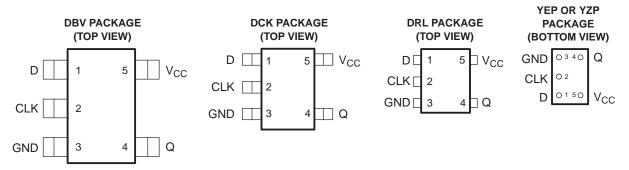
www.ti.com

#### **FEATURES**

- Available in the Texas Instruments
   NanoStar™ and NanoFree™ Packages
- Low Static-Power Consumption;
   I<sub>CC</sub> = 0.9 μA Max
- Low Dynamic-Power Consumption;
   C<sub>pd</sub> = 3 pF Typ at 3.3 V
- Low Input Capacitance;
   C<sub>i</sub> = 1.5 pF Typ
- Low Noise Overshoot and Undershoot <10% of V<sub>CC</sub>
- I<sub>off</sub> Supports Partial Power-Down-Mode Operation
- Input Hysteresis Allows Slow Input Transition and Better Switching Noise Immunity at the Input (V<sub>hvs</sub> = 250 mV Typ at 3.3 V)
- Wide Operating V<sub>CC</sub> 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<sub>nd</sub> = 3.6 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)
  - 200-V Machine Model (A115-A)
  - 1000-V Charged-Device Model (C101)
- ESD Protection Exceeds ±5000 V With Human-Body Model



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).

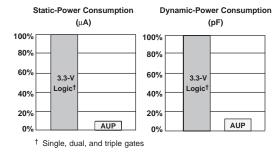


Figure 1. AUP - The Lowest-Power Family

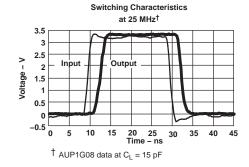


Figure 2. Excellent Signal Integrity

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.

NanoStar, NanoFree are trademarks of Texas Instruments.

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#### **DESCRIPTION/ORDERING INFORMATION (CONTINUED)**

This is a single positive-edge-triggered D-type flip-flop. When data at the data (D) input meets the setup time requirement, the data is transferred to the Q output on the positive-going edge of the clock pulse. Clock triggering occurs at a voltage level and is not directly related to the rise time of the clock pulse. Following the hold-time interval, data at the D input can be changed without affecting the levels at the outputs.

NanoStar<sup>™</sup> and NanoFree<sup>™</sup> 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**

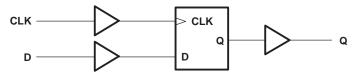
T <sub>A</sub>	PACKAGE <sup>(1)</sup>		ORDERABLE PART NUMBER	TOP-SIDE MARKING(2)
	NanoStar™ – WCSP (DSBGA) 0.23-mm Large Bump – YEP		SN74AUP1G79YEPR	
	NanoFree™ – WCSP (DSBGA) 0.23-mm Large Bump – YZP (Pb-free)	Reel of 3000	SN74AUP1G79YZPR	HW _
-40°C to 85°C	SOT (SOT-23) – DBV	Reel of 3000	SN74AUP1G79DBVR	H79
		Reel of 250	SN74AUP1G79DBVT	H/9_
	SOT (SC-70) – DCK	Reel of 3000	SN74AUP1G79DCKR	HW
	SOT (SC-70) - DCK	Reel of 250	SN74AUP1G79DCKT	TOV_
	SOT (SOT-553) – DRL	Reel of 4000	SN74AUP1G79DRLR	HW_

<sup>(1)</sup> Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at www.ti.com/sc/package.

#### **FUNCTION TABLE**

INPU	INPUTS		
CLK	D	Q	
1	Н	Н	
$\uparrow$	L	L	
L or H	Χ	$Q_0$	

#### **LOGIC DIAGRAM (POSITIVE LOGIC)**



<sup>(2)</sup> DBV/DCK/DRL: The actual top-side marking has one additional character that designates the assembly/test site. YEP/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).



