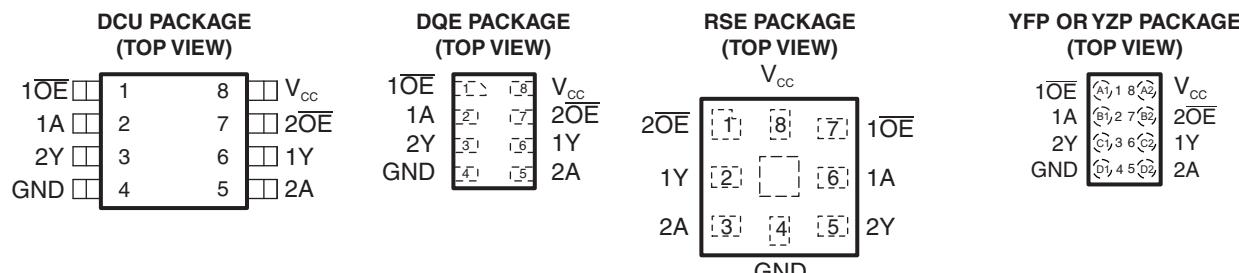


LOW-POWER DUAL BUS BUFFER GATE WITH 3-STATE OUTPUTS

Check for Samples: [SN74AUP2G125](#)

FEATURES

- Available in the Texas Instruments NanoStar™ Package
- Low Static-Power Consumption ($I_{cc} = 0.9 \mu A$ Max)
- Low Dynamic-Power Consumption ($C_{pd} = 4 \text{ pF}$ Typ at 3.3 V)
- Low Input Capacitance ($C_I = 1.5 \text{ pF}$ Typ)
- Low Noise – Overshoot and Undershoot <10% of V_{CC}
- Input-Disable Feature Allows Floating Input Conditions
- I_{off} Supports Partial-Power-Down Mode Operation
- Input Hysteresis Allows Slow Input Transition and Better Switching Noise Immunity at Input
- Wide Operating V_{CC} Range of 0.8 V to 3.6 V
- Optimized for 3.3-V Operation
- 3.6-V I/O Tolerant to Support Mixed-Mode Signal Operation
- $t_{pd} = 5.4 \text{ ns}$ Max at 3.3 V
- Suitable for Point-to-Point Applications
- Latch-Up Performance Exceeds 100 mA Per JESD 78, Class II
- ESD Performance Tested Per JESD 22
 - 2000-V Human-Body Model (A114-B, Class II)
 - 1000-V Charged-Device Model (C101)



The exposed center pad, if used, must be connected only as a secondary GND or left electrically open.

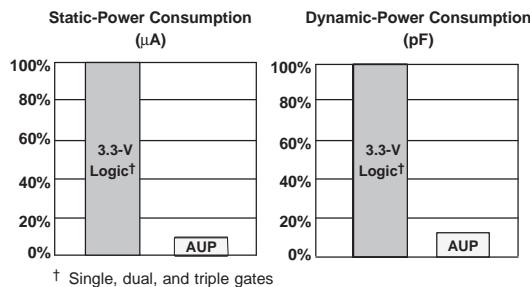
See mechanical drawings for dimensions.

DESCRIPTION/ORDERING INFORMATION

The AUP family is TI's premier solution to the industry's low-power needs in battery-powered portable applications. This family ensures a very low static and dynamic power consumption across the entire V_{CC} range of 0.8 V to 3.6 V, resulting in an increased battery life. This product also maintains excellent signal integrity (see Figure 1 and Figure 2).

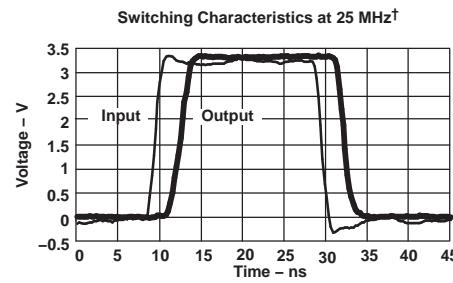


Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.



† Single, dual, and triple gates

Figure 1. AUP – The Lowest-Power Family



† AUP1G08 data at $C_L = 15 \text{ pF}$

Figure 2. Excellent Signal Integrity

The SN74AUP2G125 is a dual bus buffer gate designed for 0.8-V to 3.6-V V_{CC} operation. This device features dual line drivers with 3-state outputs. Each output is disabled when the corresponding output-enable (\overline{OE}) input is high. This device has the input-disable feature, which allows floating input signals.

To ensure the high-impedance state during power up or power down, \overline{OE} should be tied to V_{CC} through a pullup resistor; the minimum value of the resistor is determined by the current-sinking capability of the driver.

NanoStar™ package technology is a major breakthrough in IC packaging concepts, using the die as the package.

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.

ORDERING INFORMATION⁽¹⁾

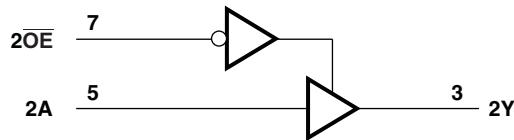
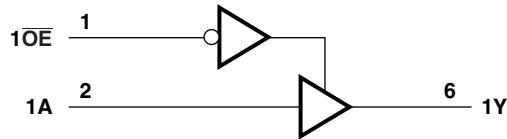
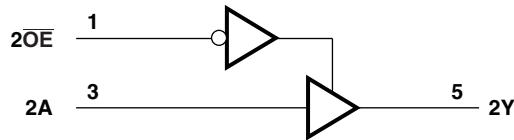
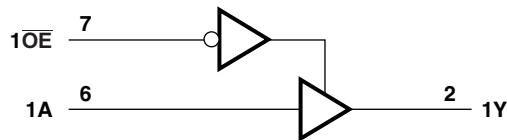
T_A	PACKAGE ⁽²⁾	ORDERABLE PART NUMBER	TOP-SIDE MARKING ⁽³⁾
-40°C to 85°C	NanoStar™ – WCSP (DSBGA) 0.23-mm Large Bump – YFP (Pb-free)	Reel of 3000	SN74AUP2G125YFPR _ _ _ HM_
	NanoStar™ – WCSP (DSBGA) 0.23-mm Large Bump – YZP (Pb-free)	Reel of 3000	SN74AUP2G125YZPR _ _ _ HM_
	uQFN – DQE	Reel of 5000	SN74AUP2G125DQER PV
	QFN – RSE	Reel of 5000	SN74AUP2G125RSER PV
	VSSOP – DCU	Reel of 3000	SN74AUP2G125DCUR H25_

- (1) For the most current package and ordering information, see the Package Option Addendum at the end of this document, or see the TI web site at www.ti.com.
- (2) Package drawings, thermal data, and symbolization are available at www.ti.com/packaging.
- (3) YFP/YZP: The actual top-side marking has three preceding characters to denote year, month, and sequence code, and one following character to designate the wafer fab/assembly site. Pin 1 identifier indicates solder-bump composition (1 = SnPb, • = Pb-free). DCU: The actual top-side marking has one additional character to designate the wafer fab/assembly site.

FUNCTION TABLE

INPUTS		OUTPUT Y
\overline{OE}	A	
L	H	H
L	L	L
H	X ⁽¹⁾	Z

(1) Floating inputs allowed.

LOGIC DIAGRAM (POSITIVE LOGIC)
DCU, YFP, and YZP Packages

RSE Package

ABSOLUTE MAXIMUM RATINGS⁽¹⁾

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

		MIN	MAX	UNIT
V_{CC}	Supply voltage range	-0.5	4.6	V
V_I	Input voltage range ⁽²⁾	-0.5	4.6	V
V_O	Voltage range applied to any output in the high-impedance or power-off state ⁽²⁾	-0.5	4.6	V
V_O	Output voltage range in the high or low state ⁽²⁾	-0.5	$V_{CC} + 0.5$	V
I_{IK}	Input clamp current	$V_I < 0$		-50 mA
I_{OK}	Output clamp current	$V_O < 0$		-50 mA
I_O	Continuous output current			± 20 mA
	Continuous current through V_{CC} or GND			± 50 mA
θ_{JA}	Package thermal impedance ⁽³⁾	DCU package	227	°C/W
		DQE package	261	
		RSE package	253	
		YFP package	132	
		YZP package	102	
T_{stg}	Storage temperature range	-65	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 negative-voltage and output voltage ratings may be exceeded if the input and output current ratings are observed.

(3) The package thermal impedance is calculated in accordance with JESD 51-7.

