Features

- High accuracy: ±2% (25°C)
- Low power consumption: 0.6μA @ 3V Vcc
- Detecting voltage range: 1.8 to 5V in 100mV increments
- Operating voltage range: 1.2V ~ 5.5V
- Operating temperature range: -40°C to + 85°C
- Detecting voltage accuracy over temperature: ±2.5% × TYP
- Output configuration: N-channel open drain or CMOS
- Reset timeout period at least 140ms

Discription

The PT7M64xx series are μP supervisory circuits with a minimum reset timeout period of 140ms. Each circuit includes a precise bandgap reference, a comparator, a reset timeout circuit, internally trimmed resistor networks that set specified trip thresholds, and an internal 5% threshold hysteresis circuit (see the *Block Diagra*m). Output is asserted when V_{CC} falls below the internal V_{TH-} and remains asserted until V_{CC} rises above V_{TH+} (V_{TH+} = $V_{TH-}\times 1.05$) after a reset timeout period. These devices provide excellent circuit reliability and low cost by eliminating external components and adjustments when monitoring normal systems voltage from +1.8V to +5V in 100mV increments. The series are voltage detectors with a propagation delay of 35μs.

The family is available with four output stage options: push-pull with active-low output, push-pull with active-high output, open drain with active-low output and bidirection port with active-low output and pushbutton reset input. These devices specified over the -40°C to +85°C temperature range.

Ordering Information

Part Number	Package
PT7M64xxCLTA3	SOT23-3
PT7M64xxCLTA3E	Lead free SOT23-3
PT7M64xxCLTA5	SOT23-5
PT7M64xxCLTA5E	Lead free SOT23-5
PT7M64xxCLC4E	Lead free SC70-4
PT7M64xxCHTA3	SOT23-3
PT7M64xxCHTA3E	Lead free SOT23-3
PT7M64xxCHTA5	SOT23-5
PT7M64xxCHTA5E	Lead free SOT23-5
PT7M64xxCHC4E	Lead free SC70-4
PT7M64xxCHNBE	Lead free TO92

Part Number	Package
PT7M64xxNLLC4E	Lead free SC70-4
PT7M64xxNLTA3	SOT23-3
PT7M64xxNLTA3E	Lead free SOT23-3
PT7M64xxNLTA5	SOT23-5
PT7M64xxNLTA5E	Lead free SOT23-5
PT7M64xxNLC4E	Lead free SC70-4
PT7M64xxBLTA3	SOT23-3
PT7M64xxBLTA3E	Lead free SOT23-3
PT7M64xxBLTA5	SOT23-5
PT7M64xxBLTA5E	Lead free SOT23-5
PT7M64xxBLC4E	Lead free SC70-4

Note: "xx" refer to voltage range, see below table 1.

Table.1 Suffix "xx" definition of PT7M64xx

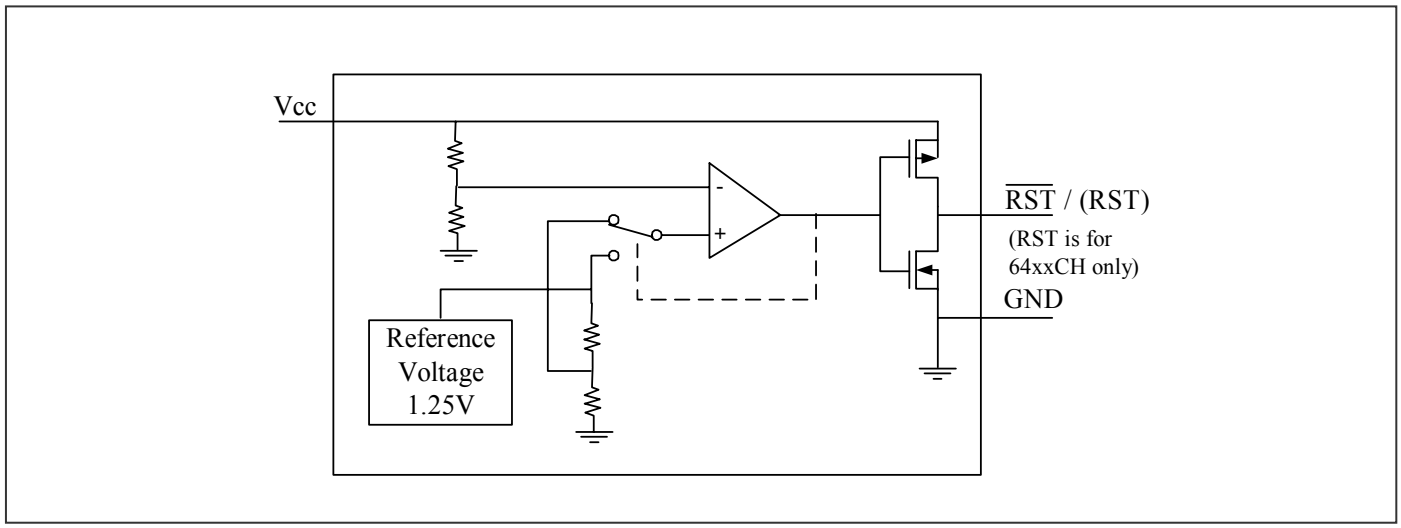
Suffix xx	V_{TH-} (V)	Suffix xx	V_{TH-} (V)	Suffix xx	V_{TH-} (V)	Suffix xx	V_{TH-} (V)	Suffix xx	V_{TH-} (V)
18	1.8	25	2.5	32	3.2	39	3.9	46	4.6
19	1.9	26	2.6	33	3.3	40	4.0	47	4.7
20	2.0	27	2.7	34	3.4	41	4.1	48	4.8
21	2.1	28	2.8	35	3.5	42	4.2	49	4.9
22	2.2	29	2.9	36	3.6	43	4.3	50	5.0
23	2.3	30	3.0	37	3.7	44	4.4		
24	2.4	31	3.1	38	3.8	45	4.5		

