

# System Reset Monolithic IC PST91XX Series

## Outline

The function of this low reset 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. Further, 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                                                                                                        | $V_s \pm 3\%$ max.                                  |
| 2. Super low current consumption                                                                                                           | $I_{CCH} = 1.5\mu A$ typ. $I_{CCL} = 1.0\mu A$ typ. |
| 3. Low operating threshold voltage                                                                                                         | 0.65V typ.                                          |
| 4. Hysteresis voltage is provided as a detect voltage                                                                                      | 50mV typ.                                           |
| 5. Large output current at the time ON                                                                                                     | 15mA typ.                                           |
| 6. The detect voltage can be selected at your discretion at 0.1V step within the range of 1.9 to 4.6V by the following stipulation method. |                                                     |

PST91XX


 Detected voltage value

(Example : for 4.2V ..... PST9142)

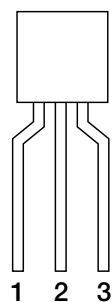
## Package

TO-92A (PST91XX)  
 SOT-25A (PST91XXN)

## Applications

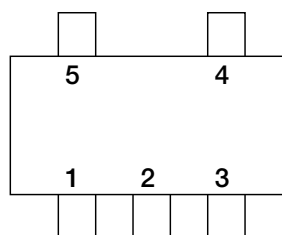
- Reset circuits for microcomputers, CPU and MPU.
- Reset circuit for logic circuitry.
- Battery voltage check circuit.
- Circuit for changing over to backup battery.
- Level detecting circuit.

## Pin Assignment



TO-92A

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

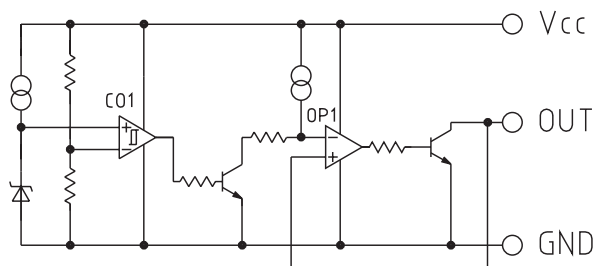


SOT-25A

|   |           |
|---|-----------|
| 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



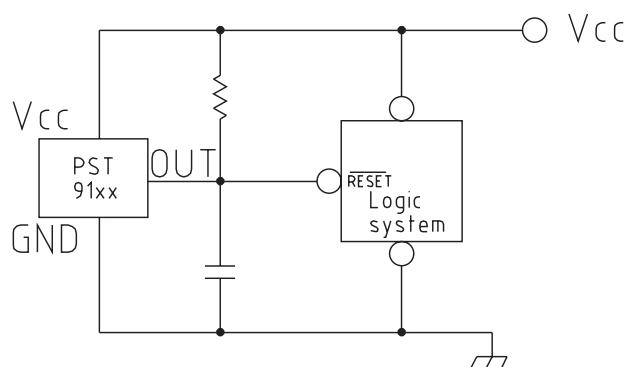
## Absolute Maximum Ratings (Ta=25°C)

