trademarks

All trademarks are the property of their respective owners.

12.2 Electrostatic Discharge Caution



These devices have limited built-in ESD protection. The leads should be shorted together or the device placed in conductive foam during storage or handling to prevent electrostatic damage to the MOS gates.

12.3 Glossary

SLYZ022 — TI Glossary.

This glossary lists and explains terms, acronyms, and definitions.

13 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.

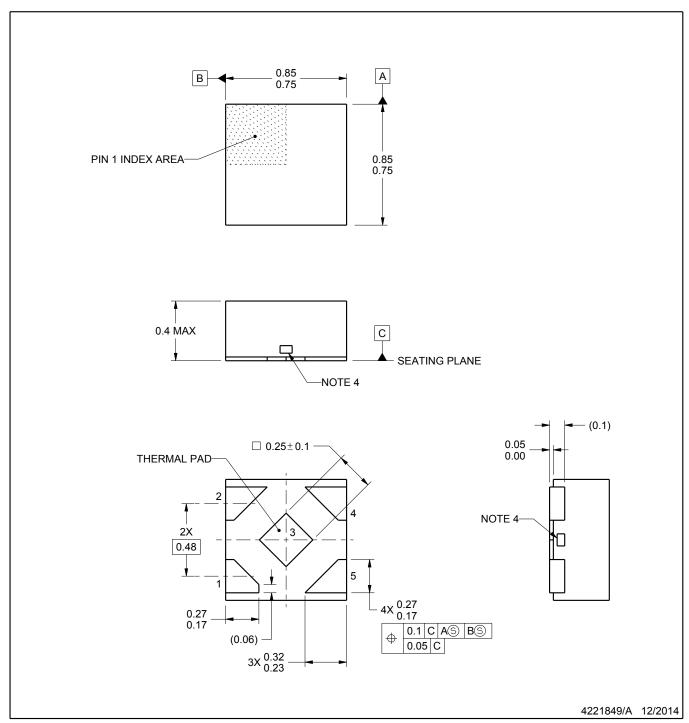
Product Folder Links: SN74LVC1G07



PACKAGE OUTLINE

X2SON - 0.4 mm max height

PLASTIC SMALL OUTLINE - NO LEAD



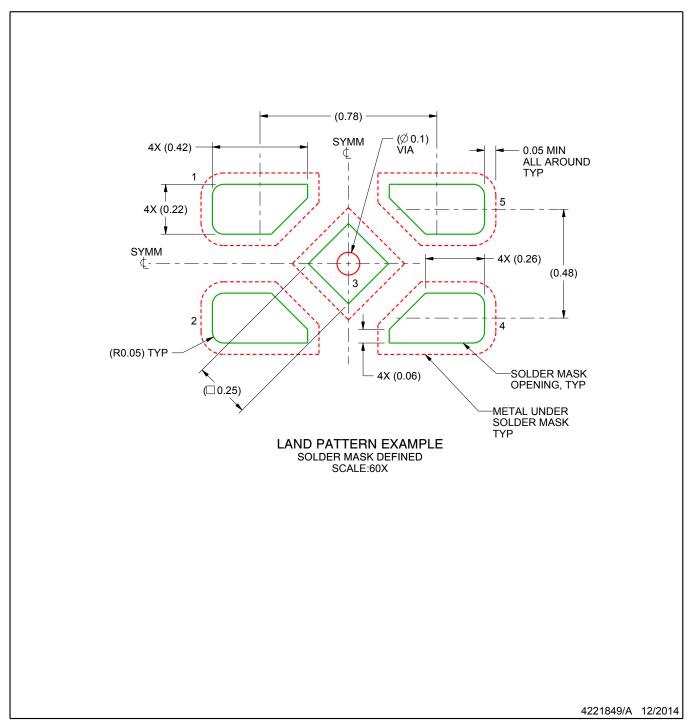
- 1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.

 2. This drawing is subject to change without notice.
- 3. The package thermal pad must be soldered to the printed circuit board for thermal and mechanical performance.

