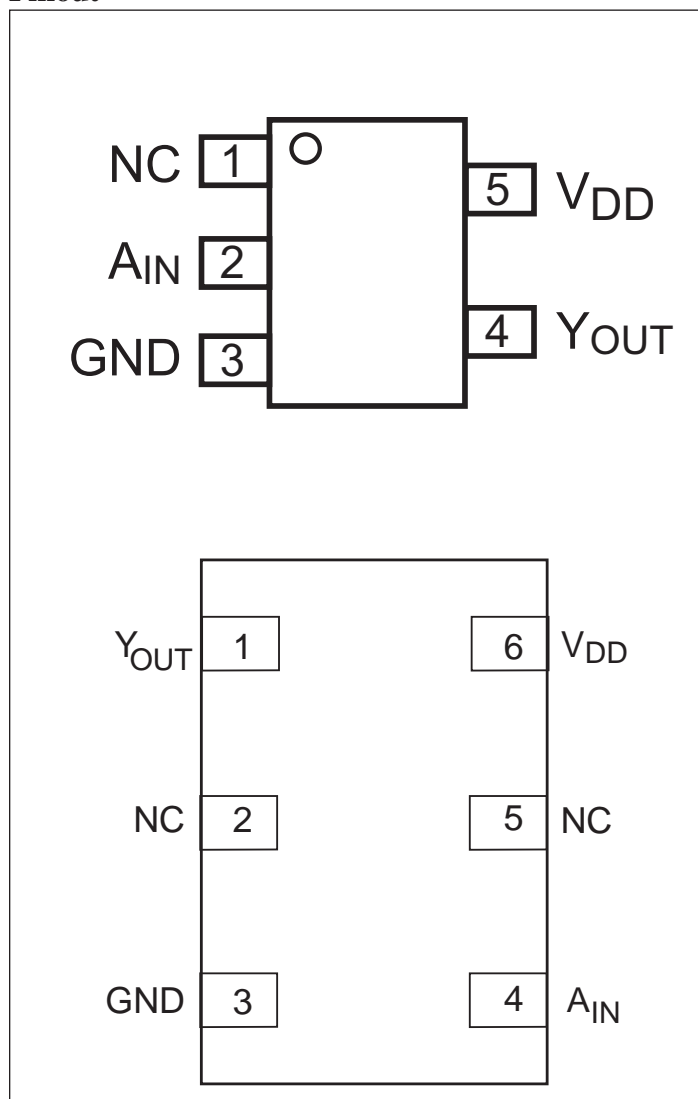
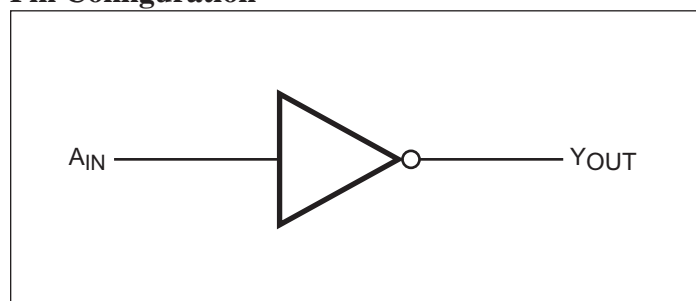


**Features**

- High-speed:  $t_{PD} = 2.6\text{ns}$  typical into  $50\text{pF}$  @  $5\text{V VDD}$
- Unbuffered Output
- Broad operating range:  $V_{DD} = 1.65\text{V} - 5.5\text{V}$
- Power down high-impedance inputs/outputs
- Balanced output drive:  $\pm 8\text{mA}$  at  $3\text{V VDD}$
- Packaging (Pb-free & Green available):
  - 5-pin SOT23(T)
  - 5-pin SC70(C)
  - 6-pin UDFN(ZR)

**Description**

The PI74STX1GU04 is an unbuffered inverter that operates over the  $1.65\text{V}$  to  $5.5\text{V VDD}$  operating range.