RECOMMENDED OPERATING CONDITIONS⁽¹⁾

			MIN	MAX	UNIT
V_{CC}	Supply voltage		0.8	3.6	V
V_{IH}	High-level input voltage	$V_{CC} = 0.8 \text{ V}$	V_{CC}	3.6	V
		$V_{CC} = 1.1 \text{ V to } 1.95 \text{ V}$	$0.65 \times V_{CC}$	3.6	
		$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$	1.6	3.6	
		$V_{CC} = 3 \text{ V to } 3.6 \text{ V}$	2	3.6	
V_{IL}	Low-level input voltage	$V_{CC} = 0.8 \text{ V}$	0		V
		$V_{CC} = 1.1 \text{ V to } 1.95 \text{ V}$	0	$0.35 \times V_{CC}$	
		$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$	0	0.7	
		$V_{CC} = 3 \text{ V to } 3.6 \text{ V}$	0	0.9	
V_O	Output voltage	Active state	0	V_{CC}	V
		3-state	0	3.6	
I_{OH}	High-level output current	$V_{CC} = 0.8 \text{ V}$		-20	μA
		$V_{CC} = 1.1 \text{ V}$		-1.1	mA
		$V_{CC} = 1.4 \text{ V}$		-1.7	
		$V_{CC} = 1.65 \text{ V}$		-1.9	
		$V_{CC} = 2.3 \text{ V}$		-3.1	
		$V_{CC} = 3 \text{ V}$		-4	
I_{OL}	Low-level output current	$V_{CC} = 0.8 \text{ V}$		20	μA
		$V_{CC} = 1.1 \text{ V}$		1.1	mA
		$V_{CC} = 1.4 \text{ V}$		1.7	
		$V_{CC} = 1.65 \text{ V}$		1.9	
		$V_{CC} = 2.3 \text{ V}$		3.1	
		$V_{CC} = 3 \text{ V}$		4	
$\Delta t/\Delta v$	Input transition rise or fall rate	$V_{CC} = 0.8 \text{ V to } 3.6 \text{ V}$		200	ns/V
T_A	Operating free-air temperature			-40	$^{\circ}\text{C}$

(1) All unused inputs of the device must be held at V_{CC} or GND to ensure proper device operation. See the TI application report *Implications of Slow of Floating CMOS Inputs*, literature number [SCBA004](#).

ELECTRICAL CHARACTERISTICS

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

PARAMETER	TEST CONDITIONS	V _{CC}	T _A = 25°C			T _A = -40°C to 85°C		UNIT
			MIN	TYP	MAX	MIN	MAX	
V _{OH}	I _{OH} = -20 µA	0.8 V to 3.6 V	V _{CC} – 0.1			V _{CC} – 0.1		V
	I _{OH} = -1.1 mA	1.1 V	0.75 × V _{CC}			0.7 × V _{CC}		
	I _{OH} = -1.7 mA	1.4 V		1.11			1.03	
	I _{OH} = -1.9 mA	1.65 V		1.32			1.3	
	I _{OH} = -2.3 mA	2.3 V		2.05			1.97	
	I _{OH} = -3.1 mA			1.9			1.85	
	I _{OH} = -2.7 mA	3 V		2.72			2.67	
	I _{OH} = -4 mA			2.6			2.55	
V _{OL}	I _{OL} = 20 µA	0.8 V to 3.6 V			0.1		0.1	V
	I _{OL} = 1.1 mA	1.1 V		0.3 × V _{CC}			0.3 × V _{CC}	
	I _{OL} = 1.7 mA	1.4 V			0.31		0.37	
	I _{OL} = 1.9 mA	1.65 V		0.31			0.35	
	I _{OL} = 2.3 mA	2.3 V		0.31			0.33	
	I _{OL} = 3.1 mA			0.44			0.45	
	I _{OL} = 2.7 mA	3 V		0.31			0.33	
	I _{OL} = 4 mA			0.44			0.45	
I _I	A or \overline{OE} input	V _I = GND to 3.6 V	0 V to 3.6 V		0.1		0.5	µA
I _{off}		V _I or V _O = 0 V to 3.6 V	0 V		0.2		0.6	µA
ΔI_{off}		V _I or V _O = 0 V to 3.6 V	0 V to 0.2 V		0.2		0.9	µA
I _{OZ}		V _O = V _{CC} or GND	3.6 V		0.1		0.5	µA
I _{CC}		V _I = GND or (V _{CC} to 3.6 V), \overline{OE} = GND, I _O = 0	0.8 V to 3.6 V		0.5		0.9	µA
ΔI_{CC}	A input	V _I = V _{CC} – 0.6 V ⁽¹⁾ , I _O = 0	3.3 V		40		50	µA
	\overline{OE} input				110		120	
	All inputs	V _I = GND to 3.6 V, \overline{OE} = V _{CC} ⁽²⁾	0.8 V to 3.6 V		0		0	
C _I		V _I = V _{CC} or GND	0 V		2			pF
			3.6 V		2			
C _O		V _O = V _{CC} or GND	3.6 V		3			pF

(1) One input at V_{CC} – 0.6 V, other input at V_{CC} or GND

(2) To show I_{CC} is very low when the input-disable feature is enabled

SWITCHING CHARACTERISTICS

over recommended operating free-air temperature range, $C_L = 5 \text{ pF}$ (unless otherwise noted) (see [Figure 3](#) and [Figure 4](#))

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V_{CC}	$T_A = 25^\circ\text{C}$			$T_A = -40^\circ\text{C to } 85^\circ\text{C}$		UNIT
				MIN	TYP	MAX	MIN	MAX	
t_{pd}	A	Y	0.8 V		23.0				ns
			1.2 V ± 0.1 V	0.5	7.8	19.5	0.5	20.7	
			1.5 V ± 0.1 V	0.5	5.2	11.1	0.5	13.5	
			1.8 V ± 0.15 V	0.6	4.0	8.1	0.5	10.5	
			2.5 V ± 0.2 V	0.9	2.8	5.0	0.5	7.1	
			3.3 V ± 0.3 V	0.9	2.3	3.7	0.5	5.4	
t_{en}	\overline{OE}	Y	0.8 V		32.5				ns
			1.2 V ± 0.1 V	0.5	8.5	21.7	0.5	23.1	
			1.5 V ± 0.1 V	0.7	5.5	11.6	0.5	14.2	
			1.8 V ± 0.15 V	1.0	4.3	8.6	0.5	11.1	
			2.5 V ± 0.2 V	1.3	3.0	5.4	0.5	7.6	
			3.3 V ± 0.3 V	1.3	2.4	4.0	0.5	5.8	
t_{dis}	\overline{OE}	Y	0.8 V		13.0				ns
			1.2 V ± 0.1 V	1.8	5.0	9.8	1.5	10.2	
			1.5 V ± 0.1 V	0.5	3.6	7.3	0.5	7.6	
			1.8 V ± 0.15 V	0.5	3.3	5.9	0.5	6.3	
			2.5 V ± 0.2 V	0.5	2.2	3.7	0.5	4.1	
			3.3 V ± 0.3 V	1.5	2.6	4.3	1.1	4.6	

SWITCHING CHARACTERISTICS

over recommended operating free-air temperature range, $C_L = 10 \text{ pF}$ (unless otherwise noted) (see [Figure 3](#) and [Figure 4](#))

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V_{CC}	$T_A = 25^\circ\text{C}$			$T_A = -40^\circ\text{C to } 85^\circ\text{C}$		UNIT
				MIN	TYP	MAX	MIN	MAX	
t_{pd}	A	Y	0.8 V		26.0				ns
			1.2 V ± 0.1 V	0.5	8.8	21.5	0.5	22.7	
			1.5 V ± 0.1 V	1.2	6.0	12.4	0.5	14.7	
			1.8 V ± 0.15 V	1.2	4.7	9.2	0.5	11.5	
			2.5 V ± 0.2 V	1.4	3.3	5.8	0.5	7.8	
			3.3 V ± 0.3 V	1.4	2.7	4.3	0.5	6.0	
t_{en}	\overline{OE}	Y	0.8 V		35.7				ns
			1.2 V ± 0.1 V	0.5	9.6	23.8	0.5	25.1	
			1.5 V ± 0.1 V	1.5	6.4	12.9	0.5	15.5	
			1.8 V ± 0.15 V	1.5	5.0	9.8	0.5	12.2	
			2.5 V ± 0.2 V	1.6	3.5	9.6	0.5	12.3	
			3.3 V ± 0.3 V	1.6	2.9	4.7	0.5	6.4	
t_{dis}	$\overline{OE$	Y	0.8 V		14.5				ns
			1.2 V ± 0.1 V	0.9	5.8	11.2	0.8	11.5	
			1.5 V ± 0.1 V	0.5	4.1	9.0	0.5	9.2	
			1.8 V ± 0.15 V	1.3	4.4	7.5	1.1	7.8	
			2.5 V ± 0.2 V	1.2	2.9	4.7	1.0	5.0	
			3.3 V ± 0.3 V	1.9	3.8	6.1	1.7	6.3	

SWITCHING CHARACTERISTICS

over recommended operating free-air temperature range, $C_L = 15 \text{ pF}$ (unless otherwise noted) (see [Figure 3](#) and [Figure 4](#))

