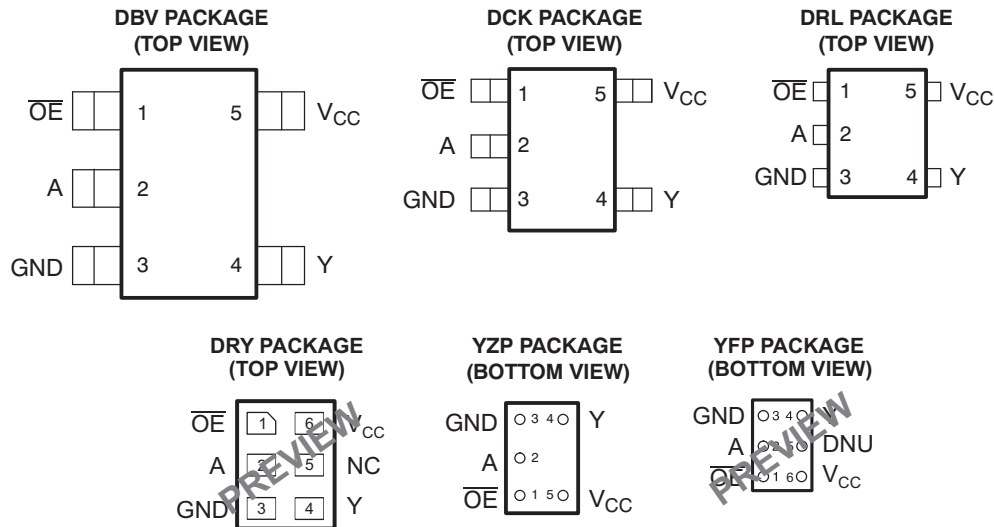


FEATURES

- Available in the Texas Instruments NanoFree™ Package
- Low Static-Power Consumption ($I_{CC} = 0.9 \mu\text{A Max}$)
- Low Dynamic-Power Consumption ($C_{pd} = 4 \text{ pF Typ at } 3.3 \text{ V}$)
- 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
- $t_{pd} = 4.6 \text{ ns Max at } 3.3 \text{ V}$
- 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)
 - 200-V Machine Model (A115-A)
 - 1000-V Charged-Device Model (C101)
- ESD Protection Exceeds $\pm 5000 \text{ V}$ With Human-Body Model



NC – No internal connection
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 Figures 1 and 2).

This bus buffer gate is a single line driver with a 3-state output. The output is disabled when the 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.



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.

NanoFree is a trademark of Texas Instruments.

SN74AUP1G125

LOW-POWER SINGLE BUS BUFFER GATE WITH 3-STATE OUTPUT

SCES595H–JULY 2004–REVISED MAY 2007

DESCRIPTION/ORDERING INFORMATION (CONTINUED)

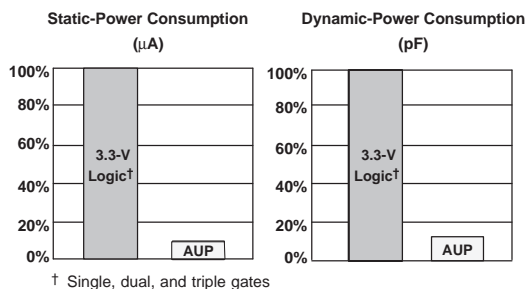


Figure 1. AUP – The Lowest-Power Family

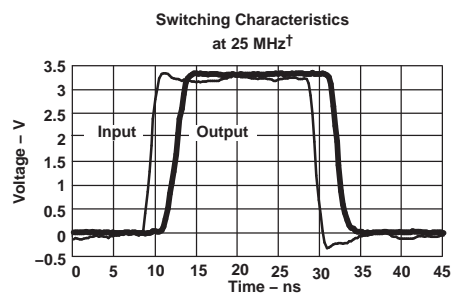


Figure 2. Excellent Signal Integrity

NanoFree™ 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

T_A	PACKAGE ⁽¹⁾⁽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	SN74AUP1G125YFPR	PREVIEW
	NanoStar™ – WCSP (DSBGA) 0.23-mm Large Bump – YZP (Pb-free)	Reel of 3000	SN74AUP1G125YZPR	___ HM _
	SON – DRY	Reel of 5000	SN74AUP1G125DRYR	PREVIEW
	SOT (SOT-23) – DBV	Reel of 3000	SN74AUP1G125DBVR	H25_
		Reel of 250	SN74AUP1G125DBVT	
	SOT (SC-70) – DCK	Reel of 3000	SN74AUP1G125DCKR	HM_
		Reel of 250	SN74AUP1G125DCKT	
SOT (SOT-553) – DRL	Reel of 4000	SN74AUP1G125DRLR		

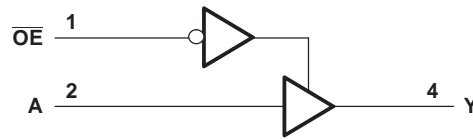
- (1) Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at www.ti.com/sc/package.
- (2) For the most current package and ordering information, see the Package Option Addendum at the end of this document, or see the TI website at www.ti.com.
- (3) DBV/DCK/DRL/DRY: The actual top-side marking has one additional character that designates the assembly/test site. 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 assembly/test site. Pin 1 identifier indicates solder-bump composition (1 = SnPb, • = Pb-free).