Table 2. Function comparison

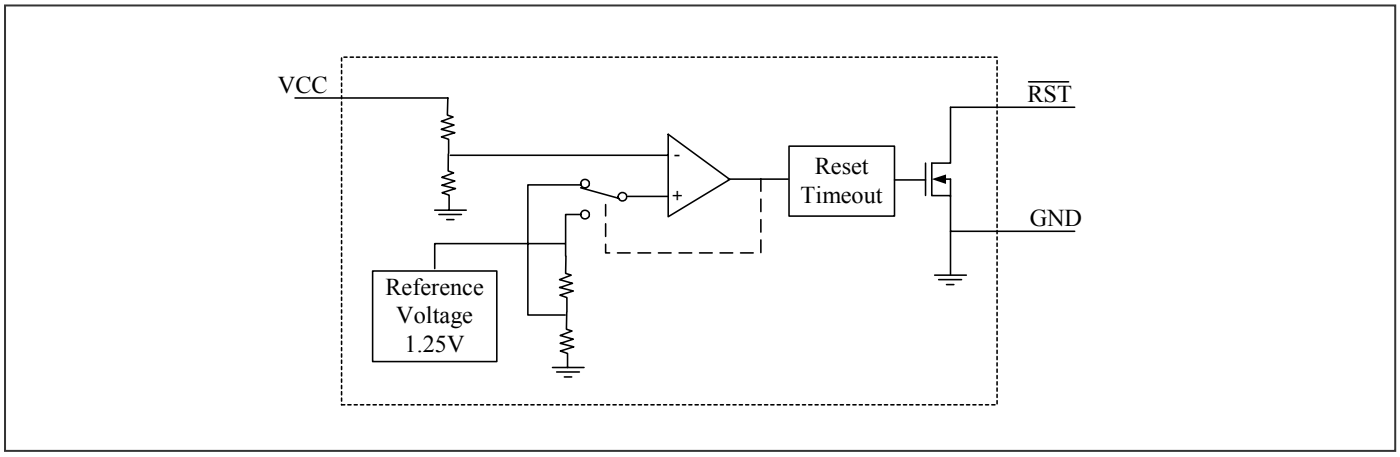
Item	Part No.	Reset Output				Reset bi-direction	Threshold
		Open-Drain		Push-Pull			
		Active high	Active low	Active high	Active low		
1	PT7M64xxCL	-	-	-	√	-	1.8V to 5.0V in 100mV increments
2	PT7M64xxCH	-	-	√	-	-	
3	PT7M64xxNL	-	√	-	-	-	
4	PT7M64xxNLL	-	√	-	-	-	
5	PT7M64xxBL	-	-	-	-	√	