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V_{CC}	$T_A = 25^\circ\text{C}$			$T_A = -40^\circ\text{C to } 85^\circ\text{C}$		UNIT
				MIN	TYP	MAX	MIN	MAX	
t_{pd}	A	Y	0.8 V		28.6				ns
			1.2 V ± 0.1 V	0.5	9.8	23.5	0.5	24.6	
			1.5 V ± 0.1 V	1.7	4.1	13.5	0.5	15.7	
			1.8 V ± 0.15 V	1.6	5.3	10.2	0.5	12.4	
			2.5 V ± 0.2 V	1.8	3.8	6.4	0.5	8.4	
			3.3 V ± 0.3 V	1.7	3.1	4.8	0.5	6.4	
t_{en}	\overline{OE}	Y	0.8 V		38.9				ns
			1.2 V ± 0.1 V	0.5	10.7	24.7	0.5	26.0	
			1.5 V ± 0.1 V	1.7	7.2	14.1	0.5	16.5	
			1.8 V ± 0.15 V	2.0	5.6	10.3	0.5	12.7	
			2.5 V ± 0.2 V	2.0	4.0	6.8	0.5	8.9	
			3.3 V ± 0.3 V	1.9	3.3	5.2	0.5	6.8	
t_{dis}	\overline{OE}	Y	0.8 V		14.8				ns
			1.2 V ± 0.1 V	0.5	6.3	13.7	0.5	14.0	
			1.5 V ± 0.1 V	0.5	4.6	8.8	0.5	9.1	
			1.8 V ± 0.15 V	0.7	4.9	8.1	0.6	8.4	
			2.5 V ± 0.2 V	1.1	3.7	6.5	1.0	6.7	
			3.3 V ± 0.3 V	1.3	4.8	7.6	1.2	7.7	

SWITCHING CHARACTERISTICS

over recommended operating free-air temperature range, $C_L = 30 \text{ pF}$ (unless otherwise noted) (see [Figure 3](#) and [Figure 4](#))

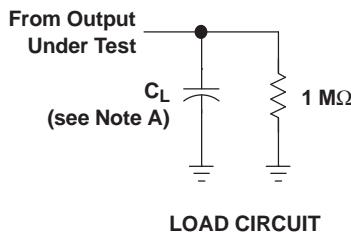
PARAMETER	FROM (INPUT)	TO (OUTPUT)	V_{CC}	$T_A = 25^\circ\text{C}$			$T_A = -40^\circ\text{C to } 85^\circ\text{C}$		UNIT
				MIN	TYP	MAX	MIN	MAX	
t_{pd}	A	Y	0.8 V		37.9				ns
			1.2 V ± 0.1 V	0.5	13.0	30.2	0.5	31.1	
			1.5 V ± 0.1 V	3.2	8.9	17.2	0.9	19.2	
			1.8 V ± 0.15 V	3.0	7.1	13.0	0.8	15.0	
			2.5 V ± 0.2 V	3.0	5.2	8.3	1.2	10.2	
			3.3 V ± 0.3 V	2.7	4.3	6.5	1.3	7.9	
t_{en}	\overline{OE}	Y	0.8 V		49.9				ns
			1.2 V ± 0.1 V	0.5	14.1	31.7	0.5	32.8	
			1.5 V ± 0.1 V	2.7	9.6	17.8	0.6	20.0	
			1.8 V ± 0.15 V	2.5	7.5	13.2	0.5	15.4	
			2.5 V ± 0.2 V	2.9	5.5	8.6	1.2	10.6	
			3.3 V ± 0.3 V	2.7	4.6	6.7	1.4	8.3	
t_{dis}	$\overline{OE$	Y	0.8 V		17.9				ns
			1.2 V ± 0.1 V	0.5	8.7	17.4	0.5	17.6	
			1.5 V ± 0.1 V	0.5	6.5	14.0	0.5	14.0	
			1.8 V ± 0.15 V	2.4	8.1	12.9	2.3	13.0	
			2.5 V ± 0.2 V	1.8	5.7	10.4	1.7	10.6	
			3.3 V ± 0.3 V	3.9	8.6	13.5	3.8	13.6	

OPERATING CHARACTERISTICS

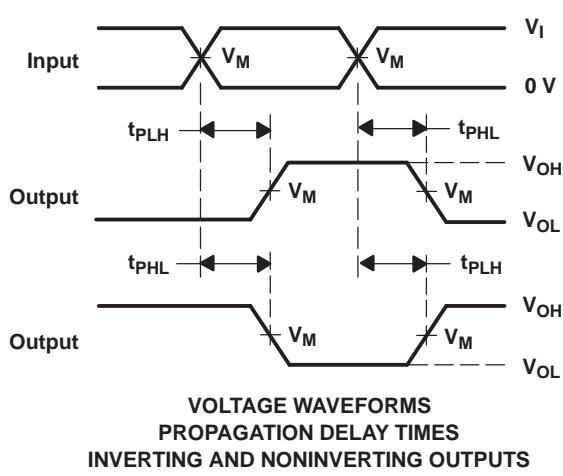
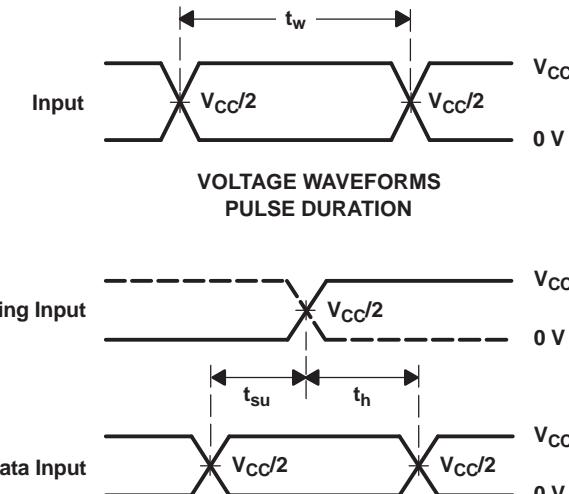
 $T_A = 25^\circ\text{C}$

PARAMETER		TEST CONDITIONS	V_{CC}	TYP	UNIT
C_{pd} Power dissipation capacitance	Outputs enabled	$f = 10 \text{ MHz}$	0.8 V	3.8	pF
			1.2 V $\pm 0.1 \text{ V}$	3.7	
			1.5 V $\pm 0.1 \text{ V}$	3.7	
			1.8 V $\pm 0.15 \text{ V}$	3.7	
			2.5 V $\pm 0.2 \text{ V}$	3.9	
			3.3 V $\pm 0.3 \text{ V}$	4	
	Outputs disabled	$f = 10 \text{ MHz}$	0.8 V	0	
			1.2 V $\pm 0.1 \text{ V}$	0	
			1.5 V $\pm 0.1 \text{ V}$	0	
			1.8 V $\pm 0.15 \text{ V}$	0	
			2.5 V $\pm 0.2 \text{ V}$	0	
			3.3 V $\pm 0.3 \text{ V}$	0	

PARAMETER MEASUREMENT INFORMATION (Propagation Delays, Setup and Hold Times, and Pulse Duration)


LOAD CIRCUIT

	$V_{CC} = 0.8\text{ V}$	$V_{CC} = 1.2\text{ V} \pm 0.1\text{ V}$	$V_{CC} = 1.5\text{ V} \pm 0.1\text{ V}$	$V_{CC} = 1.8\text{ V} \pm 0.15\text{ V}$	$V_{CC} = 2.5\text{ V} \pm 0.2\text{ V}$	$V_{CC} = 3.3\text{ V} \pm 0.3\text{ V}$
C_L	5, 10, 15, 30 pF	5, 10, 15, 30 pF	5, 10, 15, 30 pF	5, 10, 15, 30 pF	5, 10, 15, 30 pF	5, 10, 15, 30 pF
V_M	$V_{CC}/2$	$V_{CC}/2$	$V_{CC}/2$	$V_{CC}/2$	$V_{CC}/2$	$V_{CC}/2$
V_I	V_{CC}	V_{CC}	V_{CC}	V_{CC}	V_{CC}	V_{CC}

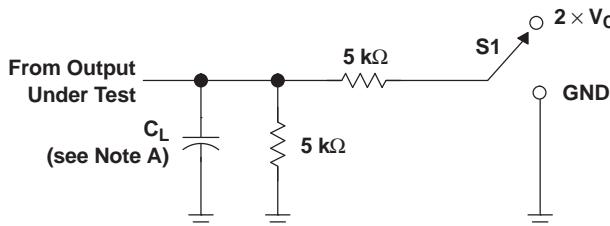

**VOLTAGE WAVEFORMS
PROPAGATION DELAY TIMES
INVERTING AND NONINVERTING OUTPUTS**

**VOLTAGE WAVEFORMS
PULSE DURATION**
**VOLTAGE WAVEFORMS
SETUP AND HOLD TIMES**

NOTES:

- C_L includes probe and jig capacitance.
- All input pulses are supplied by generators having the following characteristics: PRR $\leq 10\text{ MHz}$, $Z_O = 50\text{ }\Omega$, $t_r/t_f = 3\text{ ns}$.
- The outputs are measured one at a time, with one transition per measurement.
- t_{PLH} and t_{PHL} are the same as t_{pd} .
- All parameters and waveforms are not applicable to all devices.