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)



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⁾	DBV package	206	°C/W
		DCK package	252	
		DRL package	142	
		DRY package	234	
		YFP/YZP package	132	
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.

SN74AUP1G125

LOW-POWER SINGLE BUS BUFFER GATE WITH 3-STATE OUTPUT

SCES595H–JULY 2004–REVISED MAY 2007

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 V	V _{CC}	3.6
		V _{CC} = 1.1 V to 1.95 V	0.65 × V _{CC}	3.6
		V _{CC} = 2.3 V to 2.7 V	1.6	3.6
		V _{CC} = 3 V to 3.6 V	2	3.6
V _{IL}	Low-level input voltage	V _{CC} = 0.8 V	0	
		V _{CC} = 1.1 V to 1.95 V	0	0.35 × V _{CC}
		V _{CC} = 2.3 V to 2.7 V	0	0.7
		V _{CC} = 3 V to 3.6 V	0	0.9
V _O	Output voltage	Active state	0	V _{CC}
		3-state	0	3.6
I _{OH}	High-level output current	V _{CC} = 0.8 V		–20
		V _{CC} = 1.1 V		–1.1
		V _{CC} = 1.4 V		–1.7
		V _{CC} = 1.65 V		–1.9
		V _{CC} = 2.3 V		–3.1
		V _{CC} = 3 V		–4
I _{OL}	Low-level output current	V _{CC} = 0.8 V		20
		V _{CC} = 1.1 V		1.1
		V _{CC} = 1.4 V		1.7
		V _{CC} = 1.65 V		1.9
		V _{CC} = 2.3 V		3.1
		V _{CC} = 3 V		4
Δt/Δv	Input transition rise or fall rate	V _{CC} = 0.8 V to 3.6 V		200
T _A	Operating free-air temperature		–40	85

(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 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 _{OL}	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	0.6	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			1.5		pF
			3.6 V			1.5		
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

SN74AUP1G125

LOW-POWER SINGLE BUS BUFFER GATE

WITH 3-STATE OUTPUT

SCES595H–JULY 2004–REVISED MAY 2007

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°C		UNIT
				MIN	TYP	MAX	MIN	MAX	
t_{pd}	A	Y	0.8 V	18.1					ns
			$1.2 \text{ V} \pm 0.1 \text{ V}$	4.3	7.4	12.6	2.7	15.3	
			$1.5 \text{ V} \pm 0.1 \text{ V}$	3.3	5.2	8.5	1	10.2	
			$1.8 \text{ V} \pm 0.15 \text{ V}$	2.6	4.1	6.8	1.3	8.3	
			$2.5 \text{ V} \pm 0.2 \text{ V}$	2	2.9	4.7	1.1	5.8	
t_{en}	\overline{OE}	Y	0.8 V	19.1					ns
			$1.2 \text{ V} \pm 0.1 \text{ V}$	5.1	9.3	15.9	3.6	19.2	
			$1.5 \text{ V} \pm 0.1 \text{ V}$	4.1	6.6	10.5	2.5	12.7	
			$1.8 \text{ V} \pm 0.15 \text{ V}$	3.2	5.3	8.7	2.1	10.3	
			$2.5 \text{ V} \pm 0.2 \text{ V}$	2.5	3.8	6	1.6	7.2	
t_{dis}	\overline{OE}	Y	0.8 V	12.1					ns
			$1.2 \text{ V} \pm 0.1 \text{ V}$	2.4	4.1	6.9	2.2	7.7	
			$1.5 \text{ V} \pm 0.1 \text{ V}$	1.8	2.9	4.5	1.7	5.1	
			$1.8 \text{ V} \pm 0.15 \text{ V}$	1	2.9	4.3	1.5	4.7	
			$2.5 \text{ V} \pm 0.2 \text{ V}$	1	1.8	2.7	1	3.3	
t_{dis}	\overline{OE}	Y	$3.3 \text{ V} \pm 0.3 \text{ V}$	1.2	2.2	3.2	1.1	4	

Switching Characteristics

over recommended operating free-air temperature range, $C_L = 10$ 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°C		UNIT
				MIN	TYP	MAX	MIN	MAX	
t_{pd}	A or B	Y	0.8 V	20.5					ns
			$1.2\text{ V} \pm 0.1\text{ V}$	4.6	8.4	13.7	3.6	16.6	
			$1.5\text{ V} \pm 0.1\text{ V}$	3.5	5.9	9.3	2.4	11.1	
			$1.8\text{ V} \pm 0.15\text{ V}$	3.9	4.7	7.5	1.3	9.1	
			$2.5\text{ V} \pm 0.2\text{ V}$	2.3	3.4	5.3	1.6	6.4	
			$3.3\text{ V} \pm 0.3\text{ V}$	2.1	2.8	4.3	1.4	5.2	
t_{en}	\overline{OE}	Y	0.8 V	21.8					ns
			$1.2\text{ V} \pm 0.1\text{ V}$	4.9	10.2	16.8	4.4	20.2	
			$1.5\text{ V} \pm 0.1\text{ V}$	3.9	7.3	11.2	3.3	13.5	
			$1.8\text{ V} \pm 0.15\text{ V}$	3.4	5.8	9.2	2.7	11	
			$2.5\text{ V} \pm 0.2\text{ V}$	2.5	4.3	6.4	2.1	7.8	
			$3.3\text{ V} \pm 0.3\text{ V}$	2.1	3.7	5.4	1.9	6.4	
t_{dis}	\overline{OE}	Y	0.8 V	13					ns
			$1.2\text{ V} \pm 0.1\text{ V}$	3.8	6.6	11.7	1.2	14	
			$1.5\text{ V} \pm 0.1\text{ V}$	2.2	4.7	7.9	1.3	9.3	
			$1.8\text{ V} \pm 0.15\text{ V}$	2.4	4.4	6.4	2.2	7.5	
			$2.5\text{ V} \pm 0.2\text{ V}$	1.3	3.1	4.9	1.2	5.4	
			$3.3\text{ V} \pm 0.3\text{ V}$	1.9	3.4	5	1.9	5.6	