Block Diagram

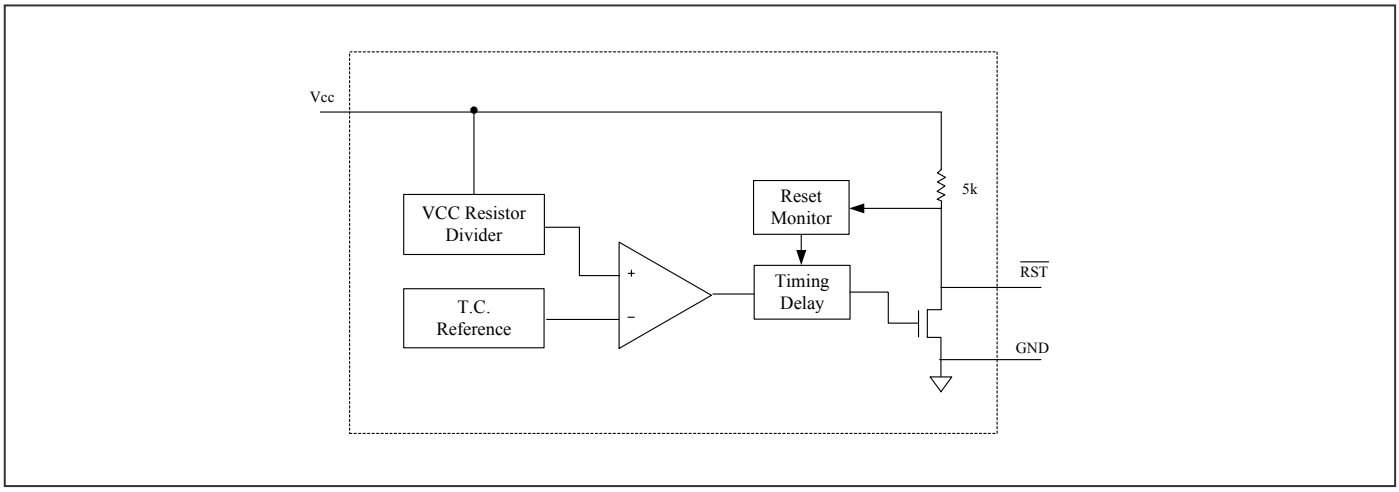
Block Diagram of PT7M64xxCL/CH



Block Diagram of PT7M64xxNL/NLL

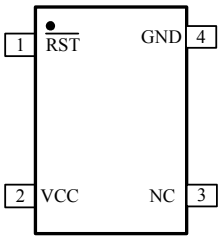


Block Diagram of PT7M64xxBL



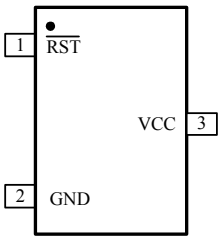
Pin Configuration

PT7M64xxBLC4
PT7M64xxCLC4
PT7M64xxNLC4



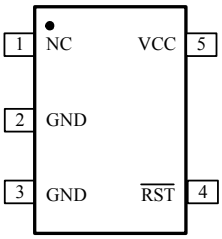
SC70-4

PT7M64xxBLTA3
PT7M64xxCLTA3
PT7M64xxNLTA3



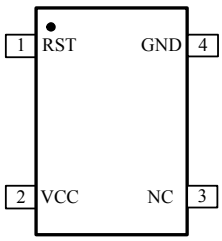
SOT23-3

PT7M64xxBLTA5
PT7M64xxCLTA5
PT7M64xxNLTA5



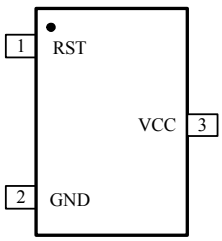
SOT23-5

PT7M64xxCHC4



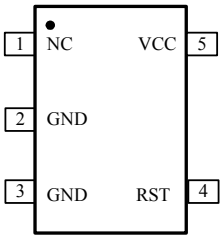
SC70-4

PT7M64xxCHTA3



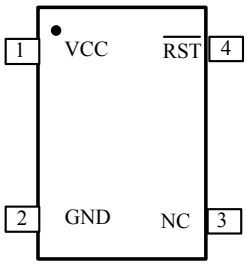
SOT23-3

PT7M64xxCHTA5



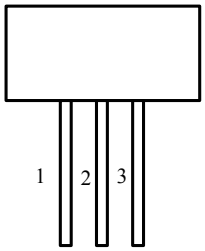
SOT23-5

PT7M64xxNLLC4



SC70-4

PT7M64xxCHNB



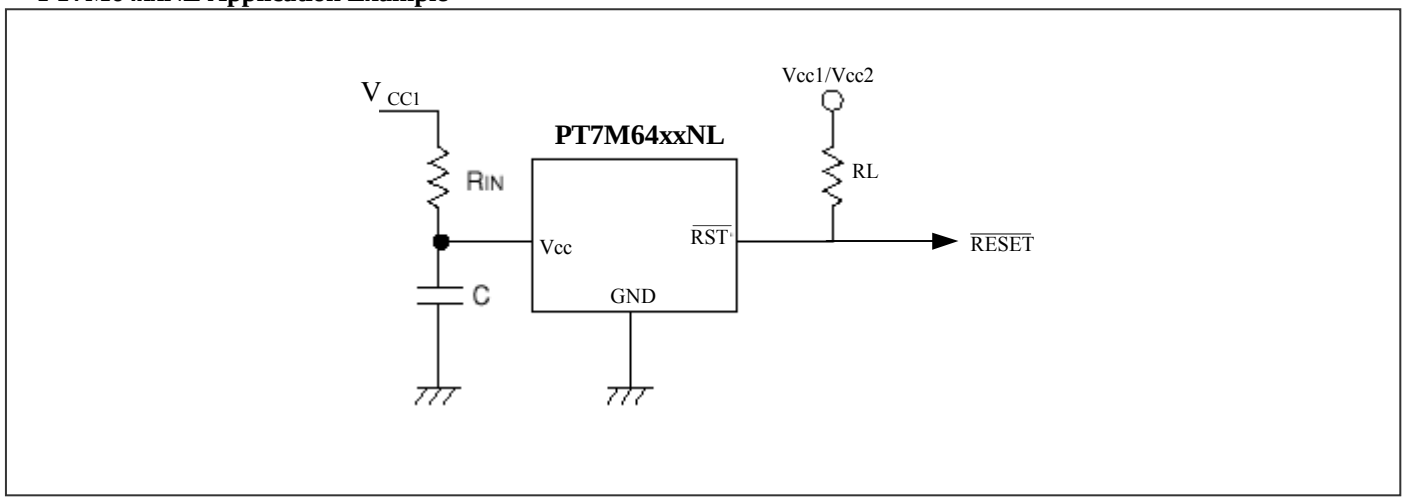
TO92

Pin Description

Name	Type	Description
$\overline{RST}$	O	**Reset Output (PT7M64xxCL/NL/BL/NLL):** $\overline{RST}$ is asserted when V_{CC} drops below voltage threshold V_{TH-}: Active low. For PT7M64xxBL, $\overline{RST}$ is also pushbutton reset input
RST	O	**Reset Output (PT7M64xxCH):** RST is asserted when V_{CC} drops below voltage threshold V_{TH-}: Active high.
GND	P	**Ground**
V_{CC}	P	**Supply Voltage**

