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±2.5% max.
2. Super low current consumption — I_{CCH}=1.5μA typ. I_{CCL}=1μA typ.
3. Low operating threshold voltage — 0.7V max.
4. Hysteresis voltage is provided as a detect voltage — Vs × 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.

PST90XX
└┘└──── Detected voltage value

(Example : for 0.8V ····· PST9008)

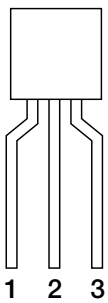
Packages

TO-92A (PST90××)
SOT-25A (PST90××N)

Applications

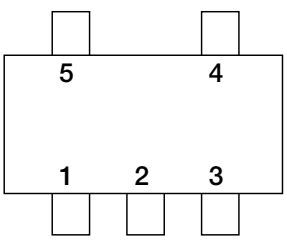
1. Reset circuits for microcomputers, CPUs and MPUs
2. Reset circuits for logic circuits
3. Battery voltage check circuits
4. Back-up power supply switching circuits
5. Level detection circuits

Pin Assignment



TO-92A

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

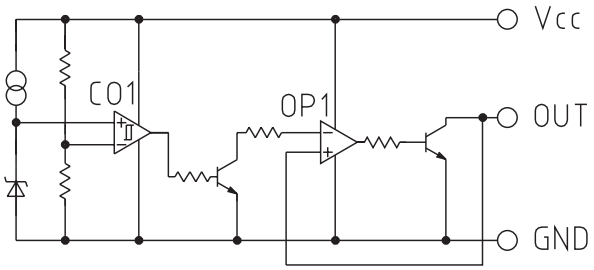


SOT-25A
(TOP VIEW)

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



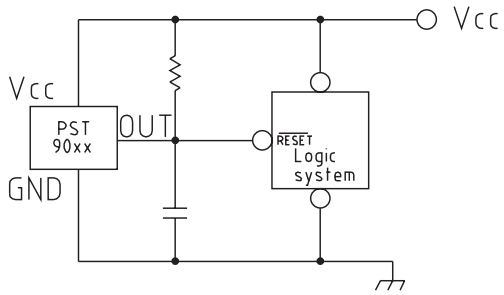
Absolute Maximum Ratings (Ta=25℃)

Item	Symbol	Ratings	Units
Storage temperature	T_{STG}	−40~+125	℃
Operating temperature	T_{OPR}	−20~+75	℃
Supply Voltage	V_{CC} max.	−0.3~10	V
Allowable loss	Pd	150 (SOT-25A) 300 (TO-92A)	mW

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

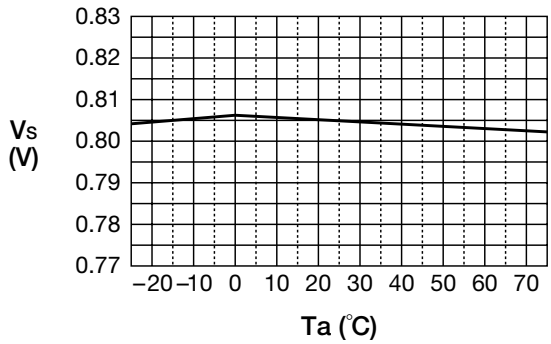
Item	Symbol	Measurement Circuit	Measurement conditions		Min.	Typ.	Max.	Unit
Detection Voltage	Vs	1	R_L=4.7k V_{CC}=H→L V_{OL} ≦ 0.4V	PST9008 PST9009 PST9010 PST9011 PST9012 PST9013 PST9014 PST9015 PST9016 PST9017 PST9018	−2.5% typ.	0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8	+2.5% typ.	V
Hysteresis Voltage	⊿Vs	1	R_L=4.7k V_{CC}=L→H→L		⊿Vs ×0.5	Vs typ. ×0.05	⊿Vs ×2	mV
Detection Voltage Temperature Coefficient	Vs/⊿T	1	R_L=4.7k Ta=−20℃~+75℃			±0.01		%/℃
Low Level Output Voltage	VoL	1	V_{CC}=Vs min. −0.02V R_L=4.7k			0.2	0.4	V
Output Leakage Current	IoH	1	V_{CC}=10V				0.1	μA
Circuit Current at On Time	I_{CCL}	1	V_{CC}=Vs min. −0.02V I_{OL}=0mA			1.0	2.0	μA
Circuit Current at OFF Time	I_{CCH}	1	Vs=0.8~1.2	V_{CC}=1.5V, R_L=∞		1.0	2.0	μA
			Vs=1.3~1.8	V_{CC}=3.0V, R_L=∞		1.5	2.5	
"H" Transmission Delay Time	tpLH	2	C_L=100pF, R_L=4.7k		10	20	50	μs
"L" Transmission Delay Time	tpHL	2	C_L=100pF, R_L=4.7k		20	50	80	μs
Operating Threshold Voltage	VopL	1	R_L=4.7k, V_{OL} ≦ 0.4V			0.65	0.70	V
Output Current at On Time 1	IoL1	1	R_L=0 V_{CC}=Vs min. −0.02V		0.3			mA
Output Current at On Time 2	IoL2	1	V_{CC}=Vs min. −0.02V R_L=0, Ta=−20℃~+75℃		0.2			mA

Equivalent Circuit

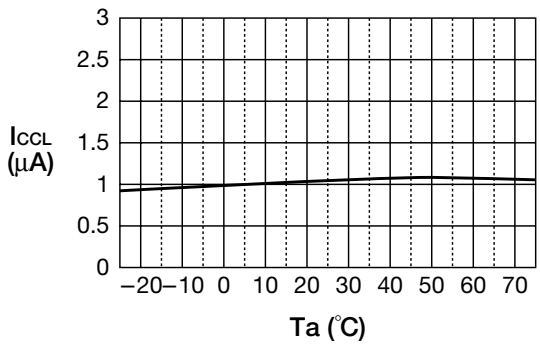


Characteristics (Example: PST9008)

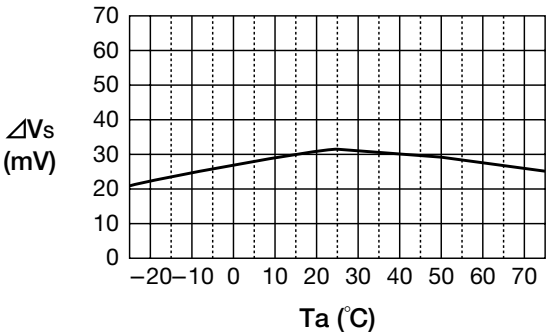
Vs vs. Ta



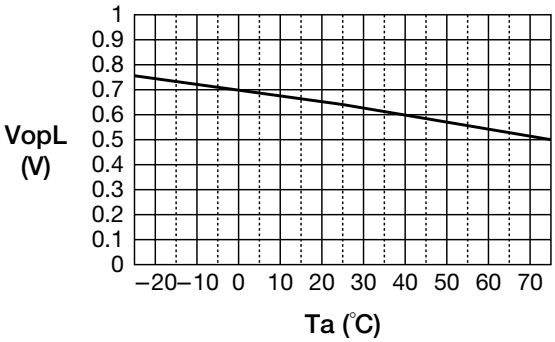
ICCL vs. Ta



⊿Vs vs. Ta



VopL vs. Ta



ICCH vs. Ta