**Pinout**

**Pin Configuration**

**Recommended Operating Conditions**

Parameter	Condition	Min.	Max.	Units
Supply Voltage ( $V_{DD}$ )		1.65	5.5	V
Input Voltage ( $V_{IN}$ )		0	5.5	
Output Voltage ( $V_{OUT}$ )		0	$V_{DD}$	
Operating Temperature		-40	85	°C
Input Rise and Fall Time ( $t_r, t_f$ )	$V_{DD} = 1.8\text{V}, 2.5\text{V} \pm 0.2\text{V}$	0	20	ns/V
	$V_{DD} = 3.3\text{V}, \pm 0.3\text{V}$	0	10	
	$V_{DD} = 5.0\text{V}, \pm 0.5\text{V}$	0	5	

**Notes:**

1. Unused inputs must be held HIGH or LOW. They may not float.



### DC Electrical Characteristics

Symbol	Parameter	VDD (V)	Description		T <sub>A</sub> = +25°C			T <sub>A</sub> = -40 to +85°C		Units	
					Min.	Typ	Max.	Min.	Max.		
V <sub>IH</sub>	HIGH Level Input Voltage	1.8-2.7 3.0-5.5			0.85 V <sub>DD</sub> 0.8 V <sub>DD</sub>			0.85 V <sub>DD</sub> 0.8 V <sub>DD</sub>		V	
V <sub>IL</sub>	LOW Level Input Voltage	1.8-2.7 3.0-5.5					0.15 V <sub>DD</sub> 0.2 V <sub>DD</sub>		0.15 V <sub>DD</sub> 0.2 V <sub>DD</sub>		
V <sub>OH</sub>	HIGH Level Output Voltage	1.65	V <sub>IN</sub> = V <sub>IL</sub>	I <sub>OH</sub> = -100μA	1.55	1.65		1.55			
		1.8			1.6	1.8		1.6			
		2.3			2.1	2.3		2.1			
		3.0			2.7	3.0		2.7			
		4.5			4.0	4.4		4.0			
			1.65		I <sub>OH</sub> = -4mA	1.29	1.42		1.29		
			2.3			I <sub>OH</sub> = -4mA	1.9	2.14		1.9	
			3.0			I <sub>OH</sub> = -8mA	2.4	2.75		2.4	
			3.0			I <sub>OH</sub> = -12mA	2.3	2.61		2.3	
			4.5			I <sub>OH</sub> = -16mA	3.8	4.07		3.8	
V <sub>OL</sub>	LOW Level Output Voltage	1.65	V <sub>IN</sub> = V <sub>IH</sub>	I <sub>OH</sub> = 100μA		0.00	0.1		0.1		
		1.8			0.00	0.1		0.1			
		2.3			0.00	0.1		0.1			
		3.0			0.00	0.1		0.1			
		4.5			0.00	0.1		0.1			
			1.65		I <sub>OH</sub> = 4mA		0.08	0.24		0.24	
			2.3			I <sub>OH</sub> = 4mA	0.10	0.3		0.3	
			3.0			I <sub>OH</sub> = 8mA	0.48	0.4		0.4	
			3.0			I <sub>OH</sub> = 12mA	0.28	0.55		0.55	
			4.5			I <sub>OH</sub> = 16mA	0.31	0.55		0.55	
I <sub>IN</sub>	Input Leakage Current	0 to 5.5	V <sub>IN</sub> = 5.5V, GND				±1		±10	μA	
IOFF	Power Off Leakage Current	0.0	V <sub>IN</sub> or V <sub>OUT</sub> = 5.5V		-1		1	-1	1		
ICC	Quiescent Supply Current	1.65 - 5.5	V <sub>IN</sub> = 5.5V, GND				2.0		20		