Switching Characteristics

over recommended operating free-air temperature range, $C_L = 15$ 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°C		UNIT
				MIN	TYP	MAX	MIN	MAX	
t_{pd}	A or B	Y	0.8 V	22.5					ns
			$1.2\text{ V} \pm 0.1\text{ V}$	5.8	9.3	15.1	4.3	17.9	
			$1.5\text{ V} \pm 0.1\text{ V}$	4.4	6.6	10.2	3	12.1	
			$1.8\text{ V} \pm 0.15\text{ V}$	3.5	5.3	8.3	2.3	9.9	
			$2.5\text{ V} \pm 0.2\text{ V}$	2.7	3.9	5.8	1.9	7	
			$3.3\text{ V} \pm 0.3\text{ V}$	2.4	3.2	4.7	1.8	5.7	
t_{en}	\overline{OE}	Y	0.8 V	25.2					ns
			$1.2\text{ V} \pm 0.1\text{ V}$	7	11.3	18.1	5.4	21.4	
			$1.5\text{ V} \pm 0.1\text{ V}$	5.5	8.1	12.2	4.1	14.5	
			$1.8\text{ V} \pm 0.15\text{ V}$	4.3	6.5	10.1	3.3	12	
			$2.5\text{ V} \pm 0.2\text{ V}$	3.4	4.8	7.1	2.6	8.4	
			$3.3\text{ V} \pm 0.3\text{ V}$	2.9	4.1	5.9	2.3	6.9	
t_{dis}	\overline{OE}	Y	0.8 V	14					ns
			$1.2\text{ V} \pm 0.1\text{ V}$	3.7	5.8	8.2	3.3	11	
			$1.5\text{ V} \pm 0.1\text{ V}$	5.5	3.9	5.9	2.1	8	
			$1.8\text{ V} \pm 0.15\text{ V}$	3.3	4.5	6.6	2.9	7.4	
			$2.5\text{ V} \pm 0.2\text{ V}$	2.3	3.2	4.3	1.8	5.1	
			$3.3\text{ V} \pm 0.3\text{ V}$	2.4	4.8	6.2	3.1	6.7	

SN74AUP1G125

LOW-POWER SINGLE BUS BUFFER GATE

WITH 3-STATE OUTPUT

SCES595H–JULY 2004–REVISED MAY 2007

Switching Characteristics

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

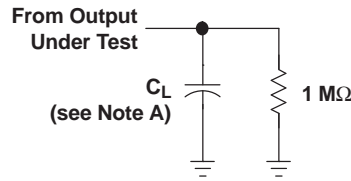
PARAMETER	FROM (INPUT)	TO (OUTPUT)	V_{CC}	$T_A = 25^\circ\text{C}$			$T_A = -40^\circ\text{C}$ to 85°C		UNIT
				MIN	TYP	MAX	MIN	MAX	
t_{pd}	A or B	Y	0.8 V	29					ns
			$1.2\text{ V} \pm 0.1\text{ V}$	7.4	12	18.7	6.6	21.4	
			$1.5\text{ V} \pm 0.1\text{ V}$	5.7	8.6	12.5	4.9	14.7	
			$1.8\text{ V} \pm 0.15\text{ V}$	4.8	6.9	10.1	3.1	12	
			$2.5\text{ V} \pm 0.2\text{ V}$	3.9	5.1	7.2	3.3	8.7	
t_{en}	\overline{OE}	Y	0.8 V	33.4					ns
			$1.2\text{ V} \pm 0.1\text{ V}$	8.8	14.1	21.8	7.4	25.5	
			$1.5\text{ V} \pm 0.1\text{ V}$	6.9	10.1	14.6	5.6	17.4	
			$1.8\text{ V} \pm 0.15\text{ V}$	5.6	8.1	12	4.7	14.1	
			$2.5\text{ V} \pm 0.2\text{ V}$	4.3	6.1	8.5	3.8	10	
t_{dis}	\overline{OE}	Y	0.8 V	17.7					ns
			$1.2\text{ V} \pm 0.1\text{ V}$	5.8	10	16	3.7	16	
			$1.5\text{ V} \pm 0.1\text{ V}$	5.7	7.7	10.9	1	10.7	
			$1.8\text{ V} \pm 0.15\text{ V}$	4.5	7.7	9.8	4.4	12.5	
			$2.5\text{ V} \pm 0.2\text{ V}$	3.9	5.6	7.4	3.2	9	
			$3.3\text{ V} \pm 0.3\text{ V}$	3.3	8.4	10.7	6.6	10.8	