 4. The size and shape of this feature may vary.



PLASTIC SMALL OUTLINE - NO LEAD

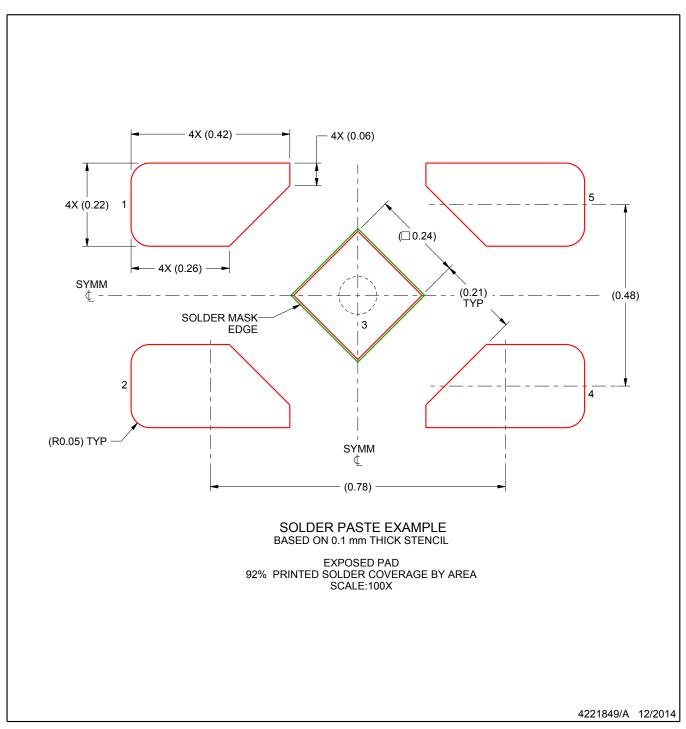


NOTES: (continued)

5. This package is designed to be soldered to a thermal pad on the board. For more information, refer to QFN/SON PCB application note in literature No. SLUA271 (www.ti.com/lit/slua271).



PLASTIC SMALL OUTLINE - NO LEAD



NOTES: (continued)

6. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.







7-Apr-2016

PACKAGING INFORMATION

Orderable Device	Status	Package Type	Package Drawing	Pins	Package Qty	Eco Plan	Lead/Ball Finish	MSL Peak Temp	Op Temp (°C)	Device Marking (4/5)	Samples
SN74LVC1G07DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU CU SN	Level-1-260C-UNLIM	-40 to 125	(C075 ~ C07F ~ C07K ~ C07R ~ C07T) (C07H ~ C07P ~ C07S)	Samples
SN74LVC1G07DBVRE4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	C07F	Samples
SN74LVC1G07DBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	C07F	Samples
SN74LVC1G07DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU CU SN	Level-1-260C-UNLIM	-40 to 125	(C075 ~ C07F ~ C07K ~ C07R) (C07H ~ C07P ~ C07S)	Samples
SN74LVC1G07DBVTE4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	C07F	Samples
SN74LVC1G07DBVTG4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	C07F	Samples
SN74LVC1G07DCKR	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(CV5 ~ CVF ~ CVK ~ CVR ~ CVT) (CVH ~ CVP ~ CVS)	Samples
SN74LVC1G07DCKRE4	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(CV5 ~ CVF ~ CVK ~ CVR ~ CVT) (CVH ~ CVP ~ CVS)	Samples
SN74LVC1G07DCKRG4	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(CV5 ~ CVF ~ CVK ~ CVR ~ CVT) (CVH ~ CVP ~ CVS)	Samples
SN74LVC1G07DCKT	ACTIVE	SC70	DCK	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(CV5 ~ CVF ~ CVK ~ CVR ~ CVT) CVH	Samples
SN74LVC1G07DCKTE4	ACTIVE	SC70	DCK	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(CV5 ~ CVF ~ CVK ~ CVR ~ CVT) CVH	Samples
SN74LVC1G07DCKTG4	ACTIVE	SC70	DCK	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(CV5 ~ CVF ~ CVK ~ CVR ~ CVT) CVH	Samples