### AC Electrical Characteristics

Sym- bol	Parameter	VCC (V)	Conditions	TA = +25°C			TA = -25°C to +85°C		Units	Fig. No.
				Min.	Typ.	Max.	Min.	Max.		
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay	1.8 ± 0.15 2.5 ± 0.2 3.3 ± 0.3 5.0 ± 0.5	C <sub>L</sub> = 15pF, R <sub>L</sub> = 1M-ohm	0.7 0.5 0.5 0.5	5.0 3.0 2.3 1.8	6.3 3.7 3.0 2.4	0.7 0.5 0.5 0.5	6.9 4.1 3.3 2.6	ns	1 3
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay	3.3 ± 0.3 5.0 ± 0.5	C <sub>L</sub> = 50pF, R <sub>L</sub> = 500-ohm	0.5 0.5	3.2 2.6	4.5 3.4	0.5 0.5	5.0 3.7		1 3
C <sub>IN</sub>	Input Capacitance	0			4				pF	
C <sub>PD</sub>	Power Dissipation Capacitance <sup>1</sup>	3.3 5.0			6.3 9.5					2

#### Notes:

1. CPD is defined as the value of the internal equivalent capacitance which is derived from dynamic operating current consumption (ICCD) at no output loading and operating at 50% duty cycle (see Figure 2). CPD is related to ICCD dynamic operating current by the expression: ICCD = (CPD)(VCC)(fIN) + (ICC static).