Operating Characteristics

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

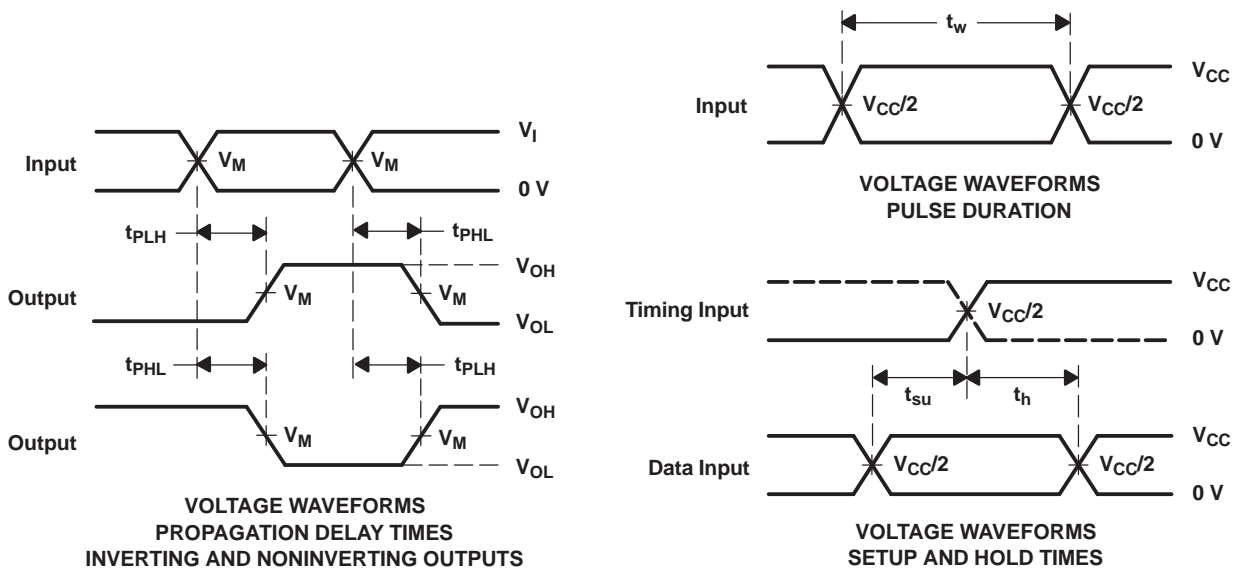
PARAMETER		TEST CONDITIONS	V_{CC}	TYP	UNIT	
C_{pd}	Power dissipation capacitance	Outputs enabled	$f = 10\text{ MHz}$	0.8 V	3.8	pF
				$1.2\text{ V} \pm 0.1\text{ V}$	3.8	
				$1.5\text{ V} \pm 0.1\text{ V}$	3.7	
				$1.8\text{ V} \pm 0.15\text{ V}$	3.8	
				$2.5\text{ V} \pm 0.2\text{ V}$	3.9	
				$3.3\text{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



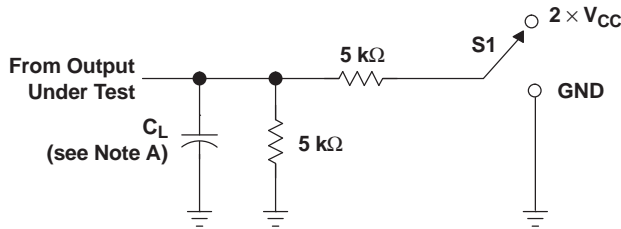
- NOTES: A. C_L includes probe and jig capacitance.
 B. All input pulses are supplied by generators having the following characteristics: $PRR \leq 10 \text{ MHz}$, $Z_O = 50 \Omega$, $t_r/t_f = 3 \text{ ns}$.
 C. The outputs are measured one at a time, with one transition per measurement.
 D. t_{PLH}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

Figure 3. Load Circuit and Voltage Waveforms

SN74AUP1G125 LOW-POWER SINGLE BUS BUFFER GATE WITH 3-STATE OUTPUT

SCES595H—JULY 2004—REVISED MAY 2007

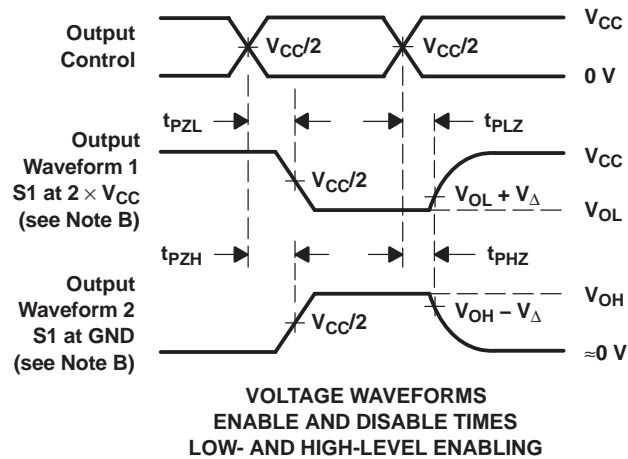
PARAMETER MEASUREMENT INFORMATION (Enable and Disable Times)