PACKAGE OPTION ADDENDUM

7-Apr-2016

Orderable Device	Status	Package Type	Package	Pins	Package	Eco Plan	Lead/Ball Finish	MSL Peak Temp	Op Temp (°C)	Device Marking	Samples
	(1)		Drawing		Qty	(2)	(6)	(3)		(4/5)	
SN74LVC1G07DPWR	ACTIVE	X2SON	DPW	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	L4	Samples
SN74LVC1G07DRLR	ACTIVE	SOT	DRL	5	4000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(CV7 ~ CVR)	Samples
SN74LVC1G07DRLRG4	ACTIVE	SOT	DRL	5	4000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	(CV7 ~ CVR)	Samples
SN74LVC1G07DRY2	ACTIVE	SON	DRY	6	5000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	CV	Samples
SN74LVC1G07DRYR	ACTIVE	SON	DRY	6	5000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	CV	Samples
SN74LVC1G07DRYRG4	ACTIVE	SON	DRY	6	5000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	CV	Samples
SN74LVC1G07DSF2	ACTIVE	SON	DSF	6	5000	Green (RoHS & no Sb/Br)	CU NIPDAU CU NIPDAUAG	Level-1-260C-UNLIM	-40 to 125	CV	Samples
SN74LVC1G07DSFR	ACTIVE	SON	DSF	6	5000	Green (RoHS & no Sb/Br)	CU NIPDAU CU NIPDAUAG	Level-1-260C-UNLIM	-40 to 125	CV	Samples
SN74LVC1G07YZPR	ACTIVE	DSBGA	YZP	5	3000	Green (RoHS & no Sb/Br)	SNAGCU	Level-1-260C-UNLIM	-40 to 85	(CV7 ~ CVN)	Samples
SN74LVC1G07YZVR	ACTIVE	DSBGA	YZV	4	3000	Green (RoHS & no Sb/Br)	SNAGCU	Level-1-260C-UNLIM	-40 to 85	CV (7 ~ N)	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.

TBD: The Pb-Free/Green conversion plan has not been defined.

Pb-Free (RoHS): Tl'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)

⁽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.



PACKAGE OPTION ADDENDUM



7-Apr-2016

- (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/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 SN74LVC1G07:

Automotive: SN74LVC1G07-Q1

■ Enhanced Product: SN74LVC1G07-EP

NOTE: Qualified Version Definitions:

- Automotive Q100 devices qualified for high-reliability automotive applications targeting zero defects
- Enhanced Product Supports Defense, Aerospace and Medical Applications

PACKAGE MATERIALS INFORMATION

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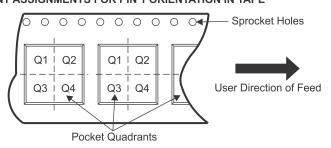
TAPE AND REEL INFORMATION





	Α0	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
г	D1	Pitch between successive cavity centers

QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



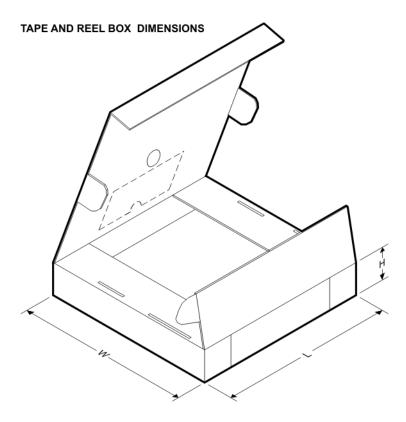
*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter	Reel Width	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
			_		(mm)	W1 (mm)						
SN74LVC1G07DBVR	SOT-23	DBV	5	3000	180.0	8.4	3.23	3.17	1.37	4.0	8.0	Q3
SN74LVC1G07DBVR	SOT-23	DBV	5	3000	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
SN74LVC1G07DBVRG4	SOT-23	DBV	5	3000	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
SN74LVC1G07DBVT	SOT-23	DBV	5	250	180.0	8.4	3.23	3.17	1.37	4.0	8.0	Q3
SN74LVC1G07DBVT	SOT-23	DBV	5	250	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
SN74LVC1G07DBVTG4	SOT-23	DBV	5	250	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
SN74LVC1G07DCKR	SC70	DCK	5	3000	178.0	9.2	2.4	2.4	1.22	4.0	8.0	Q3
SN74LVC1G07DCKT	SC70	DCK	5	250	178.0	9.0	2.4	2.5	1.2	4.0	8.0	Q3
SN74LVC1G07DCKT	SC70	DCK	5	250	180.0	9.2	2.3	2.55	1.2	4.0	8.0	Q3
SN74LVC1G07DCKT	SC70	DCK	5	250	178.0	9.2	2.4	2.4	1.22	4.0	8.0	Q3
SN74LVC1G07DPWR	X2SON	DPW	5	3000	178.0	8.4	0.91	0.91	0.5	2.0	8.0	Q3
SN74LVC1G07DRLR	SOT	DRL	5	4000	180.0	9.5	1.78	1.78	0.69	4.0	8.0	Q3
SN74LVC1G07DRLR	SOT	DRL	5	4000	180.0	8.4	1.98	1.78	0.69	4.0	8.0	Q3
SN74LVC1G07DRY2	SON	DRY	6	5000	180.0	8.4	1.65	1.2	0.7	4.0	8.0	Q3
SN74LVC1G07DRY2	SON	DRY	6	5000	180.0	9.5	1.6	1.15	0.75	4.0	8.0	Q3
SN74LVC1G07DRYR	SON	DRY	6	5000	179.0	8.4	1.2	1.65	0.7	4.0	8.0	Q1
SN74LVC1G07DSF2	SON	DSF	6	5000	180.0	9.5	1.16	1.16	0.5	4.0	8.0	Q3
SN74LVC1G07DSF2	SON	DSF	6	5000	180.0	8.4	1.16	1.16	0.63	4.0	8.0	Q3