Figure 3. Load Circuit and Voltage Waveforms

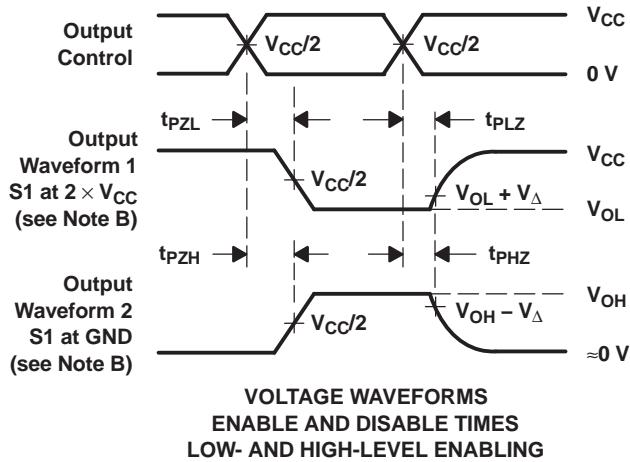
PARAMETER MEASUREMENT INFORMATION (Enable and Disable Times)



TEST	S1
t_{PLZ}/t_{PZL} t_{PHZ}/t_{PZH}	2 × V _{CC} GND

LOAD CIRCUIT

	$V_{CC} = 0.8 \text{ V}$	$V_{CC} = 1.2 \text{ V} \pm 0.1 \text{ V}$	$V_{CC} = 1.5 \text{ V} \pm 0.1 \text{ V}$	$V_{CC} = 1.8 \text{ V} \pm 0.15 \text{ V}$	$V_{CC} = 2.5 \text{ V} \pm 0.2 \text{ V}$	$V_{CC} = 3.3 \text{ V} \pm 0.3 \text{ V}$
C_L	5, 10, 15, 30 pF	5, 10, 15, 30 pF	5, 10, 15, 30 pF	5, 10, 15, 30 pF	5, 10, 15, 30 pF	5, 10, 15, 30 pF
V_M	$V_{CC}/2$	$V_{CC}/2$	$V_{CC}/2$	$V_{CC}/2$	$V_{CC}/2$	$V_{CC}/2$
V_I	V_{CC}	V_{CC}	V_{CC}	V_{CC}	V_{CC}	V_{CC}
V_Δ	0.1 V	0.1 V	0.1 V	0.15 V	0.15 V	0.3 V



NOTES:

- C_L includes probe and jig capacitance.
- 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.
- All input pulses are supplied by generators having the following characteristics: PRR $\leq 10 \text{ MHz}$, $Z_O = 50 \Omega$, $t_r/t_f = 3 \text{ ns}$.
- The outputs are measured one at a time, with one transition per measurement.
- t_{PLZ} and t_{PHZ} are the same as t_{dis} .
- t_{PZL} and t_{PZH} are the same as t_{en} .
- All parameters and waveforms are not applicable to all devices.

Figure 4. 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
SN74AUP2G125DCUR	ACTIVE	VSSOP	DCU	8	3000	Green (RoHS & no Sb/Br)	NIPDAU	Level-1-260C-UNLIM	-40 to 85	H25R	Samples
SN74AUP2G125DQER	ACTIVE	X2SON	DQE	8	5000	Green (RoHS & no Sb/Br)	NIPDAUAG	Level-1-260C-UNLIM	-40 to 85	PV	Samples
SN74AUP2G125RSER	ACTIVE	UQFN	RSE	8	5000	Green (RoHS & no Sb/Br)	NIPDAUAG	Level-1-260C-UNLIM	-40 to 85	PV	Samples
SN74AUP2G125YFPR	ACTIVE	DSBGA	YFP	8	3000	Green (RoHS & no Sb/Br)	SNAGCU	Level-1-260C-UNLIM	-40 to 85	HMN	Samples
SN74AUP2G125YZPR	ACTIVE	DSBGA	YZP	8	3000	Green (RoHS & no Sb/Br)	SNAGCU	Level-1-260C-UNLIM	-40 to 85	HMN	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.

(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/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.



www.ti.com

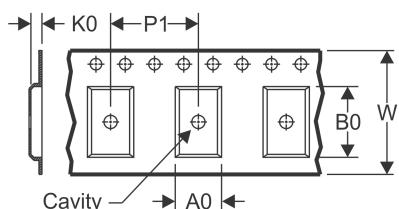
PACKAGE OPTION ADDENDUM

6-Feb-2020

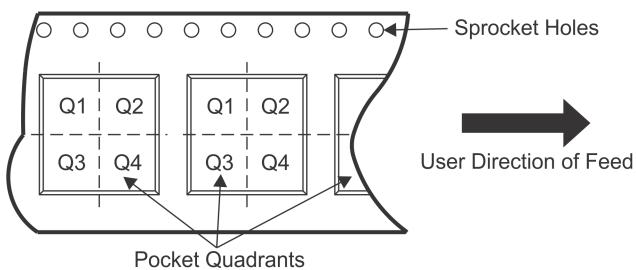
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TAPE AND REEL INFORMATION
REEL DIMENSIONS

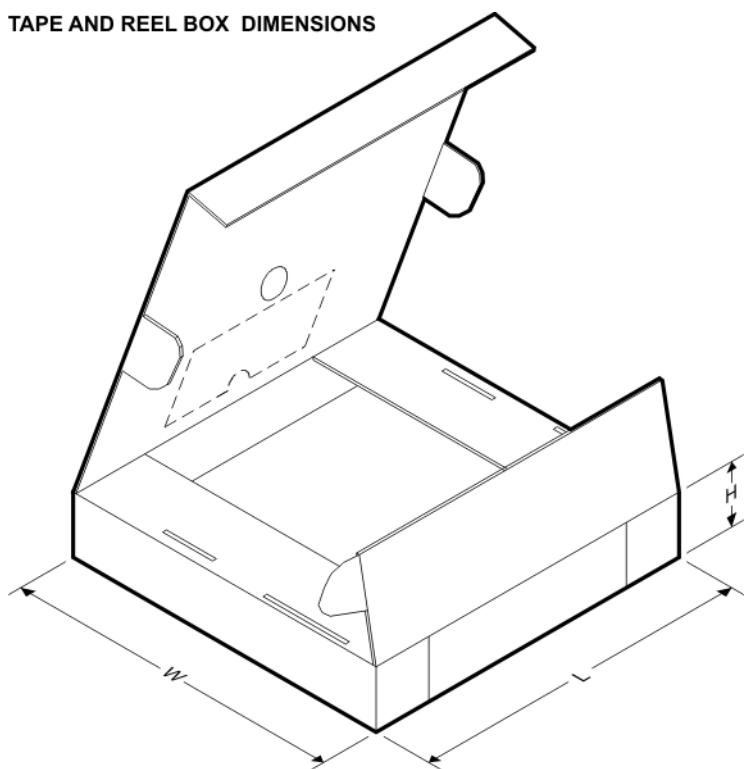
TAPE DIMENSIONS


A0	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

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
SN74AUP2G125DCUR	VSSOP	DCU	8	3000	180.0	8.4	2.25	3.35	1.05	4.0	8.0	Q3
SN74AUP2G125DQER	X2SON	DQE	8	5000	180.0	8.4	1.2	1.6	0.55	4.0	8.0	Q1
SN74AUP2G125RSER	UQFN	RSE	8	5000	180.0	8.4	1.7	1.7	0.7	4.0	8.0	Q2
SN74AUP2G125YFPR	DSBGA	YFP	8	3000	178.0	9.2	0.9	1.75	0.6	4.0	8.0	Q1
SN74AUP2G125YZPR	DSBGA	YZP	8	3000	178.0	9.2	1.02	2.02	0.63	4.0	8.0	Q1

TAPE AND REEL BOX DIMENSIONS


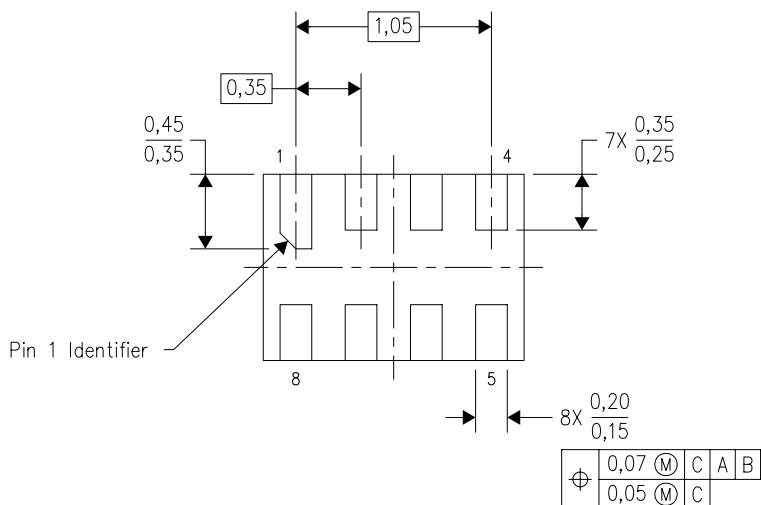
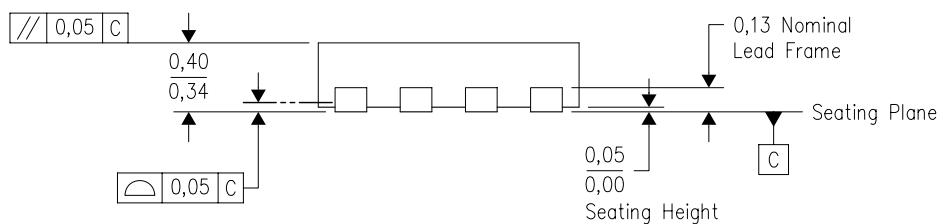
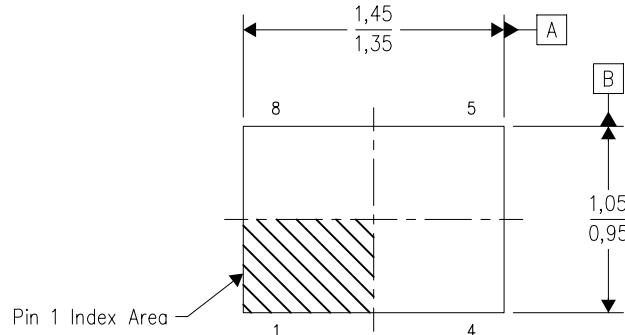
*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74AUP2G125DCUR	VSSOP	DCU	8	3000	202.0	201.0	28.0
SN74AUP2G125DQER	X2SON	DQE	8	5000	202.0	201.0	28.0
SN74AUP2G125RSER	UQFN	RSE	8	5000	202.0	201.0	28.0
SN74AUP2G125YFPR	DSBGA	YFP	8	3000	220.0	220.0	35.0
SN74AUP2G125YZPR	DSBGA	YZP	8	3000	220.0	220.0	35.0