TEST	S1
t_{PLZ}/t_{PZL}	$2 \times V_{CC}$
t_{PHZ}/t_{PZH}	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	MSL Peak Temp ⁽³⁾
74AUP1G125DBVRE4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
74AUP1G125DBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
74AUP1G125DBVTE4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
74AUP1G125DBVTG4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
74AUP1G125DCKRE4	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
74AUP1G125DCKRG4	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
74AUP1G125DCKTE4	ACTIVE	SC70	DCK	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
74AUP1G125DCKTG4	ACTIVE	SC70	DCK	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
74AUP1G125DRLRG4	ACTIVE	SOT	DRL	5	4000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AUP1G125DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AUP1G125DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AUP1G125DCKR	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AUP1G125DCKT	ACTIVE	SC70	DCK	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AUP1G125DRLR	ACTIVE	SOT	DRL	5	4000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AUP1G125YZPR	ACTIVE	WCSP	YZP	5	3000	Green (RoHS & no Sb/Br)	SNAGCU	Level-1-260C-UNLIM
SN74AUP1G125YZTR	ACTIVE	DSBGA	YZT	5	3000	Green (RoHS & no Sb/Br)	SNAGCU	Level-1-260C-UNLIM

⁽¹⁾ The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

⁽²⁾ Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

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

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

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

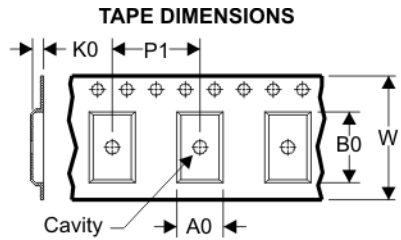
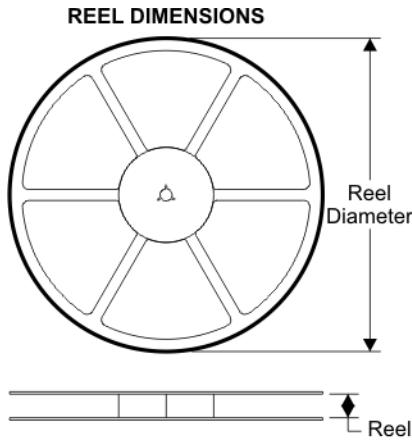
Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

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

Important Information and Disclaimer:The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. TI has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

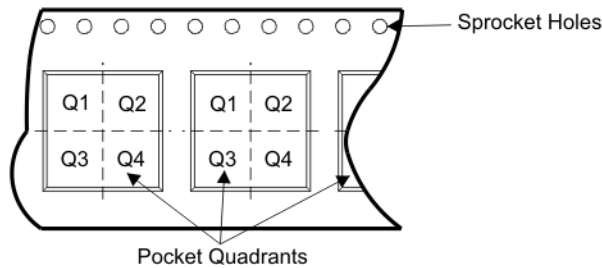
In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

TAPE AND REEL BOX INFORMATION



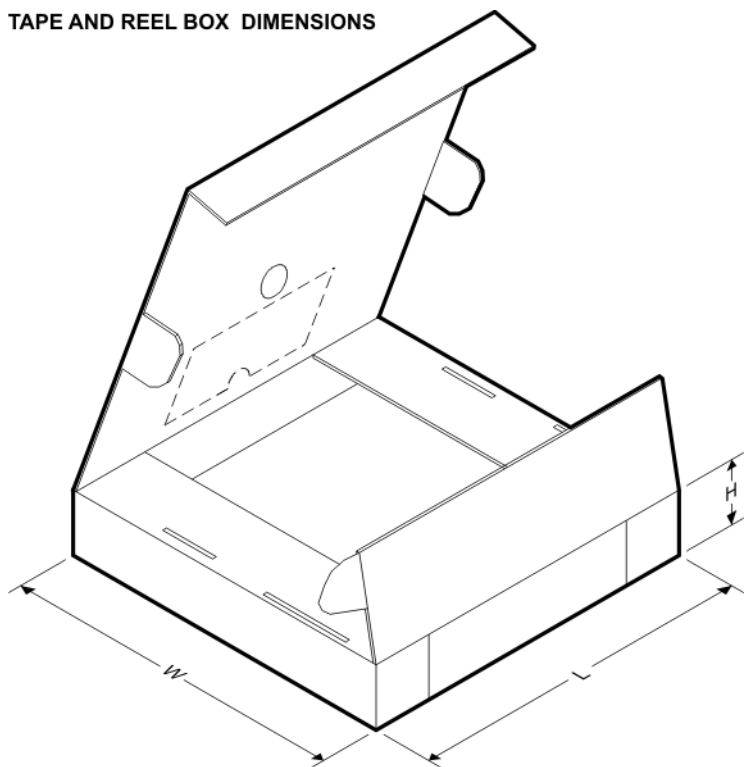
A0	Dimension designed to accommodate the component width
B0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



