

# IC for System Reset Monolithic IC PST90XX Series

November 9, 2001

## Outline

The function of this low voltage detection type IC is to accurately reset systems after detecting the supply voltage at the time of switching power on and instantaneous power off in various CPU and other logic systems. This IC, with its super low consumption current and high precision voltage detection capacity, is most suited as a voltage check circuit for a number of products which use batteries.

## Features

- |   |   |
|---|---|
| 1. High precision voltage detection   | $V_S \pm 2.5\%$ max.                              |
| 2. Super low current consumption  | $I_{CCH} = 1.5\mu A$ typ. $I_{CCL} = 1\mu A$ typ. |
| 3. Low operating threshold voltage  | 0.7V max.   |
| 4. Hysteresis voltage is provided as a detect voltage   | $V_S \times 5\%$ typ.                             |
| 5. The detect voltage can be selected at your discretion at 0.1 V step within the range of 0.8 to 1.8V by the following stipulation method. |   |



(Example : for 0.8V ..... PST9008)

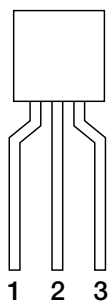
## Packages

- TO-92A (PST90××)
- SOT-25A (PST90××N)

## Applications

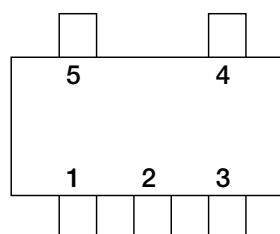
1. Reset circuits for microcomputers, CPUs and MPUs
2. Reset circuits for logic circuits
3. Battery voltage check circuits
4. Back-up power supply switching circuits
5. Level detection circuits

## Pin Assignment



TO-92A

1	$V_{OUT}$
2	$V_{CC}$
3	GND

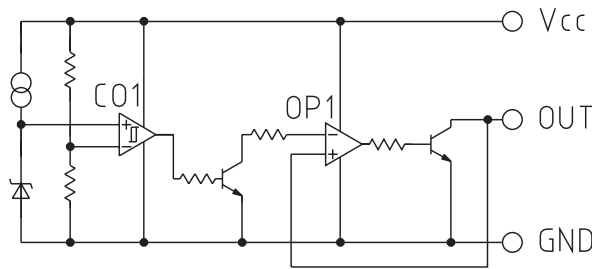


SOT-25A  
(TOP VIEW)

1	NC
2	SUB
3	GND
4	$V_{OUT}$
5	$V_{CC}$

Note : The pin 2 of SOT-25 package is a SUB terminal. Connect it to GND.

Equivalent Circuit Diagram



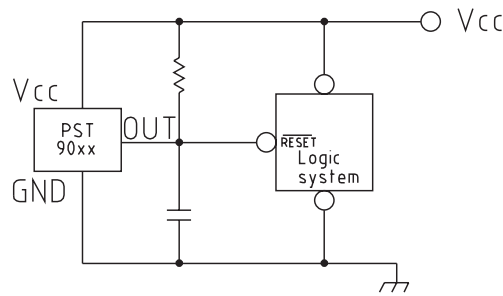
Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Ratings	Units
Storage temperature	T <sub>STG</sub>	-40~+125	°C
Operating temperature	T <sub>OPR</sub>	-20~+75	°C
Supply Voltage	V <sub>CC</sub> max.	-0.3~10	V
Allowable loss	P <sub>d</sub>	150 (SOT-25A) 300 (TO-92A)	mW

Electrical Characteristics (Ta=25°C) (The unit of resistance is Ω unless otherwise indicated.)