MECHANICAL DATA

DQE (R-PX2SON-N8)

PLASTIC SMALL OUTLINE NO-LEAD



Bottom View

4209779/B 10/2008

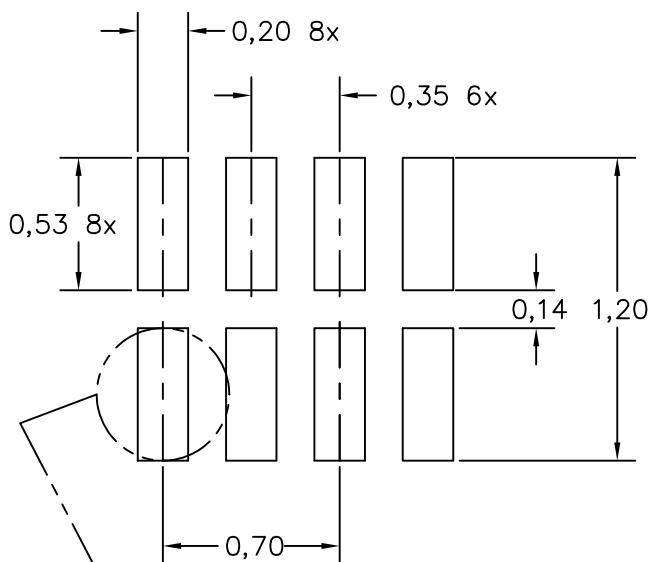
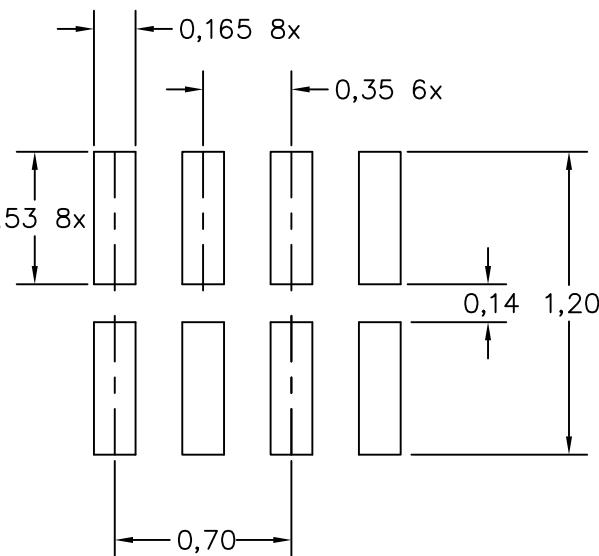
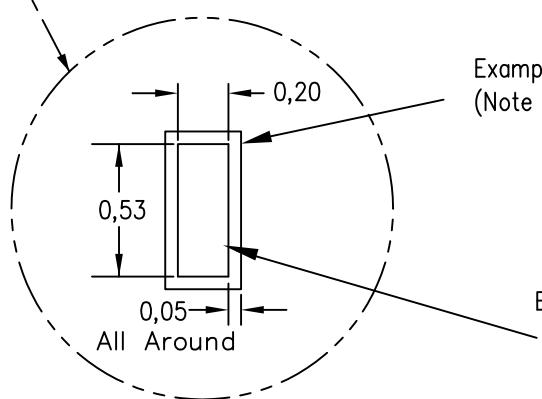
NOTES:

- All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M-1994.
- This drawing is subject to change without notice.
- SON (Small Outline No-Lead) package configuration.
- This package complies to JEDEC MO-287 variation X2EAF.

DQE (R-PX2SON-N8)

PLASTIC SMALL OUTLINE NO-LEAD

Example Board Layout

Example Stencil Design
(Note E)Example Solder Mask Clearance
(Note D)Example Pad Geometry
(Note C)

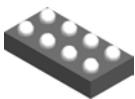
4211032/C 10/12

NOTES:

- All linear dimensions are in millimeters.
- This drawing is subject to change without notice.
- Publication IPC-7351 is recommended for alternate designs.
- 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.
- Maximum stencil thickness 0,1016 mm (4 mils). All linear dimensions are in millimeters.
- 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.
- Over-printing land for acceptable area ratio is not viable due to land width and bridging potential. Customer may further reduce side aperture dimensions if stencil manufacturing process allows for sufficient release at smaller opening.
- Suggest stencils cut with lasers such as Fiber Laser that produce the greatest positional accuracy.
- Component placement force should be minimized to prevent excessive paste block deformation.

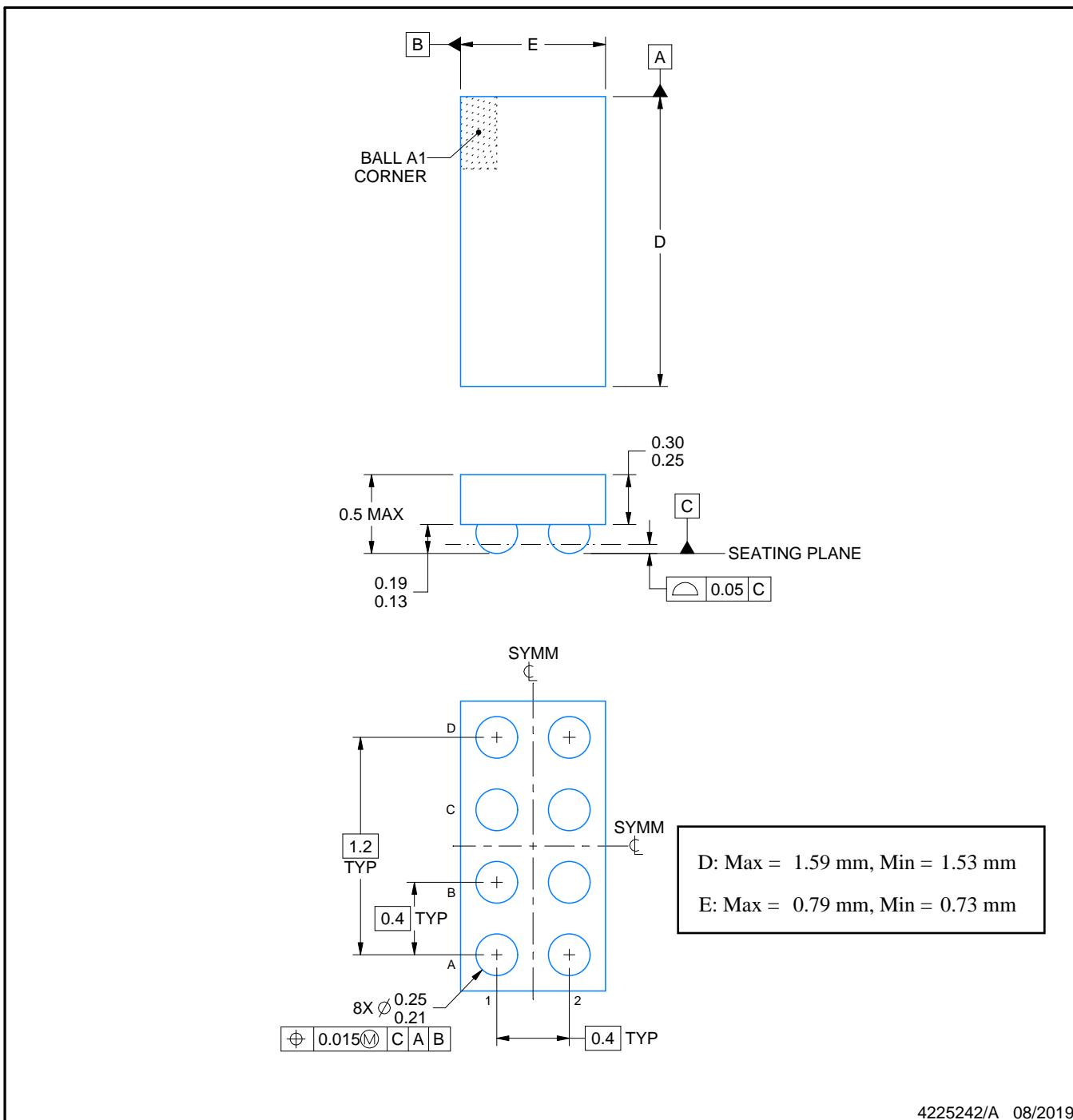
PACKAGE OUTLINE

YFP0008



DSBGA - 0.5 mm max height

DIE SIZE BALL GRID ARRAY



4225242/A 08/2019

NOTES:

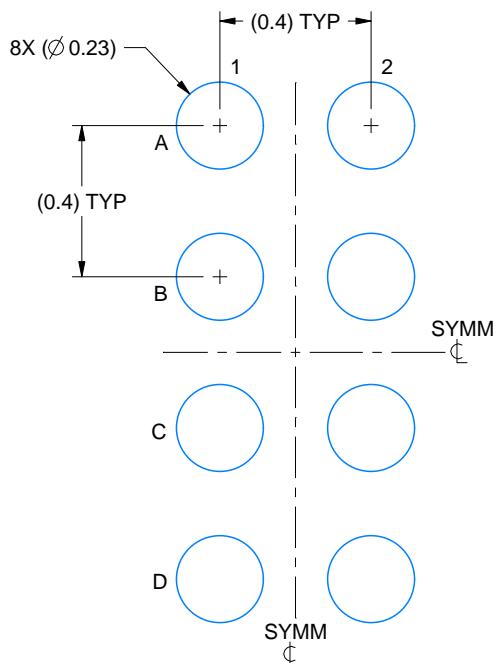
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.

EXAMPLE BOARD LAYOUT

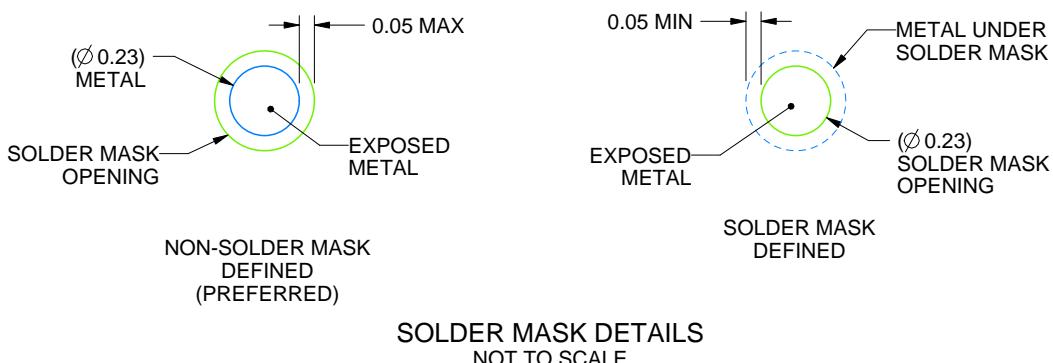
YFP0008

DSBGA - 0.5 mm max height

DIE SIZE BALL GRID ARRAY



LAND PATTERN EXAMPLE
EXPOSED METAL SHOWN
SCALE: 50X



SOLDER MASK DETAILS
NOT TO SCALE

4225242/A 08/2019

NOTES: (continued)

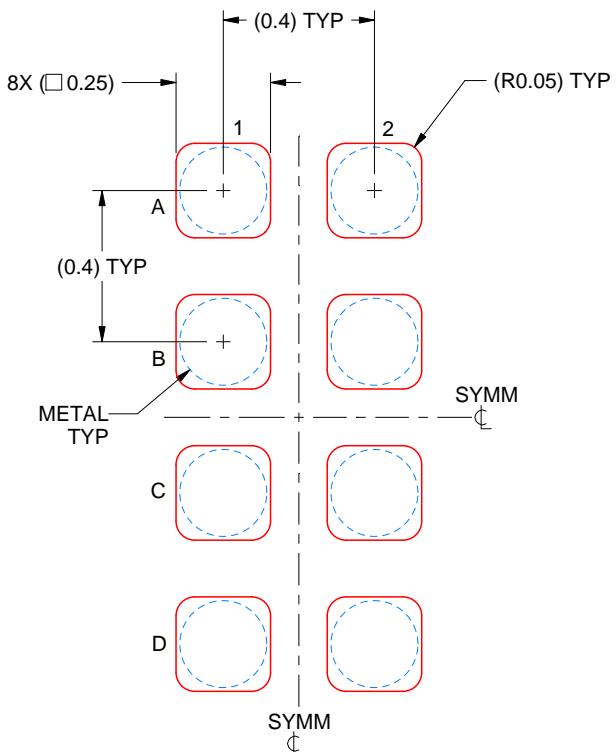
3. Final dimensions may vary due to manufacturing tolerance considerations and also routing constraints.
See Texas Instruments Literature No. SNVA009 (www.ti.com/lit/snva009).

EXAMPLE STENCIL DESIGN

YFP0008

DSBGA - 0.5 mm max height

DIE SIZE BALL GRID ARRAY



SOLDER PASTE EXAMPLE
BASED ON 0.1 mm THICK STENCIL
SCALE: 50X

4225242/A 08/2019

NOTES: (continued)

4. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release.

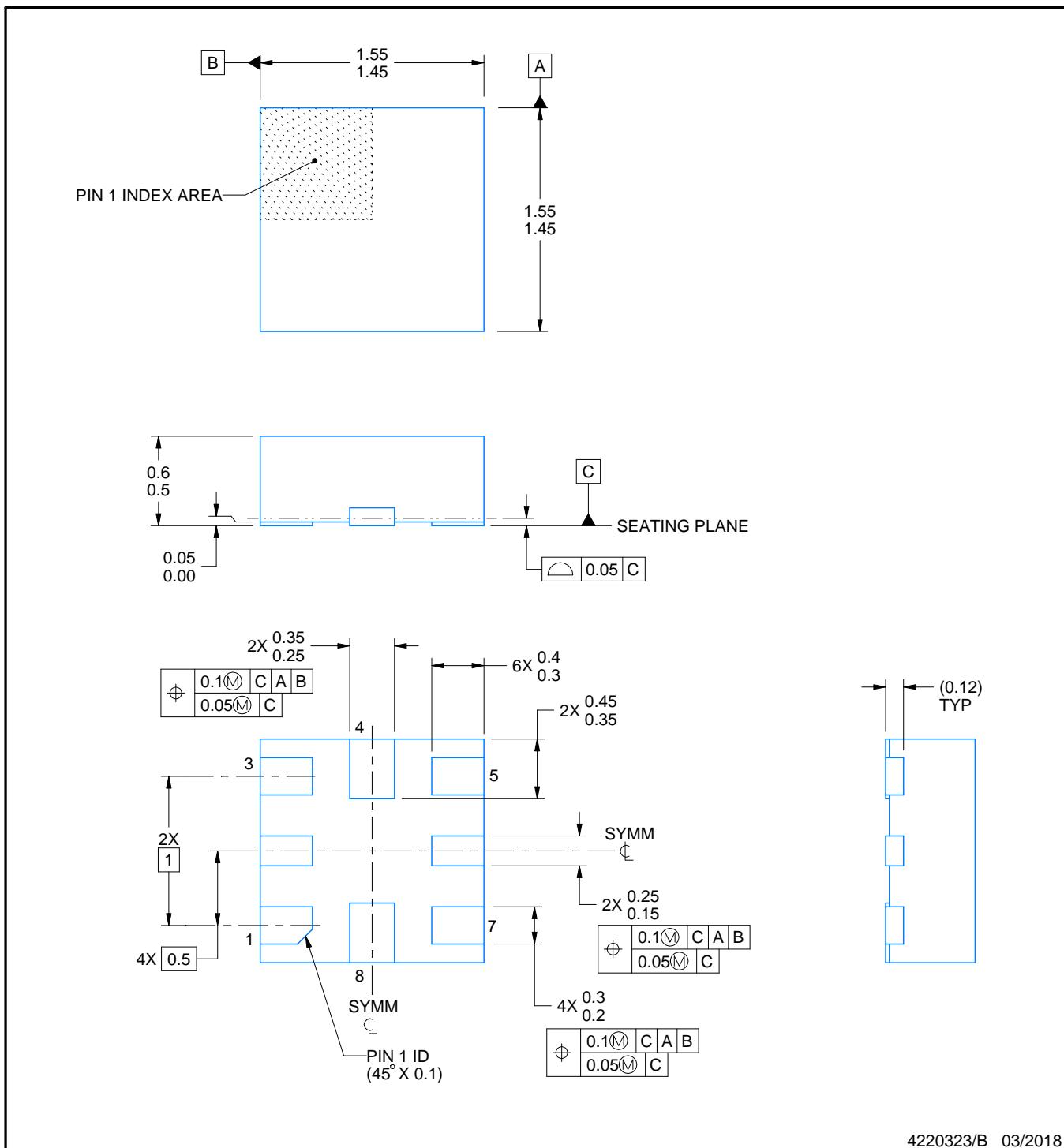
PACKAGE OUTLINE

RSE0008A



UQFN - 0.6 mm max height

PLASTIC QUAD FLATPACK - NO LEAD



4220323/B 03/2018

NOTES:

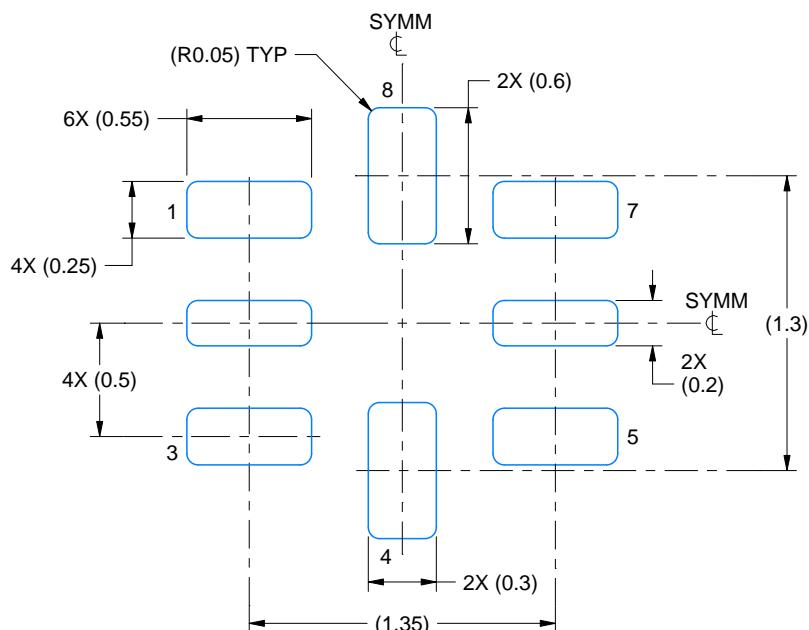
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.

EXAMPLE BOARD LAYOUT

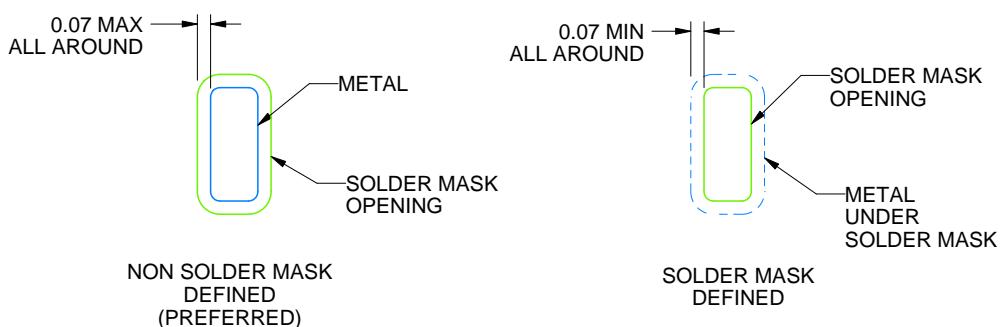
RSE0008A

UQFN - 0.6 mm max height

PLASTIC QUAD FLATPACK - NO LEAD



LAND PATTERN EXAMPLE



**SOLDER MASK DETAILS
NOT TO SCALE**

4220323/B 03/2018

NOTES: (continued)

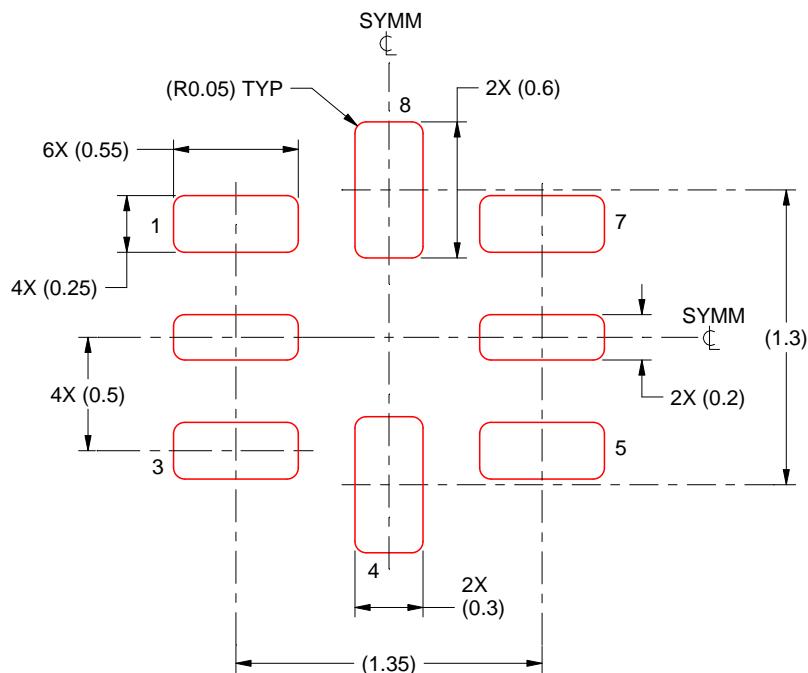
3. For more information, see Texas Instruments literature number SLUA271 (www.ti.com/lit/slua271).

EXAMPLE STENCIL DESIGN

RSE0008A

UQFN - 0.6 mm max height

PLASTIC QUAD FLATPACK - NO LEAD



**SOLDER PASTE EXAMPLE
BASED ON 0.1 mm THICKNESS
SCALE: 30X**

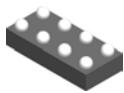
4220323/B 03/2018

NOTES: (continued)

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

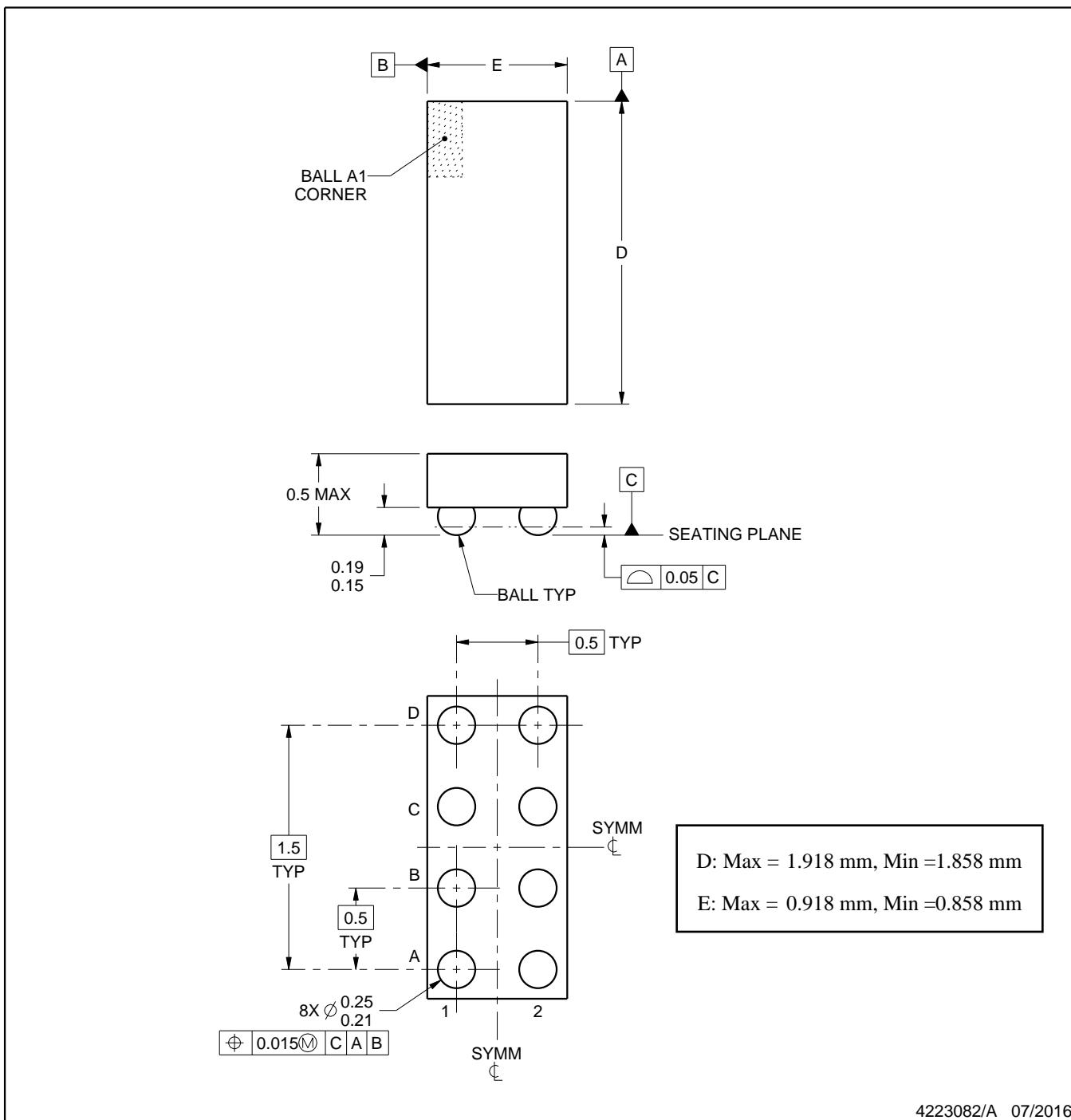
PACKAGE OUTLINE

YZP0008



DSBGA - 0.5 mm max height

DIE SIZE BALL GRID ARRAY



4223082/A 07/2016

NOTES:

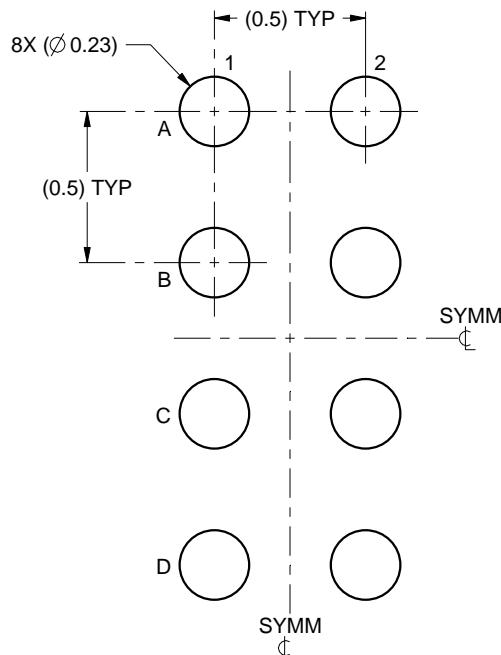
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.

EXAMPLE BOARD LAYOUT

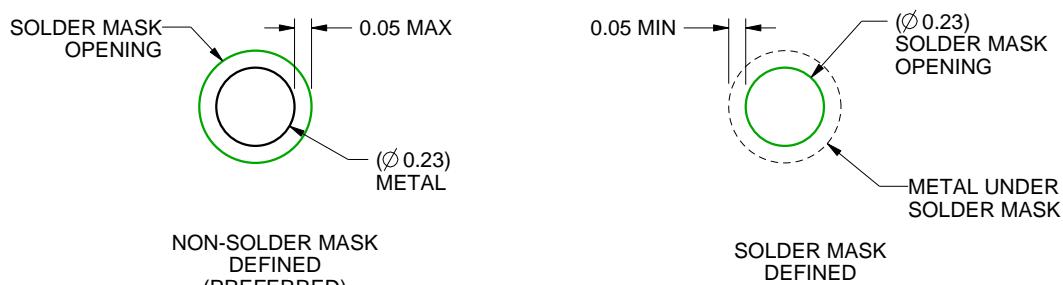
YZP0008

DSBGA - 0.5 mm max height

DIE SIZE BALL GRID ARRAY



LAND PATTERN EXAMPLE
SCALE:40X



SOLDER MASK DETAILS
NOT TO SCALE

4223082/A 07/2016

NOTES: (continued)

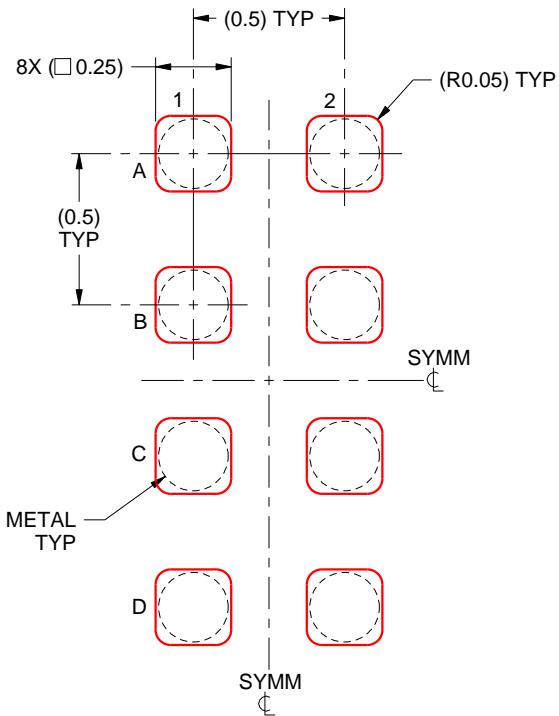
3. Final dimensions may vary due to manufacturing tolerance considerations and also routing constraints. For more information, see Texas Instruments literature number SNVA009 (www.ti.com/lit/snva009).

EXAMPLE STENCIL DESIGN

YZP0008

DSBGA - 0.5 mm max height

DIE SIZE BALL GRID ARRAY



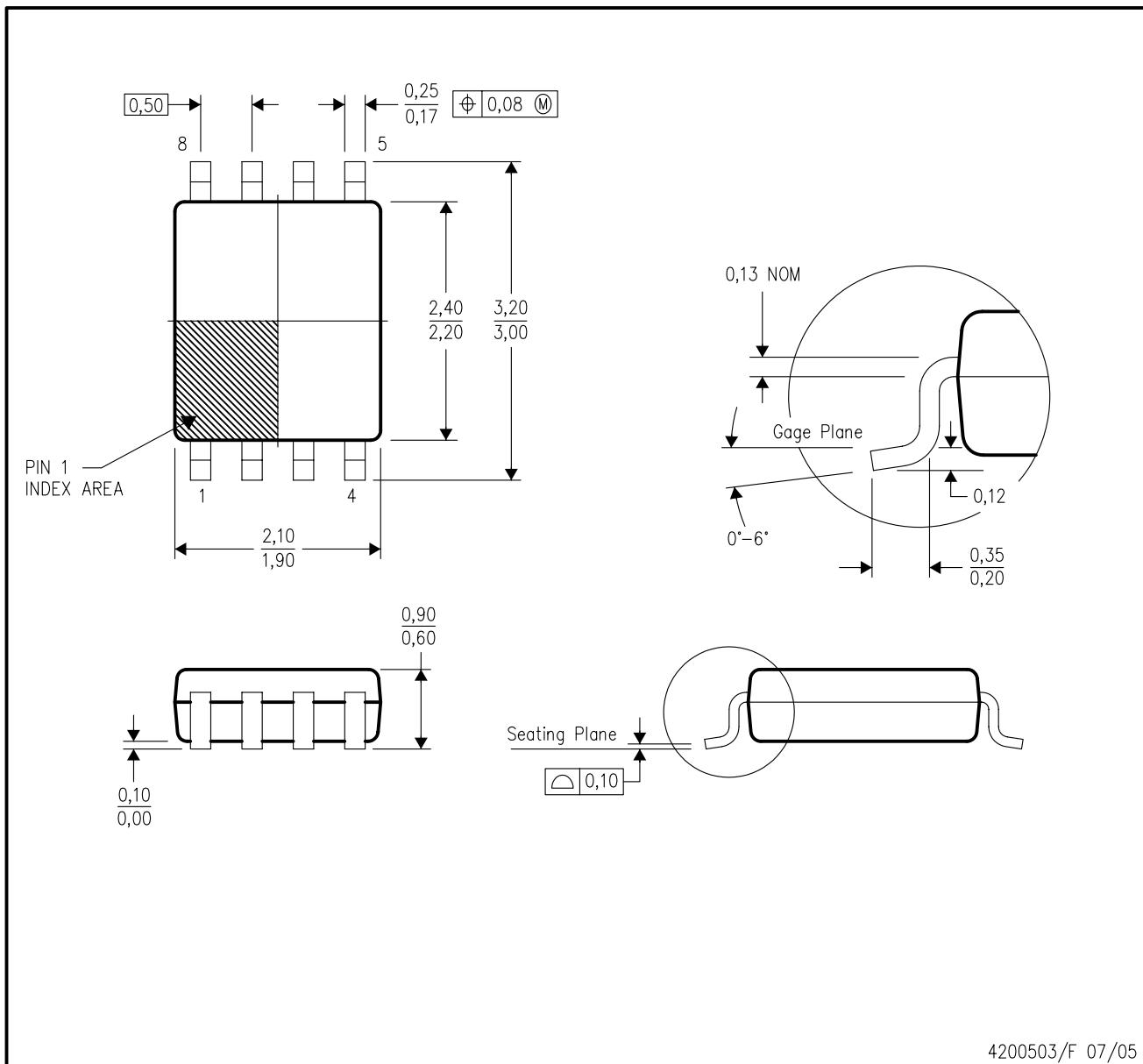
4223082/A 07/2016

NOTES: (continued)

4. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release.

DCU (R-PDSO-G8)

PLASTIC SMALL-OUTLINE PACKAGE (DIE DOWN)



4200503/F 07/05

NOTES:

- All linear dimensions are in millimeters.
- This drawing is subject to change without notice.
- Body dimensions do not include mold flash or protrusion. Mold flash and protrusion shall not exceed 0.15 per side.
- Falls within JEDEC MO-187 variation CA.

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