### AC Loading and Waveforms

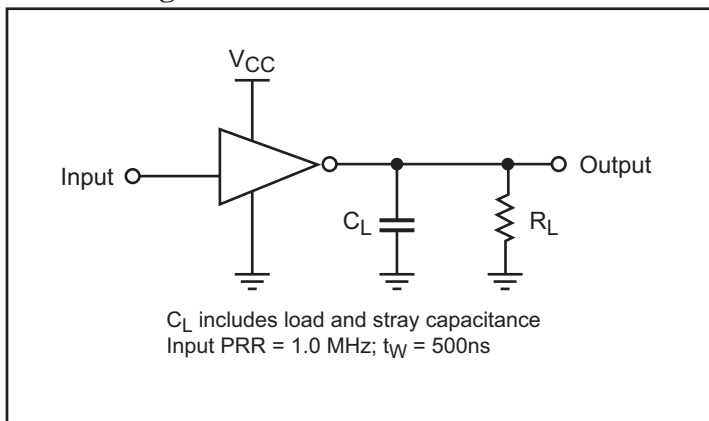


Figure 1. AC Loading and Waveforms

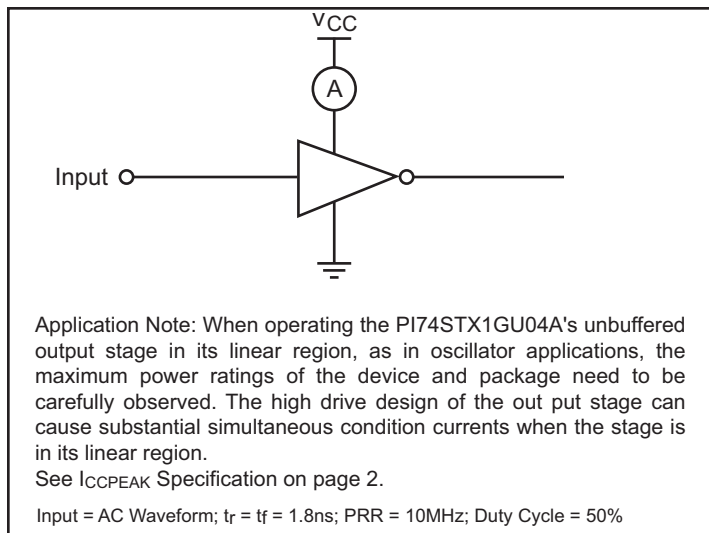


Figure 2. ICCD Test Circuit

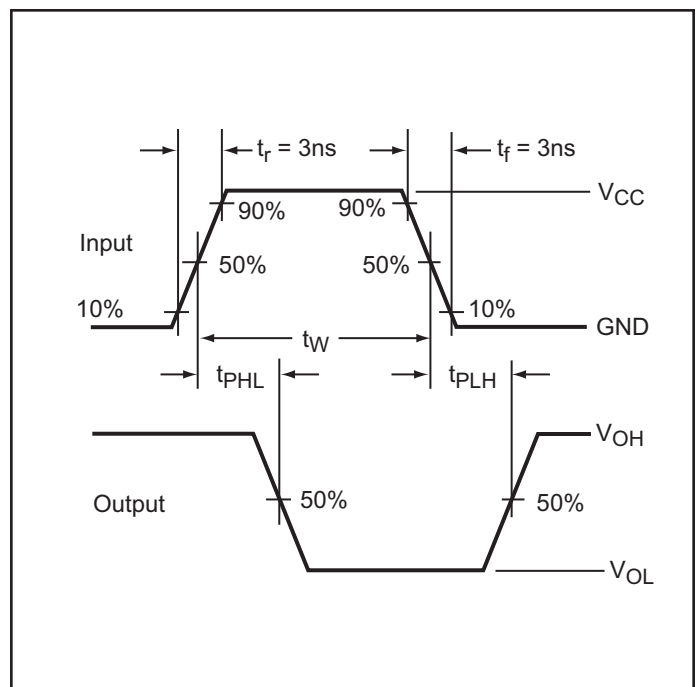
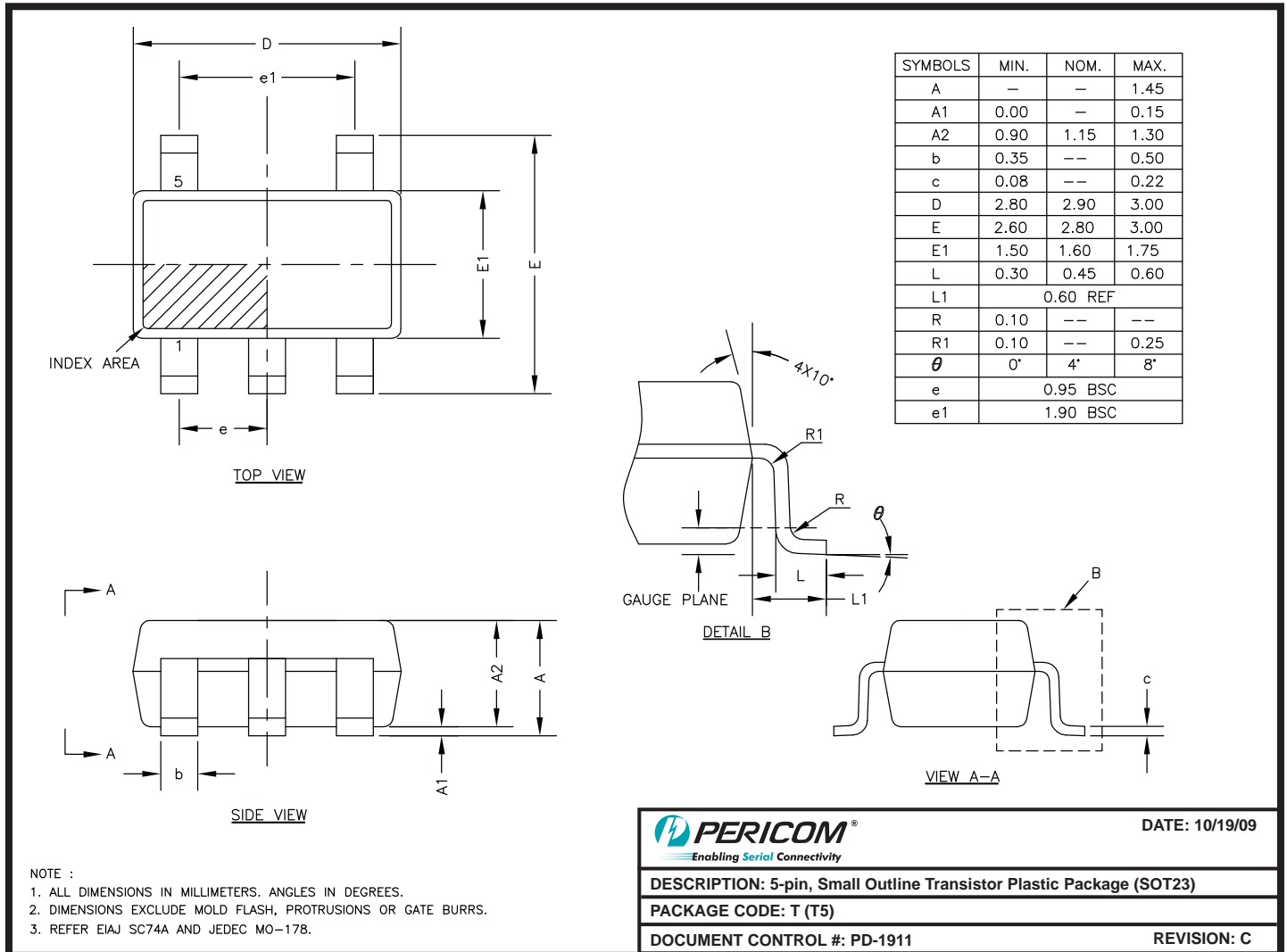