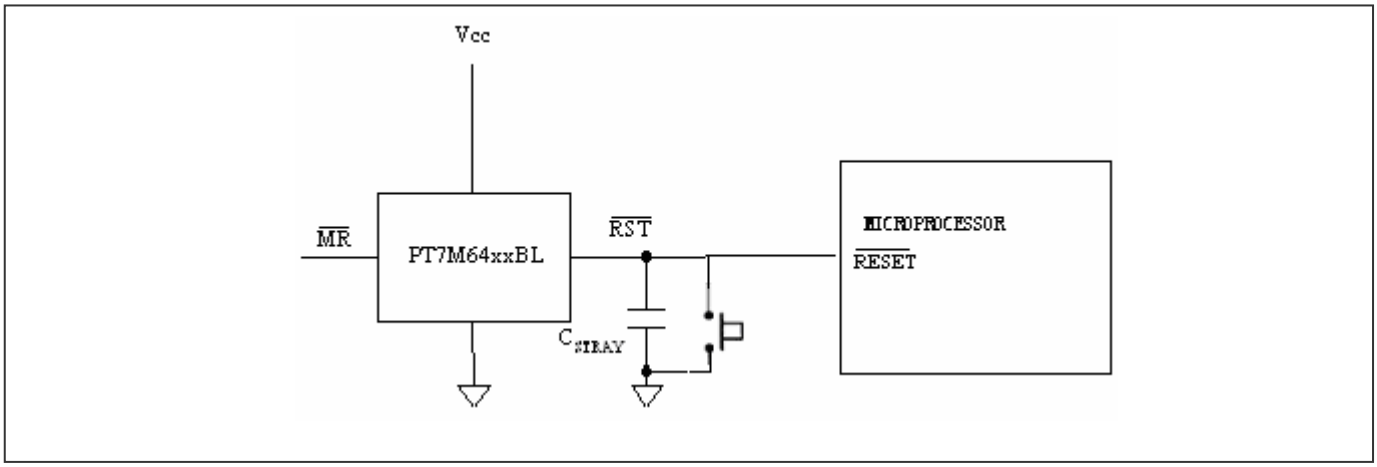
Typical Operation Circuit

PT7M64xxNL Application Example



For typical application, R_L could be 100kΩ, R_{IN} less than 10kΩ and that C more than 0.1µF.

PT7M64xxBL Application Example



Maximum Ratings

Storage Temperature .....-65ºC to +150ºC
Ambient Temperature with Power Applied .....-40ºC to +85ºC
Supply Voltage to Ground Potential (Vcc to GND) .....-0.3V to +6.0V
DC Input Voltage (All inputs except Vcc and GND).....-0.3V to V_{CC}+0.3V
DC Output Current (All outputs) 20mA
Power Dissipation 320mW
(Depend on package)

Note:
Stresses greater than those listed under MAXIMUM RATINGS may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

DC Electrical Characteristics

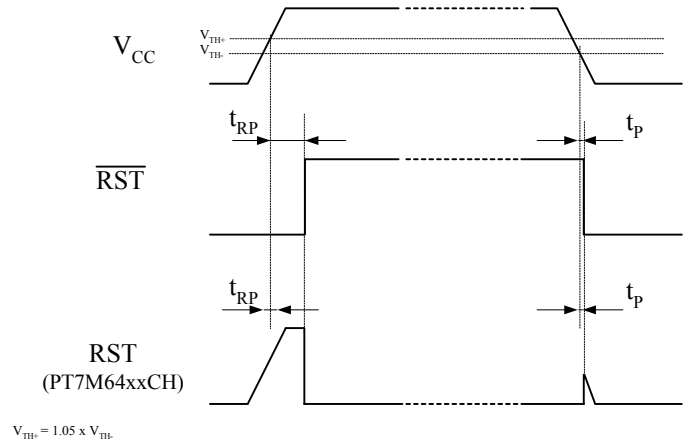
(V_{CC} = 1.2V to 5.5V, T_A= -40~85ºC, unless otherwise noted. Typical values are at T_A = +25ºC)

Description		Sym	Test Conditions	Min	Typ	Max	Unit
Supply Voltage		V_{CC}	T_A= 0~70ºC	1.0	-	5.5	V
			T_A= -40~85ºC	1.2	-	5.5	
Supply Current		I_{CC}	V_{CC} = 3V. No load.	-	0.6	1.2	µA
			V_{CC} = 5V. No load.	-	0.9	2.0	µA
Output Driving	Output high (Push-Pull only)	V_{OH}	$V_{CC} \geq$ 1.8V, I_{source} = 1mA	0.8×Vcc	-	-	V
			$V_{CC} \geq$ 2.5V, I_{source} = 3mA	0.8×Vcc	-	-	
			$V_{CC} \geq$ 4.5V, I_{source} = 8mA	0.8×Vcc	-	-	
	Output low	V_{OL}	$V_{CC} \geq$ 1.2V, I_{sink} = 1mA	-	-	0.3	V
			$V_{CC} \geq$ 2.5V, I_{sink} = 4mA	-	-	0.3	
			$V_{CC} \geq$ 4.5V, I_{sink} = 9mA	-	-	0.4	
Open-Drain Output Leakage Current		I_{LKG}	-	-	-	1	µA
Voltage Threshold*		V_{TH-}	+25°C	(V_{TH-}) ×0.98	V_{TH-}	(V_{TH-}) ×1.02	V
			-40°C~85°C	(V_{TH-}) ×0.975	V_{TH-}	(V_{TH-}) ×1.025	
		V_{TH+}	+25°C	(V_{TH-}) ×0.98	V_{TH-}	(V_{TH-}) ×1.02	
			-40°C~85°C	(V_{TH+}) ×0.975	V_{TH+}	(V_{TH+}) ×1.025	
Voltage threshold Hysteresis		V_{HYST}	V_{HYST} = [(V_{TH+})-(V_{TH-})]/(V_{TH-}) ×100%	3	4.5	6	%
Pushbutton Detect		P_{BDV}	-40°C~85°C, Vcc = 5V	0.7	-	1.2	V
Internal Pull-Up Resistor		R_P	-	3.75	5	6.25	kΩ

***** V_{TH+} = 1.05 × V_{TH-}. V_{TH-} is VCC dropping from high to low voltage. V_{TH+} is V_{CC} rising from low to high voltage.