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

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

			MIN	MAX	UNIT	
$V_{CC}$	Supply voltage range		-0.5	4.6	V	
VI	Input voltage range <sup>(2)</sup>		-0.5	4.6	V	
Vo	Voltage range applied to any output in the high-	-0.5	4.6	V		
Vo	Output voltage range in the high or low state <sup>(2)</sup>	-0.5	V <sub>CC</sub> + 0.5	V		
I <sub>IK</sub>	Input clamp current	V <sub>I</sub> < 0		-50	mA	
I <sub>OK</sub>	Output clamp current	V <sub>O</sub> < 0		-50	mA	
Io	Continuous output current			±20	mA	
	Continuous current through V <sub>CC</sub> or GND			±50	mA	
		DBV package		206		
0	Package thermal impedance (3)	DCK package		252	00044	
$\theta_{JA}$	Fackage mermai impedance 47	DRL package	1		°C/W	
		YEP/YZP package		132		
T <sub>stg</sub>	Storage temperature range		-65	150	°C	

<sup>(1)</sup> 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.

<sup>(2)</sup> The input negative-voltage and output voltage ratings may be exceeded if the input and output current ratings are observed.

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



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

			MIN	MAX	UNIT		
V <sub>CC</sub>	Supply voltage		0.8	3.6	V		
		V <sub>CC</sub> = 0.8 V	V <sub>CC</sub>				
V	High-level input voltage	$V_{CC} = 1.1 \text{ V to } 1.95 \text{ V}$	$0.65 \times V_{CC}$		V		
$V_{IH}$	nigii-level iriput voltage	$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$	1.6		V		
		$V_{CC} = 3 \text{ V to } 3.6 \text{ V}$	2				
		V <sub>CC</sub> = 0.8 V		0			
V	Low-level input voltage	$V_{CC} = 1.1 \text{ V to } 1.95 \text{ V}$		$0.35 \times V_{CC}$			
$V_{IL}$	Low-level input voltage	$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$		0.7	V		
		$V_{CC} = 3 \text{ V to } 3.6 \text{ V}$		0.9			
$V_{I}$	Input voltage		0	3.6	V		
Vo	Output voltage		0	V <sub>CC</sub>	V		
		V <sub>CC</sub> = 0.8 V		-20	μΑ		
	High lavel autout august	V <sub>CC</sub> = 1.1 V		-1.1			
1 (2)		V <sub>CC</sub> = 1.4 V		-1.7	mA		
I <sub>OH</sub> <sup>(2)</sup>	High-level output current	V <sub>CC</sub> = 1.65 V		-1.9			
		V <sub>CC</sub> = 2.3 V		-3.1			
		$V_{CC} = 3 V$		-4			
		V <sub>CC</sub> = 0.8 V		20	μΑ		
		V <sub>CC</sub> = 1.1 V		1.1			
1 (2)	Low lovel output ourrent	V <sub>CC</sub> = 1.4 V		1.7			
I <sub>OL</sub> (2)	Low-level output current	V <sub>CC</sub> = 1.65 V		1.9			
		V <sub>CC</sub> = 2.3 V					
		V <sub>CC</sub> = 3 V		4			
Δt/Δν	Input transition rise or fall rate	V <sub>CC</sub> = 0.8 V to 3.6 V		200	ns/V		
T <sub>A</sub>	Operating free-air temperature		-40	85	°C		

 <sup>(1)</sup> All unused inputs of the device must be held at V<sub>CC</sub> or GND to ensure proper device operation. Refer to the TI application report, *Implications of Slow or Floating CMOS Inuts*, literature number SCBA004.
 (2) Defined by the signal integrity requirements and design-goal priorities

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#### **Electrical Characteristics**