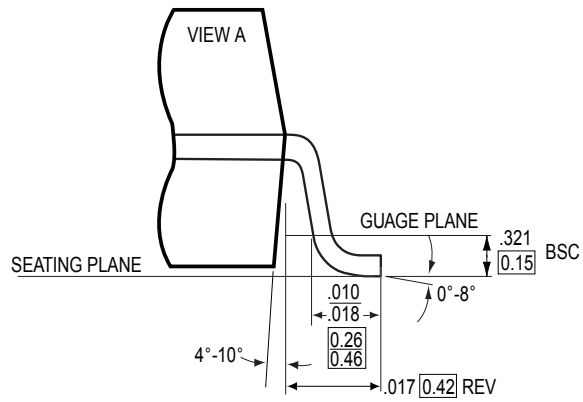
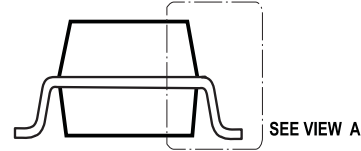
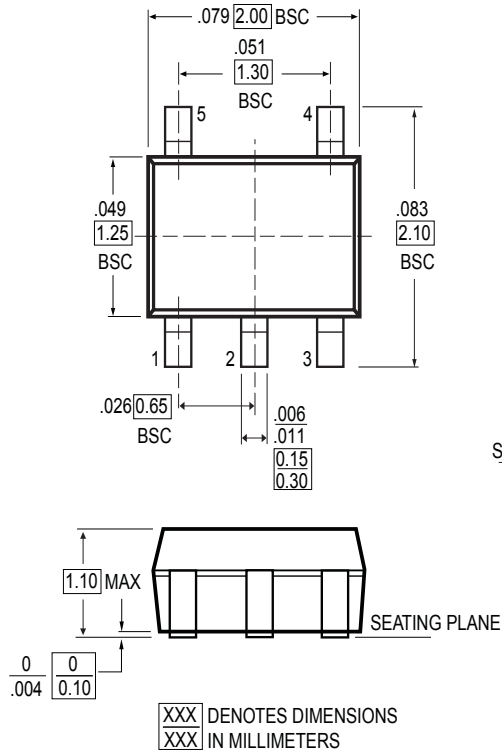
Figure 3. AC Waveform