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

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

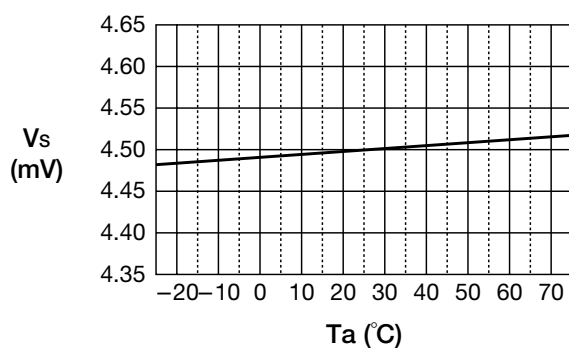
| Item                                      | Symbol             | Measurement Circuit | Measurement conditions                                                        | Min.        | Typ.                       | Max.        | Units |
|-------------------------------------------|--------------------|---------------------|-------------------------------------------------------------------------------|-------------|----------------------------|-------------|-------|
| Detection Voltage                         | V <sub>S</sub>     | 1                   | R <sub>L</sub> =4.7k, V <sub>OL</sub> ≤ 0.4V<br>V <sub>CC</sub> =H→L          | -3%<br>typ. | 4.6~<br>1.9<br>(0.1V step) | +3%<br>typ. | V     |
| Hysteresis Voltage                        | ΔV <sub>S</sub>    | 1                   | R <sub>L</sub> =470, V <sub>CC</sub> =L→H→L                                   | 30          | 50                         | 100         | mV    |
| Detection Voltage Temperature Coefficient | V <sub>S</sub> /ΔT | 1                   | R <sub>L</sub> =470, Ta=-20~+75°C                                             |             | ±0.01                      |             | %/°C  |
| Low Level Output Voltage                  | V <sub>OL</sub>    | 1                   | V <sub>CC</sub> =V <sub>S</sub> min.-0.05V, R <sub>L</sub> =470               |             | 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>CC</sub> L  | 1                   | V <sub>CC</sub> =V <sub>S</sub> min.-0.05V, R <sub>L</sub> =∞                 |             | 1.0                        | 2.0         | μA    |
| Circuit Current at OFF Time               | I <sub>CC</sub> H  | 1                   | V <sub>CC</sub> =V <sub>S</sub> typ./0.85V, R <sub>L</sub> =∞                 |             | 1.5                        | 2.5         | μA    |
| "H" Transmission Delay Time               | tp <sub>LH</sub>   | 2                   | C <sub>L</sub> =100pF, R <sub>L</sub> =4.7k                                   |             | 20                         | 60          | μS    |
| "L" Transmission Delay Time               | tp <sub>HL</sub>   | 2                   | C <sub>L</sub> =100pF, R <sub>L</sub> =4.7k                                   |             | 20                         | 60          | μS    |
| Operating Threshold Voltage               | V <sub>OP</sub> L  | 1                   | R <sub>L</sub> =4.7k, V <sub>OL</sub> ≤ 0.4V                                  |             | 0.65                       | 0.85        | V     |
| Output Current at ON Time 1               | I <sub>OL</sub> 1  | 1                   | R <sub>L</sub> =0, V <sub>CC</sub> =V <sub>S</sub> min.-0.05V                 | 5           |                            |             | mA    |
| Output Current at ON Time 2               | I <sub>OL</sub> 2  | 1                   | Ta=-20~+75°C<br>R <sub>L</sub> =0, V <sub>CC</sub> =V <sub>S</sub> min.-0.05V | 3           |                            |             | mA    |

## Application Circuits

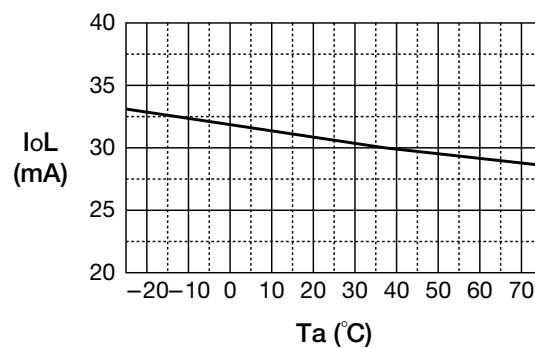


## Characteristics (Example: PST9145)

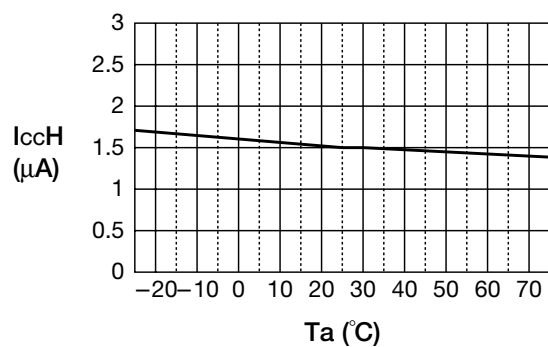
■ Vs vs. Ta



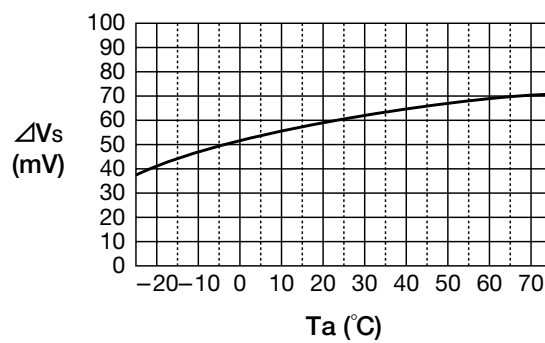
■ IoL vs. Ta



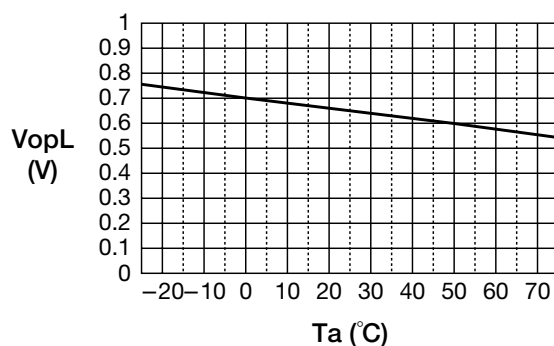
■ IccH vs. Ta



■ ΔVs vs. Ta



■ VopL vs. Ta



■ VoL vs. Ta