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

DADAMETER	TEST SOMBITIONS	.,	T,	<sub>A</sub> = 25°C	$T_A = -40^{\circ}C$ to $85^{\circ}C$	LINUT
PARAMETER	TEST CONDITIONS	V <sub>cc</sub>	MIN	TYP MAX	MIN MAX	UNIT
	$I_{OH} = -20 \mu A$	0.8 V to 3.6 V	V <sub>CC</sub> - 0.1		V <sub>CC</sub> - 0.1	
	I <sub>OH</sub> = -1.1 mA	1.1 V	$0.75 \times V_{CC}$		$0.7 \times V_{CC}$	
	I <sub>OH</sub> = -1.7 mA	1.4 V	1.11		1.03	
V	$I_{OH} = -1.9 \text{ mA}$	1.65 V	1.32		1.3	V
V <sub>OH</sub>	$I_{OH} = -2.3 \text{ mA}$	221/	2.05		1.97	V
	$I_{OH} = -3.1 \text{ mA}$	2.3 V	1.9		1.85	
	$I_{OH} = -2.7 \text{ mA}$	3 V	2.72		2.67	
	$I_{OH} = -4 \text{ mA}$	3 V	2.6		2.55	
	$I_{OL} = 20 \mu A$	0.8 V to 3.6 V		0.1	0.1	
	I <sub>OL</sub> = 1.1 mA	1.1 V		$0.3 \times V_{CC}$	$0.3 \times V_{CC}$	
	I <sub>OL</sub> = 1.7 mA	1.4 V		0.31	0.37	
V <sub>OL</sub>	I <sub>OL</sub> = 1.9 mA	1.65 V		0.31	0.35	V
VOL	I <sub>OL</sub> = 2.3 mA	2.3 V		0.31	0.33	V
	I <sub>OL</sub> = 3.1 mA	2.5 V		0.44	0.45	
	I <sub>OL</sub> = 2.7 mA	3 V		0.31	0.33	
	I <sub>OL</sub> = 4 mA	3 V		0.44	0.45	
I <sub>I</sub> D or CLK input	V <sub>I</sub> = GND to 3.6 V	0 V to 3.6 V		0.1	0.5	μΑ
I <sub>off</sub>	$V_I$ or $V_O = 0$ V to 3.6 V	0 V		0.2	0.6	μΑ
$\Delta I_{ m off}$	$V_I$ or $V_O = 0$ V to 3.6 V	0 V to 0.2 V		0.2	0.6	μΑ
I <sub>CC</sub>	$V_I = GND \text{ or } V_{CC} \text{ to } 3.6 \text{ V}, \qquad I_O = 0$	0.8 V to 3.6 V		0.5	0.9	μΑ
Δl <sub>C</sub>	$V_I = V_{CC} - 0.6 V$ , (1) $I_O = 0$	3.3 V		40	50	μА
	V – V or CND	0 V		1.5		n.E
C <sub>i</sub>	$V_{I} = V_{CC}$ or GND	3.6 V 1.5				pF
Co	V <sub>O</sub> = GND	0 V		3		pF

<sup>(1)</sup> One-input switching



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#### **Timing Requirements**

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

			V <sub>cc</sub>	T <sub>A</sub> = 25°C	T <sub>A</sub> = -40°C to 85°C	UNIT
				TYP	MIN MAX	
			0.8 V		20	
			1.2 V ± 0.1 V		80	
£	Clash fra musa an		1.5 V ± 0.1 V		100	
f <sub>clock</sub>	Clock frequency		1.8 V ± 0.15 V		140	ns
			2.5 V ± 0.2 V		210	
			3.3 V ± 0.3 V		260	
			0.8 V		4.8	
			1.2 V ± 0.1 V		2.2	
	Dulas duration OLK bish as less		1.5 V ± 0.1 V		1.5	
t <sub>w</sub>	Pulse duration, CLK high or low		1.8 V ± 0.15 V		1.6	ns
			2.5 V ± 0.2 V		1.7	
			3.3 V ± 0.3 V		1.9	
			0.8 V	2.9	4.2	
			1.2 V ± 0.1 V		1.4	
			1.5 V ± 0.1 V		1	
		Data high	1.8 V ± 0.15 V		0.9	
			2.5 V ± 0.2 V		0.7	
	- · · · · · · · · · · · · · · · · · · ·		3.3 V ± 0.3 V		0.6	
t <sub>su</sub>	Setup time before CLK↑		0.8 V	3.5	5.3	ns
			1.2 V ± 0.1 V		1.8	
			1.5 V ± 0.1 V		1.2	
		Data low	1.8 V ± 0.15 V		1.1	
			2.5 V ± 0.2 V		1	
			3.3 V ± 0.3 V		1	
			0.8 V	0	0	
			1.2 V ± 0.1 V		0	
			1.5 V ± 0.1 V		0	
t <sub>h</sub>	Hold time, data after CLK↑		1.8 V ± 0.15 V		0	ns
			2.5 V ± 0.2 V		0	
			3.3 V ± 0.3 V		0	



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#### **Switching Characteristics**

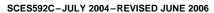
over recommended operating free-air temperature range,  $C_L = 5 \text{ pF}$  (unless otherwise noted) (see Figure 3 and Figure 4)