PACKAGE MATERIALS INFORMATION

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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
SN74LVC1G07DSFR	SON	DSF	6	5000	180.0	9.5	1.16	1.16	0.5	4.0	8.0	Q2
SN74LVC1G07YZPR	DSBGA	YZP	5	3000	178.0	9.2	1.02	1.52	0.63	4.0	8.0	Q1
SN74LVC1G07YZVR	DSBGA	YZV	4	3000	178.0	9.2	1.0	1.0	0.63	4.0	8.0	Q1



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
Device	rackage Type	Fackage Drawing	FIIIS	3F W	Length (IIIII)	widii (iiiii)	neight (illin)
SN74LVC1G07DBVR	SOT-23	DBV	5	3000	202.0	201.0	28.0
SN74LVC1G07DBVR	SOT-23	DBV	5	3000	180.0	180.0	18.0
SN74LVC1G07DBVRG4	SOT-23	DBV	5	3000	180.0	180.0	18.0
SN74LVC1G07DBVT	SOT-23	DBV	5	250	202.0	201.0	28.0
SN74LVC1G07DBVT	SOT-23	DBV	5	250	180.0	180.0	18.0
SN74LVC1G07DBVTG4	SOT-23	DBV	5	250	180.0	180.0	18.0
SN74LVC1G07DCKR	SC70	DCK	5	3000	180.0	180.0	18.0
SN74LVC1G07DCKT	SC70	DCK	5	250	180.0	180.0	18.0
SN74LVC1G07DCKT	SC70	DCK	5	250	205.0	200.0	33.0
SN74LVC1G07DCKT	SC70	DCK	5	250	180.0	180.0	18.0
SN74LVC1G07DPWR	X2SON	DPW	5	3000	205.0	200.0	33.0
SN74LVC1G07DRLR	SOT	DRL	5	4000	184.0	184.0	19.0
SN74LVC1G07DRLR	SOT	DRL	5	4000	202.0	201.0	28.0
SN74LVC1G07DRY2	SON	DRY	6	5000	202.0	201.0	28.0



PACKAGE MATERIALS INFORMATION

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Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74LVC1G07DRY2	SON	DRY	6	5000	184.0	184.0	19.0
SN74LVC1G07DRYR	SON	DRY	6	5000	203.0	203.0	35.0
SN74LVC1G07DSF2	SON	DSF	6	5000	184.0	184.0	19.0
SN74LVC1G07DSF2	SON	DSF	6	5000	202.0	201.0	28.0
SN74LVC1G07DSFR	SON	DSF	6	5000	184.0	184.0	19.0
SN74LVC1G07YZPR	DSBGA	YZP	5	3000	220.0	220.0	35.0
SN74LVC1G07YZVR	DSBGA	YZV	4	3000	220.0	220.0	35.0

DBV (R-PDSO-G5)

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. Mold flash and protrusion shall not exceed 0.15 per side.
- D. Falls within JEDEC MO-178 Variation AA.



DBV (R-PDSO-G5)

PLASTIC SMALL OUTLINE



- A. All linear dimensions are in millimeters.
- B. This drawing is subject to change without notice.
- C. Customers should place a note on the circuit board fabrication drawing not to alter the center solder mask defined pad.
- D. Publication IPC-7351 is recommended for alternate designs.
- 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. Example stencil design based on a 50% volumetric metal load solder paste. Refer to IPC-7525 for other stencil recommendations.



DCK (R-PDSO-G5)

PLASTIC SMALL-OUTLINE PACKAGE



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. Mold flash and protrusion shall not exceed 0.15 per side.
- D. Falls within JEDEC MO-203 variation AA.