Device	Package	Pins	Site	Reel Diameter (mm)	Reel Width (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SN74AUP1G125DBVR	DBV	5	SITE 35	180	9	3.23	3.17	1.37	4	8	Q3
SN74AUP1G125DBVT	DBV	5	SITE 35	180	9	3.23	3.17	1.37	4	8	Q3
SN74AUP1G125DCKR	DCK	5	SITE 35	180	9	2.24	2.34	1.22	4	8	Q3
SN74AUP1G125DCKT	DCK	5	SITE 35	180	9	2.24	2.34	1.22	4	8	Q3
SN74AUP1G125DRLR	DRL	5	SITE 35	180	9	1.78	1.78	0.69	4	8	Q3
SN74AUP1G125YZPR	YZP	5	SITE 12	180	8	1.02	1.52	0.66	4	8	Q1
SN74AUP1G125YZTR	YZT	5	SITE 12	180	8	1.1	1.6	0.7	4	8	Q1

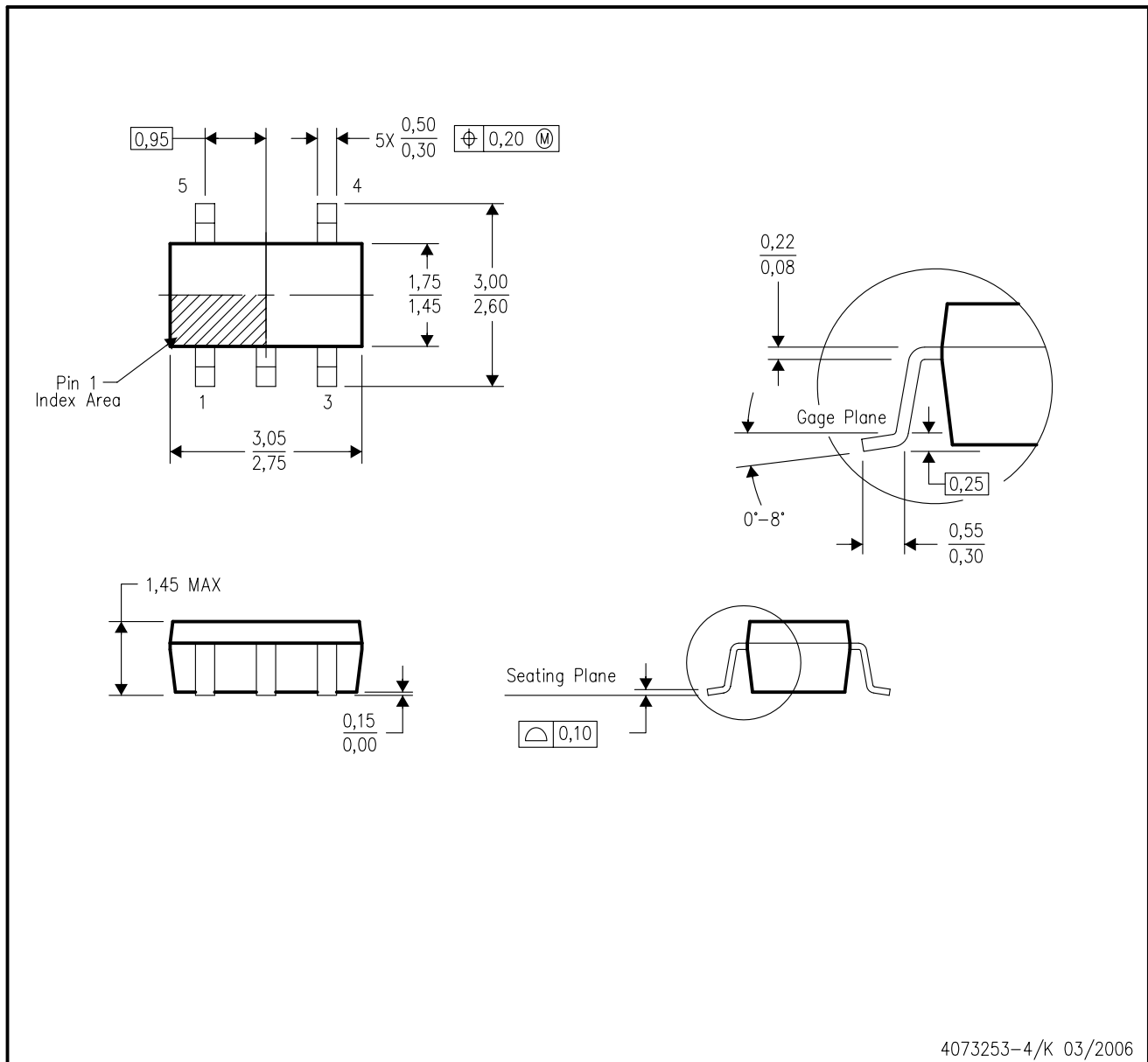
TAPE AND REEL BOX DIMENSIONS



Device	Package	Pins	Site	Length (mm)	Width (mm)	Height (mm)
SN74AUP1G125DBVR	DBV	5	SITE 35	202.0	201.0	28.0
SN74AUP1G125DBVT	DBV	5	SITE 35	202.0	201.0	28.0
SN74AUP1G125DCKR	DCK	5	SITE 35	202.0	201.0	28.0
SN74AUP1G125DCKT	DCK	5	SITE 35	202.0	201.0	28.0
SN74AUP1G125DRLR	DRL	5	SITE 35	202.0	201.0	28.0
SN74AUP1G125YZPR	YZP	5	SITE 12	220.0	220.0	0.0
SN74AUP1G125YZTR	YZT	5	SITE 12	220.0	220.0	0.0

DBV (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-178 Variation AA.