PARAMETER	FROM TO (OUTPUT)		V <sub>cc</sub>	T <sub>A</sub> = 25°C			T <sub>A</sub> = -40°C to 85°C		UNIT
			MIN	TYP	MAX	MIN	MAX		
			0.8 V		93		90		
			1.2 V ± 0.1 V		199		220		
			1.5 V ± 0.1 V		250		230		MHz
f <sub>max</sub>			1.8 V ± 0.15 V		271		240		IVITZ
			$2.5~V\pm0.2~V$		280		250		
			3.3 V ± 0.3 V		280		260		
			0.8 V		15.9				
			1.2 V ± 0.1 V	3.7	6.9	11	2.6	13.1	
	CLK	0	1.5 V ± 0.1 V	3	4.8	7.6	2	8.8	20
t <sub>pd</sub>	CLK	Q	1.8 V ± 0.15 V	2.4	3.8	6.1	1.5	7.1	ns
			2.5 V ± 0.2 V	1.8	2.7	4.4	1.1	5	
			3.3 V ± 0.3 V	1.5	2.1	3.6	0.9	4	

#### **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	FROM TO (OUTPUT)	V <sub>cc</sub>	T <sub>A</sub> = 25°C			T <sub>A</sub> = -40°C to 85°C		UNIT
	(INPUT)			MIN	TYP	MAX	MIN	MAX	Ĭ
			0.8 V		62		50		
			1.2 V ± 0.1 V		147		160		
			1.5 V ± 0.1 V		189		200		N 41 1-
f <sub>max</sub>			1.8 V ± 0.15 V		180		240		MHz
			2.5 V ± 0.2 V		260		250		
			$3.3~V \pm 0.3~V$		280		260		
			0.8 V		18				
			1.2 V ± 0.1 V	4.3	7.8	12.3	3.2	14.4	
	CLIK		1.5 V ± 0.1 V	3.5	5.5	8.4	2.5	9.8	
t <sub>pd</sub>	CLK Q	Q	1.8 V ± 0.15 V	2.8	4.4	6.8	1.9	8	ns
			2.5 V ± 0.2 V	2.2	3.2	5	1.5	5.7	
			$3.3~V \pm 0.3~V$	1.8	2.6	4.1	1.3	4.5	





#### **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 TO (OUTPUT)			T <sub>A</sub> = 25°C			T <sub>A</sub> = -40°C to 85°C		UNIT
		(001F01)		MIN	TYP	MAX	MIN	MAX	
			0.8 V		48		30		
			1.2 V ± 0.1 V		112		120		
£			1.5 V ± 0.1 V		151		160		N 41 1-
f <sub>max</sub>			1.8 V ± 0.15 V		194		220		MHz
			2.5 V ± 0.2 V		248		250		
			3.3 V ± 0.3 V		280		260		
			0.8 V		20.3				
			1.2 V ± 0.1 V	5	8.7	13.6	3.9	15.6	
	CLK	0	1.5 V ± 0.1 V	4.1	6.3	9.3	3.1	10.7	
$t_{pd}$	CLK	Q	1.8 V ± 0.15 V	3.3	4	7.6	2.4	8.7	ns
			2.5 V ± 0.2 V	2.6	3.6	5.5	1.9	6.3	
			3.3 V ± 0.3 V	2.2	3	4.5	1.6	5	

#### **Switching Characteristics**

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

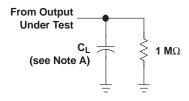
PARAMETER	FROM	TO (OUTPUT)	V <sub>cc</sub>	T <sub>A</sub> = 25°C			T <sub>A</sub> = -40°C to 85°C		UNIT
	(INPUT)	(001701)		MIN	TYP	MAX	MIN	MAX	
			V 8.0		24		20		
			1.2 V ± 0.1 V		72		80		
f			1.5 V ± 0.1 V		100		100		MHz
f <sub>max</sub>			1.8 V ± 0.15 V		127		140		IVI□Z
			$2.5~V\pm0.2~V$		185		210		
			$3.3~V\pm0.3~V$		266		260		
			0.8 V		27.2				
			$1.2~V\pm0.1~V$	7	11.5	17.3	5.9	24	
	CLK	0	$1.5~V\pm0.1~V$	5.7	8.3	11.8	4.6	15.9	
t <sub>pd</sub>	CLK	K Q	1.8 V ± 0.15 V	4.7	6.7	9.6	3.8	13	ns
			2.5 V ± 0.2 V	3.7	4.9	7	2.9	9	
			3.3 V ± 0.3 V	3.2	4.1	5.8	2.6	7.2	