DCK (R-PDSO-G5)

PLASTIC SMALL OUTLINE



- A. All linear dimensions are in millimeters.
- B. This drawing is subject to change without notice.
- C. Customers should place a note on the circuit board fabrication drawing not to alter the center solder mask defined pad.
- D. Publication IPC-7351 is recommended for alternate designs.
- 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. Example stencil design based on a 50% volumetric metal load solder paste. Refer to IPC-7525 for other stencil recommendations.



DRL (R-PDSO-N5)

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 dimensions do not include mold flash, interlead flash, protrusions, or gate burrs.

 Mold flash, interlead flash, protrusions, or gate burrs shall not exceed 0,15 per end or side.
- D. JEDEC package registration is pending.



DRL (R-PDSO-N5)

PLASTIC SMALL OUTLINE



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. Customers should contact their board fabrication site for minimum solder mask web tolerances between signal pads.
- E. Maximum stencil thickness 0,127 mm (5 mils). All linear dimensions are in millimeters.
- F. 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.
- G. Side aperture dimensions over—print land for acceptable area ratio > 0.66. Customer may reduce side aperture dimensions if stencil manufacturing process allows for sufficient release at smaller opening.





NOTES: A. All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M-1994.

- B. This drawing is subject to change without notice.
- C. SON (Small Outline No-Lead) package configuration.
- The exposed lead frame feature on side of package may or may not be present due to alternative lead frame designs.
- E. This package complies to JEDEC MO-287 variation UFAD.
- $frac{f}{K}$ See the additional figure in the Product Data Sheet for details regarding the pin 1 identifier shape.



DRY (R-PUSON-N6)

PLASTIC SMALL OUTLINE NO-LEAD



NOTES: A.

- 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. Customers should contact their board fabrication site for minimum solder mask web tolerances between signal pads.
- E. Maximum stencil thickness 0,127 mm (5 mils). All linear dimensions are in millimeters.
- F. 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.
- G. Side aperture dimensions over—print land for acceptable area ratio > 0.66. Customer may reduce side aperture dimensions if stencil manufacturing process allows for sufficient release at smaller opening.





- 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. Reference JEDEC registration MO-287, variation X2AAF.





PLASTIC SMALL OUTLINE NO-LEAD



- 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. Customers should contact their board fabrication site for minimum solder mask web tolerances between signal pads. If 2 mil solder mask is outside PCB vendor capability, it is advised to omit solder mask.
- E. Maximum stencil thickness 0,1016 mm (4 mils). All linear dimensions are in millimeters.
- F. 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.
- G. Suggest stencils cut with lasers such as Fiber Laser that produce the greatest positional accuracy.
- H. Component placement force should be minimized to prevent excessive paste block deformation.





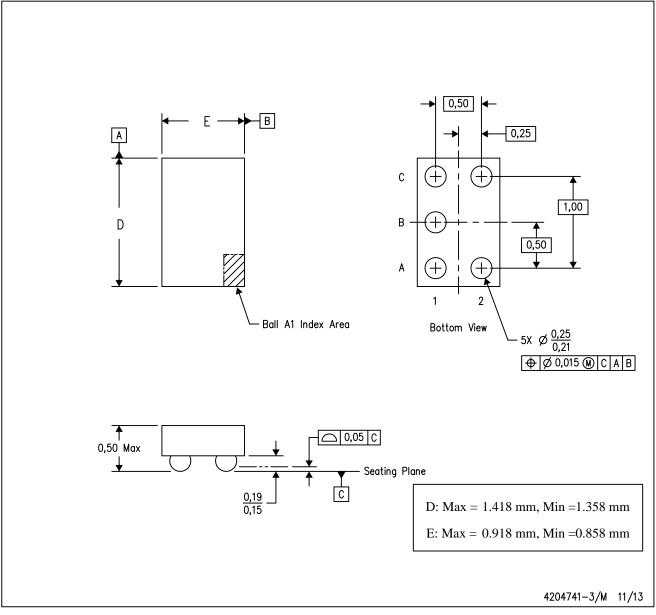
Images above are just a representation of the package family, actual package may vary. Refer to the product data sheet for package details.

4211218-3/D



YZP (R-XBGA-N5)

DIE-SIZE BALL GRID ARRAY



NOTES: A. All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M-1994.

- B. This drawing is subject to change without notice.
- C. NanoFree \mathbf{M} package configuration.

NanoFree is a trademark of Texas Instruments.



YZV (S-XBGA-N4)

DIE-SIZE BALL GRID ARRAY



NOTES: A. All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M—1994.

- B. This drawing is subject to change without notice.
- C. NanoFree™ package configuration.

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