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.

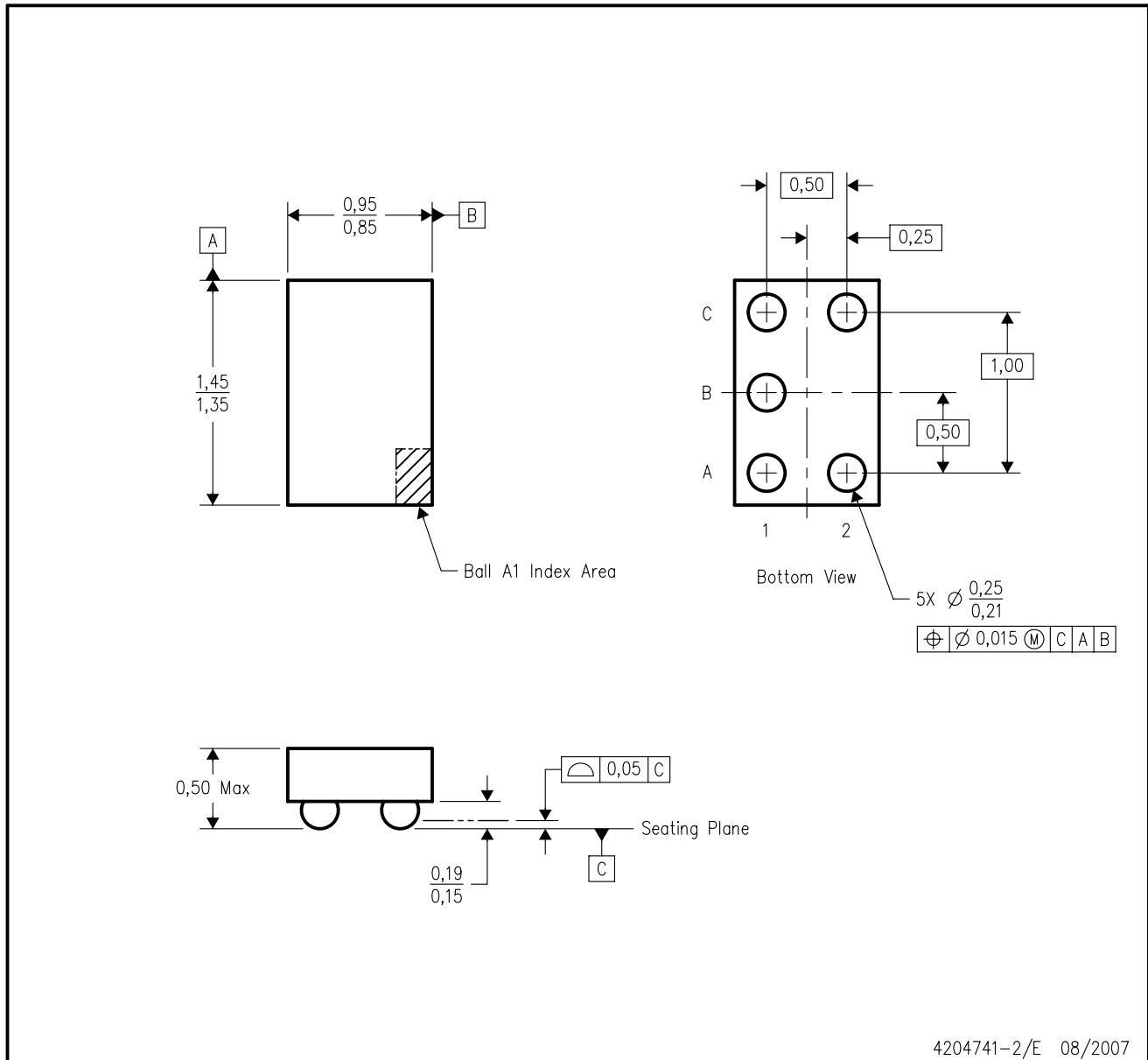


4205622-2/D 08/2007

- 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. 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.

YZP (R-XBGA-N5)