#### **Operating Characteristics**

 $T_A = 25^{\circ}C$ 

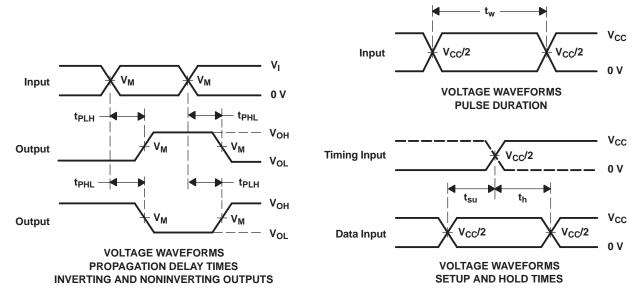
	PARAMETER	TEST CONDITIONS	V <sub>cc</sub>	TYP	UNIT
			0.8 V	2.5	
			1.2 V ± 0.1 V	2.5	
_	Dougs discination conscitones	f = 10 MHz	1.5 V ± 0.1 V	2.5	pF
C <sub>pd</sub>	Power dissipation capacitance	T = TO WINZ	1.8 V ± 0.15 V	2.5	
			2.5 V ± 0.2 V	3	
			3.3 V ± 0.3 V	3	

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



**LOAD CIRCUIT** 

	V <sub>CC</sub> = 0.8 V	V <sub>CC</sub> = 1.2 V ± 0.1 V	V <sub>CC</sub> = 1.5 V ± 0.1 V	$V_{CC}$ = 1.8 V $\pm$ 0.15 V	$V_{CC}$ = 2.5 V $\pm$ 0.2 V	V <sub>CC</sub> = 3.3 V ± 0.3 V
C <sub>L</sub>	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 <sub>M</sub>	V <sub>CC</sub> /2	V <sub>CC</sub> /2	V <sub>CC</sub> /2	V <sub>CC</sub> /2	V <sub>CC</sub> /2	V <sub>CC</sub> /2
V <sub>I</sub>	V <sub>CC</sub>	V <sub>CC</sub>	V <sub>CC</sub>	V <sub>CC</sub>	V <sub>CC</sub>	V <sub>CC</sub>

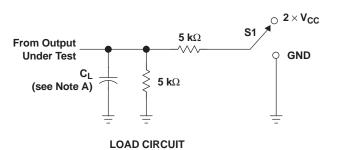


- NOTES: A.  $C_L$  includes probe and jig capacitance.
  - B. All input pulses are supplied by generators having the following characteristics: PRR  $\leq$  10 MHz,  $Z_O = 50 \Omega$ ,  $t_r/t_f = 3 \text{ ns}$ .
  - C. The outputs are measured one at a time, with one transition per measurement.
  - 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

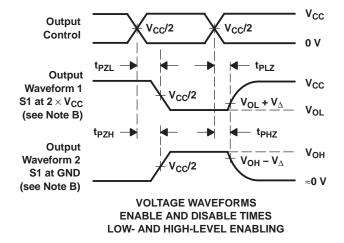


# PARAMETER MEASUREMENT INFORMATION (Enable and Disable Times)



TEST	<b>S</b> 1
t <sub>PLZ</sub> /t <sub>PZL</sub>	2×V <sub>CC</sub> GND
TPHZ/TPZH	GND