AC Electrical Characteristics

Timing Diagram

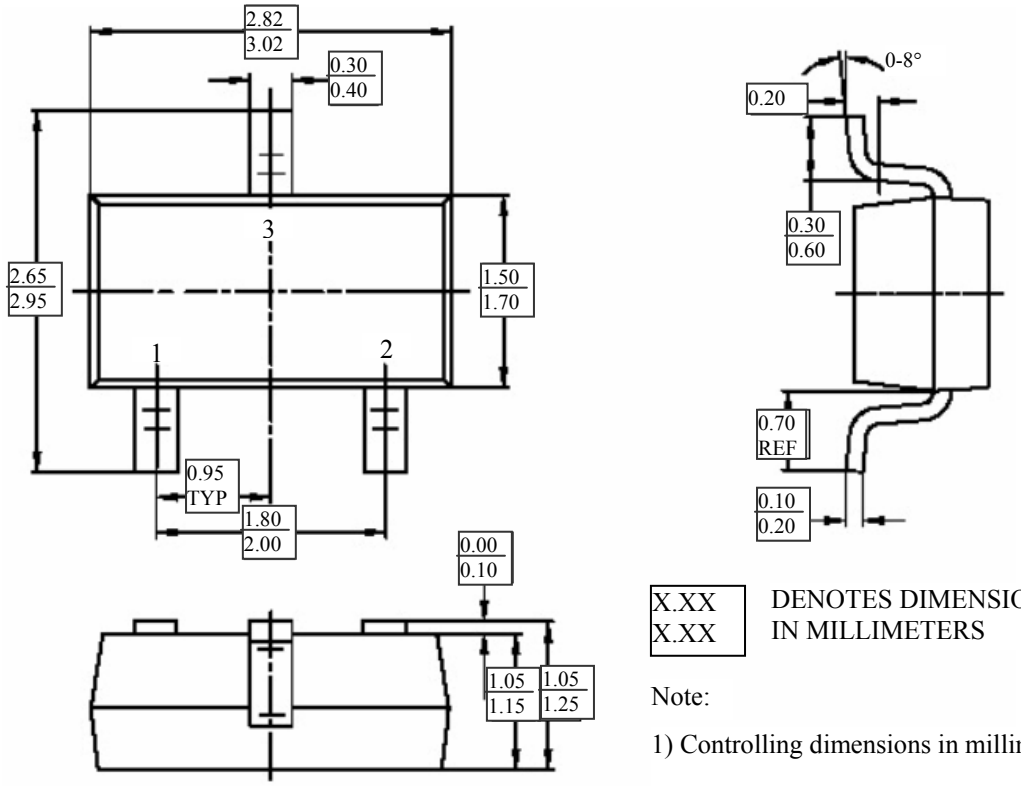


(V_{CC} = 1.2V to 5.5V, T_A= -40~85ºC, unless otherwise noted. Typical values are at T_A = +25ºC)

Sym	Description	Test Conditions	Min	Typ	Max	Unit
t_{RP}	Timeout Period	T_A = +25ºC	140	260	430	ms
t_P	Delay	-	-	35	-	µs

Mechanical Information

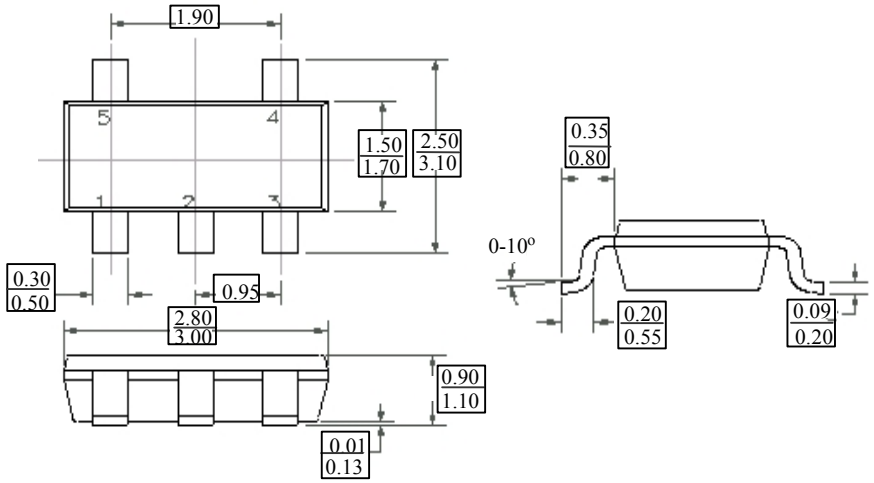
SOT23-3



Note:

1) Controlling dimensions in millimeters.