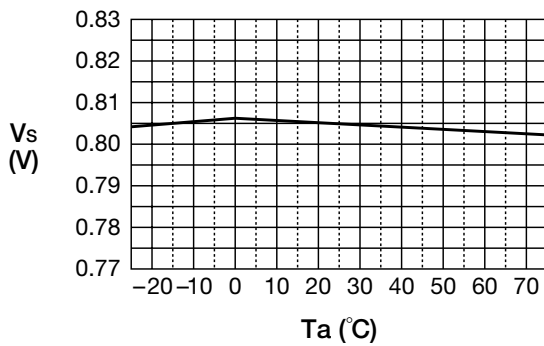
Item	Symbol	Measurement Circuit	Measurement conditions	Min.	Typ.	Max.	Unit
Detection Voltage	V <sub>s</sub>	1	R <sub>L</sub> =4.7k V <sub>CC</sub> =H→L V <sub>OL</sub> ≤ 0.4V	-2.5% typ.	0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8	+2.5% typ.	V
Hysteresis Voltage	ΔV <sub>s</sub>	1	R <sub>L</sub> =4.7k V <sub>CC</sub> =L→H→L	ΔV <sub>s</sub> × 0.5	V <sub>s</sub> typ. × 0.05	ΔV <sub>s</sub> × 2	mV
Detection Voltage Temperature Coefficient	V <sub>s</sub> /ΔT	1	R <sub>L</sub> =4.7k Ta=-20°C~+75°C		±0.01		%/°C
Low Level Output Voltage	V <sub>oL</sub>	1	V <sub>CC</sub> =V <sub>s</sub> min. -0.02V R <sub>L</sub> =4.7k		0.2	0.4	V
Output Leakage Current	I <sub>oH</sub>	1	V <sub>CC</sub> =10V			0.1	μA
Circuit Current at On Time	I <sub>cCL</sub>	1	V <sub>CC</sub> =V <sub>s</sub> min. -0.02V I <sub>oL</sub> =0mA		1.0	2.0	μA
Circuit Current at OFF Time	I <sub>cCH</sub>	1	V <sub>s</sub> =0.8~1.2 V <sub>CC</sub> =1.5V, R <sub>L</sub> =∞		1.0	2.0	μA
			V <sub>s</sub> =1.3~1.8 V <sub>CC</sub> =3.0V, R <sub>L</sub> =∞		1.5	2.5	
"H" Transmission Delay Time	t <sub>pLH</sub>	2	C <sub>L</sub> =100pF, R <sub>L</sub> =4.7k	10	20	50	μs
"L" Transmission Delay Time	t <sub>pHL</sub>	2	C <sub>L</sub> =100pF, R <sub>L</sub> =4.7k	20	50	80	μs
Operating Threshold Voltage	V <sub>opL</sub>	1	R <sub>L</sub> =4.7k, V <sub>OL</sub> ≤ 0.4V		0.65	0.70	V
Output Current at On Time 1	I <sub>oL1</sub>	1	R <sub>L</sub> =0 V <sub>CC</sub> =V <sub>s</sub> min. -0.02V	0.3			mA
Output Current at On Time 2	I <sub>oL2</sub>	1	V <sub>CC</sub> =V <sub>s</sub> min. -0.02V R <sub>L</sub> =0, Ta=-20°C~+75°C	0.2			mA

Equivalent Circuit

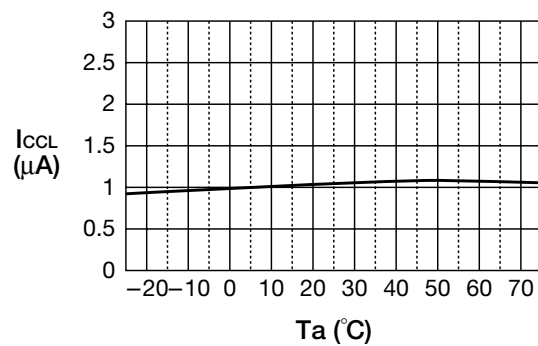


Characteristics (Example: PST9008)

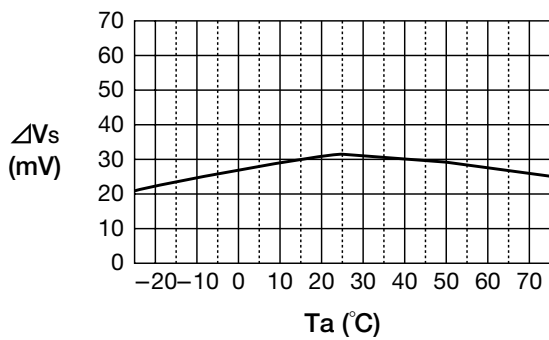
■  $V_s$  vs.  $T_a$



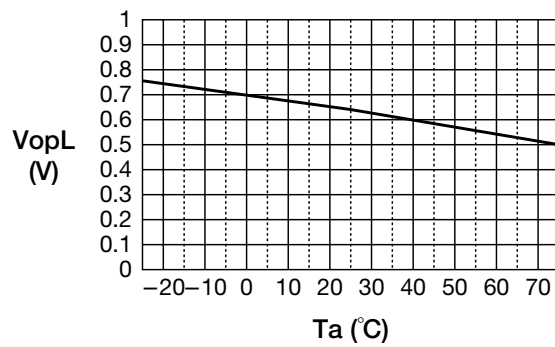
■  $I_{cCL}$  vs.  $T_a$



■  $\Delta V_s$  vs.  $T_a$



■  $V_{opL}$  vs.  $T_a$



■  $I_{cCH}$  vs.  $T_a$