	V <sub>CC</sub> = 0.8 V	V <sub>CC</sub> = 1.2 V ± 0.1 V	V <sub>CC</sub> = 1.5 V ± 0.1 V	V <sub>CC</sub> = 1.8 V ± 0.15 V	$V_{CC}$ = 2.5 V $\pm$ 0.2 V	V <sub>CC</sub> = 3.3 V ± 0.3 V
CL	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
<b>V</b> M	V <sub>CC</sub> /2	V <sub>CC</sub> /2	V <sub>CC</sub> /2	V <sub>CC</sub> /2	V <sub>CC</sub> /2	V <sub>CC</sub> /2
VI	V <sub>CC</sub>	V <sub>CC</sub>	V <sub>CC</sub>	V <sub>CC</sub>	V <sub>CC</sub>	V <sub>CC</sub>
${f V}_{\Delta}$	0.1 V	0.1 V	0.1 V	0.15 V	0.15 V	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,  $Z_O = 50 \Omega$ ,  $t_r/t_f = 3$  ns.
- D. The outputs are measured one at a time, with one transition per measurement.
- E.  $t_{PLZ}$  and  $t_{PHZ}$  are the same as  $t_{dis}$ .
- F.  $t_{PZL}$  and  $t_{PZH}$  are the same as  $t_{en}$ .
- G. 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	Packag Qty	e Eco Plan <sup>(2)</sup>	Lead/Ball Finish	n MSL Peak Temp <sup>(3)</sup>
SN74AUP1G79DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AUP1G79DBVRE4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AUP1G79DBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AUP1G79DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AUP1G79DBVTE4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AUP1G79DCKR	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AUP1G79DCKRE4	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AUP1G79DCKT	ACTIVE	SC70	DCK	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AUP1G79DCKTE4	ACTIVE	SC70	DCK	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AUP1G79DRLR	ACTIVE	SOT-533	DRL	5	4000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AUP1G79YZPR	ACTIVE	WCSP	YZP	5	3000	Green (RoHS & no Sb/Br)	SNAGCU	Level-1-260C-UNLIM

<sup>(1)</sup> 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.

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## **PACKAGE OPTION ADDENDUM**

6-Feb-2007

to Customer on an annual basis.		

# 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



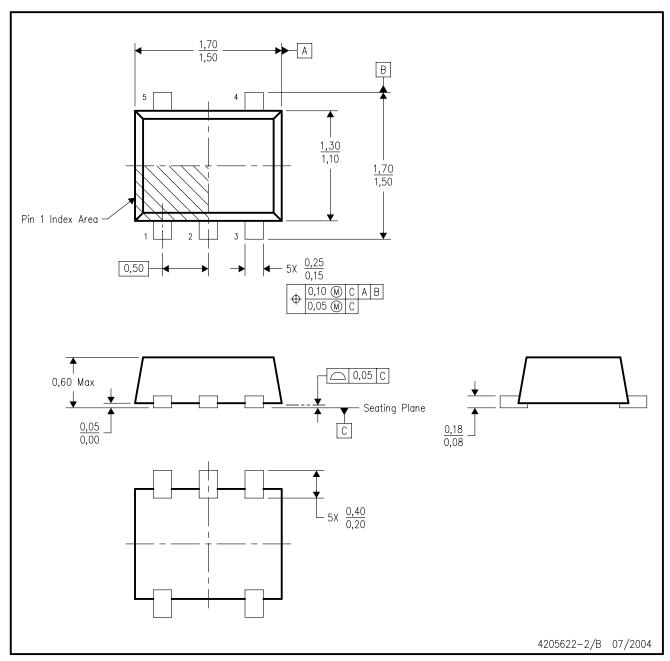
NOTES: A. All linear dimensions are in millimeters.

- 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.



# DRL (R-PDSO-N5)

## PLASTIC SMALL OUTLINE



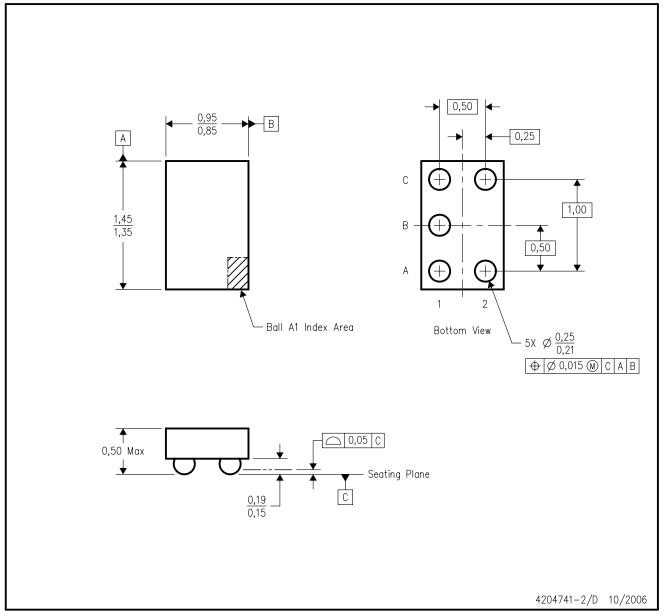
NOTES:

- A. All linear dimensions are in millimeters.
- B. This drawing is subject to change without notice.
- C. 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  $^{\text{TM}}$  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.



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