DIE-SIZE BALL GRID ARRAY

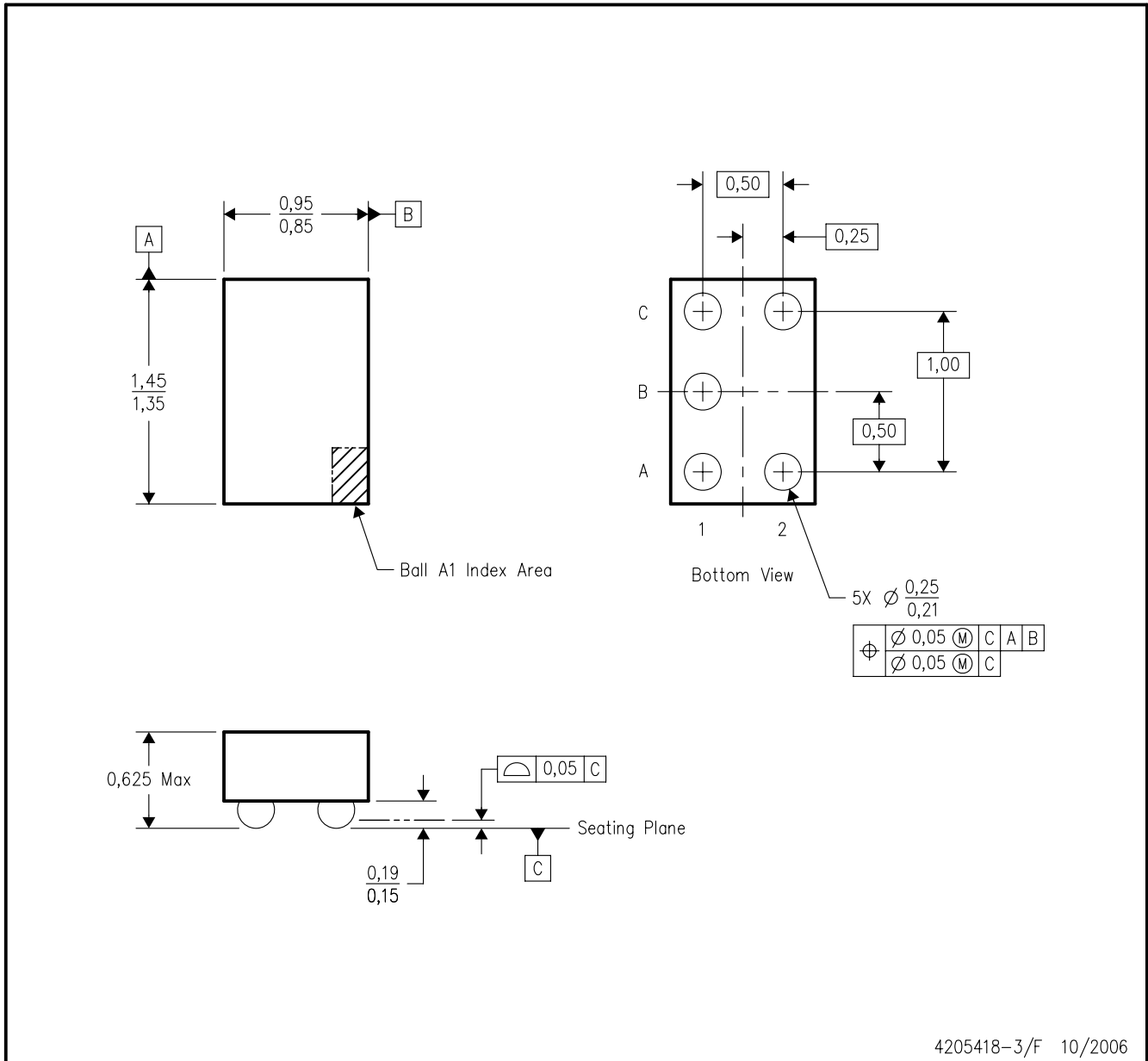


- NOTES:
- A. All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M-1994.
 - B. This drawing is subject to change without notice.
 - C. NanoFree™ package configuration.
 - D. This package is lead-free. Refer to the 5 YEP package (drawing 4204725) for tin-lead (SnPb).

NanoFree is a trademark of Texas Instruments.

YZT (R-XBGA-N5)

DIE-SIZE BALL GRID ARRAY



4205418-3/F 10/2006

- NOTES:
- A. All linear dimensions are in millimeters.
 - B. This drawing is subject to change without notice.
 - C. NanoFree™ package configuration.
 - D. This package is Lead-free. Refer to the 5 YET package (drawing 4205421) for tin-lead (SnPb).

NanoFree is a trademark of Texas Instruments.

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

TI products are not authorized for use in safety-critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, unless officers of the parties have executed an agreement specifically governing such use. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of TI products in such safety-critical applications, notwithstanding any applications-related information or support that may be provided by TI. Further, Buyers must fully indemnify TI and its representatives against any damages arising out of the use of TI products in such safety-critical applications.

TI products are neither designed nor intended for use in military/aerospace applications or environments unless the TI products are specifically designated by TI as military-grade or "enhanced plastic." Only products designated by TI as military-grade meet military specifications. Buyers acknowledge and agree that any such use of TI products which TI has not designated as military-grade is solely at the Buyer's risk, and that they are solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI products are neither designed nor intended for use in automotive applications or environments unless the specific TI products are designated by TI as compliant with ISO/TS 16949 requirements. Buyers acknowledge and agree that, if they use any non-designated products in automotive applications, TI will not be responsible for any failure to meet such requirements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

Products		Applications	
Amplifiers	amplifier.ti.com	Audio	www.ti.com/audio
Data Converters	dataconverter.ti.com	Automotive	www.ti.com/automotive
DSP	dsp.ti.com	Broadband	www.ti.com/broadband
Interface	interface.ti.com	Digital Control	www.ti.com/digitalcontrol
Logic	logic.ti.com	Military	www.ti.com/military
Power Mgmt	power.ti.com	Optical Networking	www.ti.com/opticalnetwork
Microcontrollers	microcontroller.ti.com	Security	www.ti.com/security
RFID	www.ti-rfid.com	Telephony	www.ti.com/telephony
Low Power Wireless	www.ti.com/lpw	Video & Imaging	www.ti.com/video
		Wireless	www.ti.com/wireless

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2007, Texas Instruments Incorporated