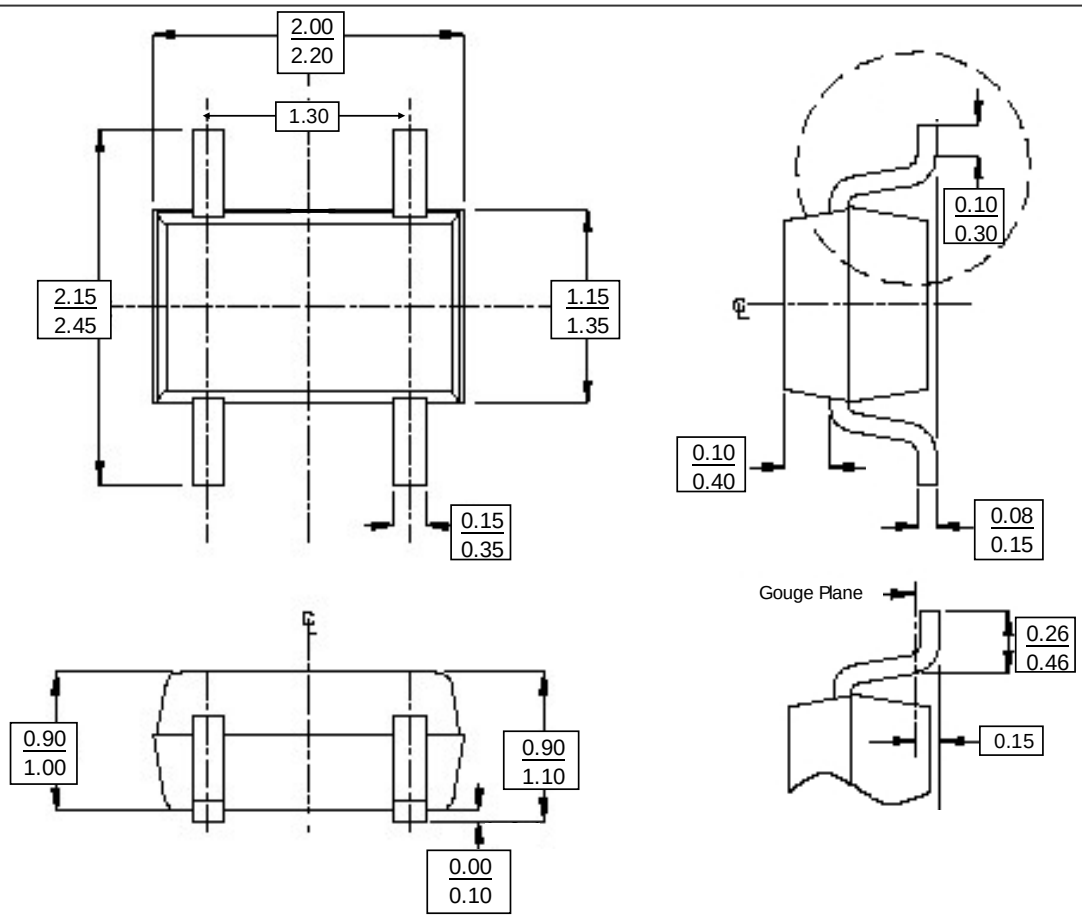
SOT23-5



Note:

1) Controlling dimensions in millimeters.
2) Ref: JDDEC MO-178AA

SC70-4



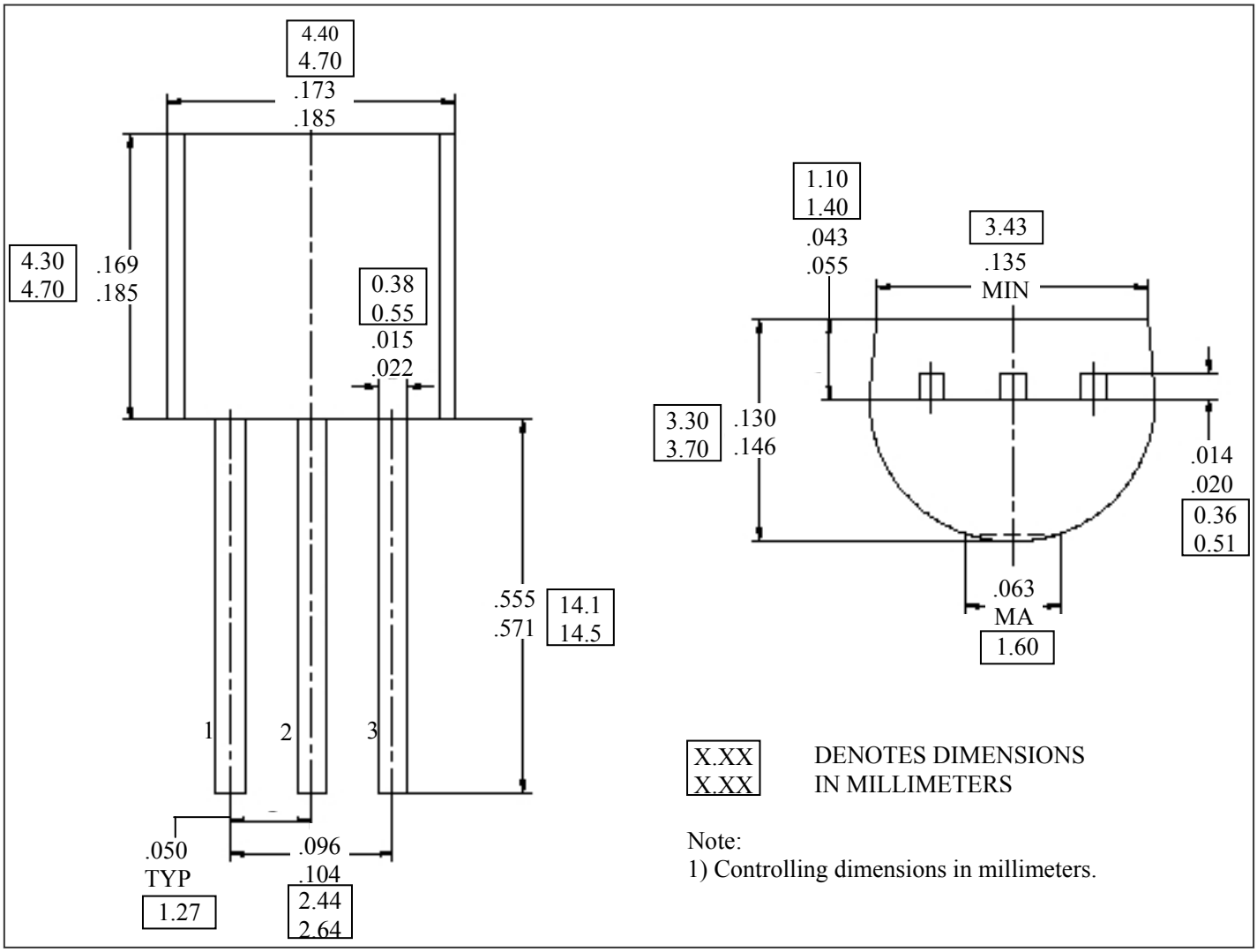
X.XX
X.XX

DENOTES DIMENSIONS
IN MILLIMETERS

Note:

1) Controlling dimensions in millimeters.
2) Dimensions are inclusive of plating

TO92-3



SOT-23/SC-70 Package Top Marking Instruction

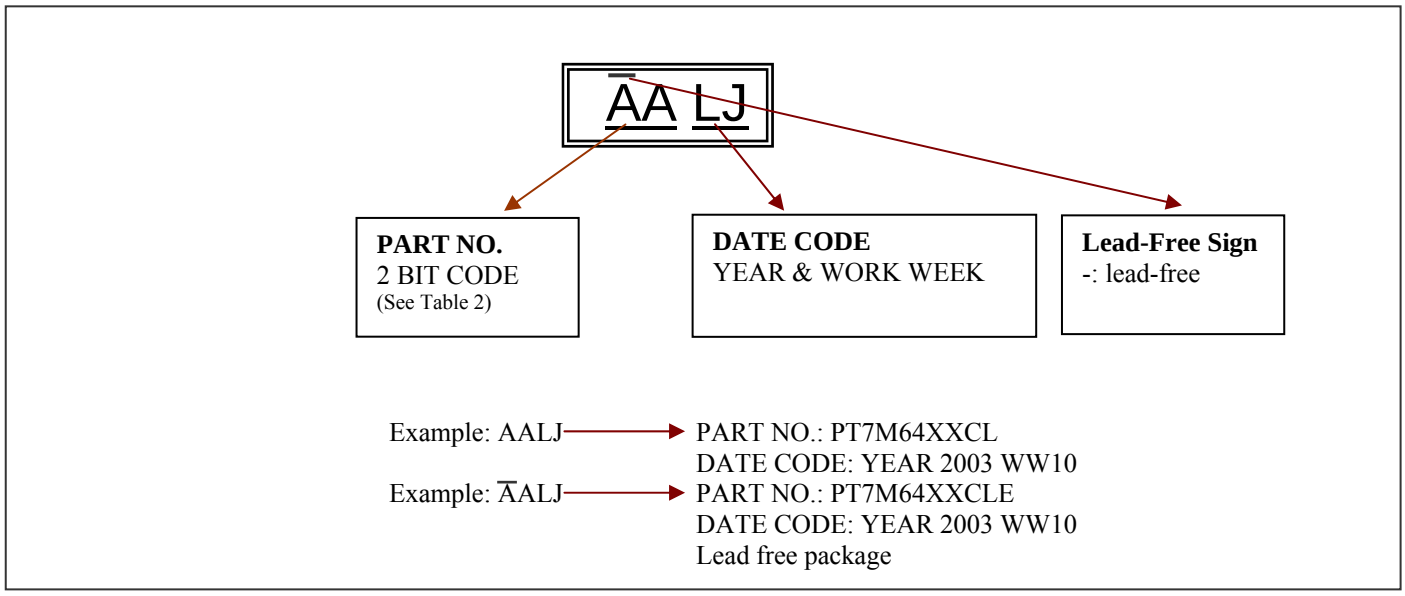


Table 2

No.	Part No.	Code	No.	Part No.	Code	No.	Part No.	Code
1	PT7M6418CL	at	***51***	PT7M6434NL	db	***101***	PT7M6419BL	fa
2	PT7M6418CH	au	***52***	PT7M6435CL	dc	***102***	PT7M6420BL	fc
3	PT7M6418NL	av	***53***	PT7M6435CH	dd	***103***	PT7M6421BL	fe
4	PT7M6419CL	aw	***54***	PT7M6435NL	de	***104***	PT7M6422BL	fg
5	PT7M6419CH	ax	***55***	PT7M6436CL	df	***105***	PT7M6423BL	fi
6	PT7M6419NL	ay	***56***	PT7M6436CH	dg	***106***	PT7M6424BL	fk
7	PT7M6420CL	az	***57***	PT7M6436NL	dh	***107***	PT7M6425BL	fm
8	PT7M6420CH	ba	***58***	PT7M6437CL	di	***108***	PT7M6426BL	fo
9	PT7M6420NL	bb	***59***	PT7M6437CH	dj	***109***	PT7M6427BL	fq
10	PT7M6421CL	bc	***60***	PT7M6437NL	dk	***110***	PT7M6428BL	fs
11	PT7M6421CH	bd	***61***	PT7M6438CL	dl	***111***	PT7M6429BL	fu
12	PT7M6421NL	be	***62***	PT7M6438CH	dm	***112***	PT7M6430BL	fw
13	PT7M6422CL	bf	***63***	PT7M6438NL	dn	***113***	PT7M6431BL	fy
14	PT7M6422CH	bg	***64***	PT7M6439CL	do	***114***	PT7M6432BL	ga
15	PT7M6422NL	bh	***65***	PT7M6439CH	dp	***115***	PT7M6433BL	gc
16	PT7M6423CL	bi	***66***	PT7M6439NL	dq	***116***	PT7M6434BL	ge
17	PT7M6423CH	bj	***67***	PT7M6440CL	dr	***117***	PT7M6435BL	gh
18	PT7M6423NL	bk	***68***	PT7M6440CH	ds	***118***	PT7M6436BL	gj
19	PT7M6424CL	bl	***69***	PT7M6440NL	dt	***119***	PT7M6437BL	gl
20	PT7M6424CH	bm	***70***	PT7M6441CL	du	***120***	PT7M6438BL	gn
21	PT7M6424NL	bn	***71***	PT7M6441CH	dv	***121***	PT7M6439BL	gp
22	PT7M6425CL	bo	***72***	PT7M6441NL	dw	***122***	PT7M6440BL	gr
23	PT7M6425CH	bp	***73***	PT7M6442CL	dx	***123***	PT7M6441BL	gt
24	PT7M6425NL	bq	***74***	PT7M6442CH	dy	***124***	PT7M6442BL	gv
25	PT7M6426CL	br	***75***	PT7M6442NL	dz	***125***	PT7M6443BL	gx
26	PT7M6426CH	bs	***76***	PT7M6443CL	ea	***126***	PT7M6444BL	gz
27	PT7M6426NL	bt	***77***	PT7M6443CH	eb	***127***	PT7M6445BL	hb
28	PT7M6427CL	bu	***78***	PT7M6443NL	ec	***128***	PT7M6446BL	hd
29	PT7M6427CH	bv	***79***	PT7M6444CL	ed	***129***	PT7M6447BL	hf
30	PT7M6427NL	bw	***80***	PT7M6444CH	ee	***130***	PT7M6448BL	hh
31	PT7M6428CL	bx	***81***	PT7M6444NL	ef	***131***	PT7M6449BL	hj
32	PT7M6428CH	by	***82***	PT7M6445CL	eg	***132***	PT7M6450BL	hl
33	PT7M6428NL	bz	***83***	PT7M6445CH	eh	***133***	PT7M6426NLL	iy
34	PT7M6429CL	ca	***84***	PT7M6445NL	ei	***134***	PT7M6427NLL	iz
35	PT7M6429CH	cb	***85***	PT7M6446CL	ej	***135***	PT7M6428NLL	ja
36	PT7M6429NL	cd	***86***	PT7M6446CH	ek	***136***	PT7M6429NLL	jb
37	PT7M6430CL	ce	***87***	PT7M6446NL	el	***137***	PT7M6430NLL	jc
38	PT7M6430CH	cf	***88***	PT7M6447CL	em	***138***	PT7M6431NLL	jd
39	PT7M6430NL	cg	***89***	PT7M6447CH	en	***139***	PT7M6432NLL	je
40	PT7M6431CL	ch	***90***	PT7M6447NL	eo	***140***	PT7M6433NLL	jf
41	PT7M6431CH	ci	***91***	PT7M6448CL	ep			
42	PT7M6431NL	cj	***92***	PT7M6448CH	eq			
43	PT7M6432CL	cl	***93***	PT7M6448NL	er			
44	PT7M6432CH	cm	***94***	PT7M6449CL	es			
45	PT7M6432NL	cn	***95***	PT7M6449CH	et			
46	PT7M6433CL	cq	***96***	PT7M6449NL	eu			
47	PT7M6433CH	cr	***97***	PT7M6450CL	ev			
48	PT7M6433NL	ct	***98***	PT7M6450CH	ew			
49	PT7M6434CL	cy	***99***	PT7M6450NL	ex			
50	PT7M6434CH	da	***100***	PT7M6418BL	ey			

Notes

Pericom Technology Inc.

Email: support@pti.com.cn Web Site: www.pti.com.cn, www.pti-ic.com

China: No. 20 Building, 3/F, 481 Guiping Road, Shanghai, 200233, China
Tel: (86)-21-6485 0576 Fax: (86)-21-6485 2181

Asia Pacific: Unit 1517, 15/F, Chevalier Commercial Centre, 8 Wang Hoi Rd, Kowloon Bay, Hongkong
Tel: (852)-2243 3660 Fax: (852)- 2243 3667

U.S.A.: 3545 North First Street, San Jose, California 95134, USA
Tel: (1)-408-435 0800 Fax: (1)-408-435 1100