**Packaging Mechanical: 5-Pin SOT23 (T)**


09-0130

DOCUMENT CONTROL NO.  
PD - 1901

REVISION: D  
DATE: 03/09/05



**Notes:**

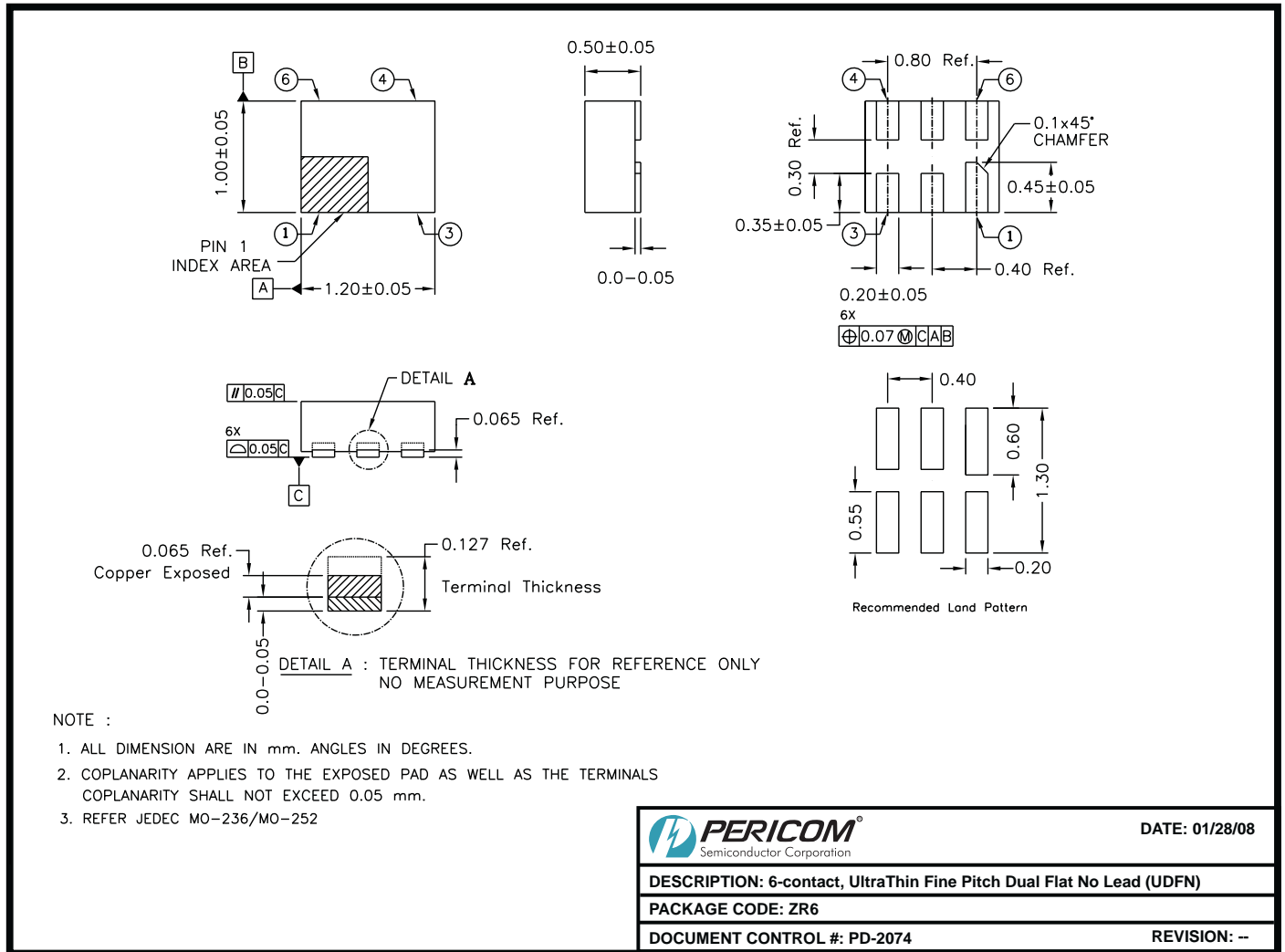
1. Controlling dimensions in millimeters
2. Ref: JEDEC MO-203B/AA
3. Package Outline Exclusive of Mold Flash and Metal Burr



Pericom Semiconductor Corporation  
3545 N. 1st Street, San Jose, CA 95134  
1-800-435-2335 • www.pericom.com

DESCRIPTION: 5-Pin, SC70

PACKAGE CODE: C



08-0035

**Note:**

- For latest package info, please check: <http://www.pericom.com/products/packaging/mechanicals.php>

**Ordering Information<sup>(1-3)</sup>**

Ordering Code	Package Code	Package Description	Top Marking
PI74STX1GU04TEX	T	5-pin SOT23, Pb-free & Green	BH
PI74STX1GU04CEX	C	5-pin SC70, Pb-free & Green	BH
PI74STX1GU04ZREX	ZR	6-pin UDFN, Pb-Free and Green	BH

**Notes:**

1. Thermal characteristics can be found on the company web site at [www.pericom.com/packaging/](http://www.pericom.com/packaging/)
2. E = Pb-free and Green
3. Adding an X suffix = Tape/Reel