

# System Reset Monolithic IC PST574

## Outline

This IC functions in a variety of CPU systems and other logic systems, to detect power supply voltage and reset the system accurately when power is turned on or interrupted. This ultra-low current consumption low reset type system reset IC has a built-in fixed delay time generating circuit. It is ideal for use in multi-CPU systems because a fast-rising output waveform can be obtained.

## Features

- |   |  |
|---|--|
| 1. Ultra-low current consumption  | $I_{CCCH}=7.5\mu\text{A typ.}$ $I_{CCCL}=400\mu\text{A typ.}$  |
| 2. Low operating limit voltage  | 0.65V typ.   |
| 3. Output current high for ON   | 30mA typ.  |
| 4. Hysteresis voltage provided in detection voltage                             | 50mV typ.  |
| 5. Built-in delay circuit with excellent delay time temperature characteristics | 50mV typ.  |
| 6. 10 ranks of detection voltage  | PST574 C : 4.5V typ. H : 3.1V typ.<br>D : 4.2V typ. I : 2.9V typ.<br>E : 3.9V typ. J : 2.7V typ.<br>F : 3.6V typ. K : 2.5V typ.<br>G : 3.3V typ. L : 2.3V typ. |

## Package

MMP-3A (PST574 □M)

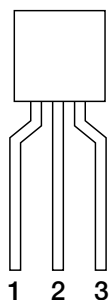
TO-92A (PST574 □)

\*□ contains detection voltage rank .

## Applications

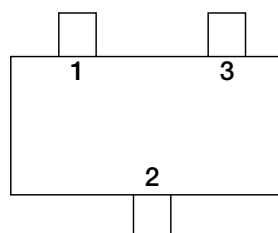
1. Reset circuits in microcomputers, CPUs and MPUs (especially multi-CPU sets)
2. Logic circuit reset circuits.
3. Battery voltage check circuits.
4. Back-up power supply switching circuits.
5. Level detection circuits.

## Pin Assignment



TO-92A

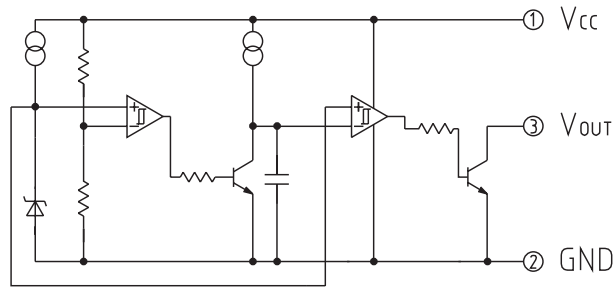
1	V <sub>CC</sub>
2	GND
3	V <sub>OUT</sub>



MMP-3A

1	V <sub>CC</sub>
2	GND
3	V <sub>OUT</sub>

**Equivalent Circuit Diagram**



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

Item	Symbol	Rating	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> max.	-0.3~10	V
Allowable loss	P <sub>d</sub>	200 (MMP-3A) 300 (TO-92A)	mW

**Electrical Characteristics** (Ta=25°C) (Except where noted otherwise, resistance unit is Ω)

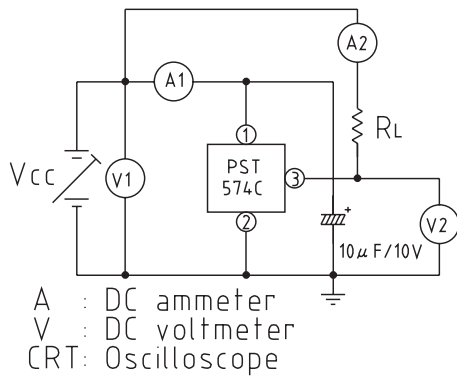
Item	Symbol	Measurement circuit	Measurement conditions	Min.	Typ.	Max.	Units	
Detection voltage	V <sub>s</sub>	1	R <sub>L</sub> =470 V <sub>OL</sub> ≤ 0.4V V <sub>CC</sub> =H→L	PST574C	4.3	4.5	4.7	V
				PST574D	4.0	4.2	4.4	
				PST574E	3.7	3.9	4.1	
				PST574F	3.4	3.6	3.8	
				PST574G	3.1	3.3	3.5	
				PST574H	2.9	3.1	3.3	
				PST574I	2.75	2.90	3.05	
				PST574J	2.55	2.70	2.85	
				PST574K	2.35	2.50	2.65	
PST574L	2.15	2.30	2.45					
Hysteresis voltage	ΔV <sub>s</sub>	1	R <sub>L</sub> =470, V <sub>CC</sub> =L→H→L	25	50	100	mV	
Detection voltage temperature coefficient	V <sub>s</sub> /ΔT	1	R <sub>L</sub> =470, 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.-0.05V, R <sub>L</sub> =470		0.1	0.4	V	
Output leakage current	I <sub>OH</sub>	1	V <sub>CC</sub> =7.5V			±0.1	μA	
Circuit current while on	I <sub>CCL</sub>	1	V <sub>CC</sub> =V <sub>s</sub> min.-0.05V, R <sub>L</sub> =∞		400	650	μA	
Circuit current while off	I <sub>CCH</sub>	1	V <sub>CC</sub> =V <sub>s</sub> typ./0.85V, R <sub>L</sub> =∞		7.5	12.0	μA	
"H"transport delay time	tp <sub>LH</sub>	2	*1 R <sub>L</sub> =4.7kΩ, C <sub>L</sub> =100pF	250	400	600	μS	
"L"transport delay time	tp <sub>HL</sub>	2	*1 R <sub>L</sub> =4.7kΩ, C <sub>L</sub> =100pF		6	20	μS	
Operation limit voltage	V <sub>opL</sub>	1	R <sub>L</sub> =4.7kΩ, V <sub>OL</sub> ≤ 0.4V		0.65	0.85	V	
Output current while on I	I <sub>OL I</sub>	1	V <sub>CC</sub> =V <sub>s</sub> min.-0.05V, R <sub>L</sub> =0	8	30		mA	
Output current while on II	I <sub>OL II</sub>	1	*2 Ta=-20°C~+75°C, R <sub>L</sub> =0	5			mA	

\*1 : tp<sub>LH</sub> : V<sub>CC</sub>=(V<sub>s</sub> typ.-0.4V)→(V<sub>s</sub> typ.+0.4V), tp<sub>HL</sub> : V<sub>CC</sub>=(V<sub>s</sub> typ.+0.4V)→(V<sub>s</sub> typ.-0.4V)

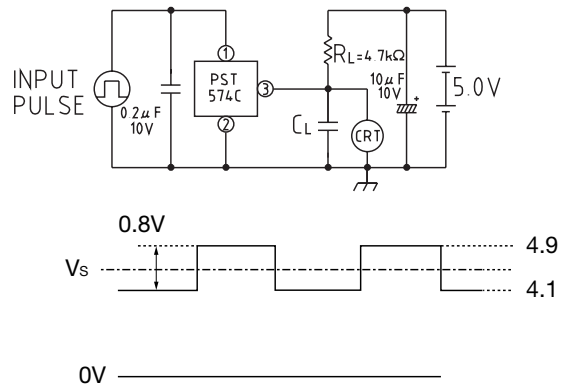
\*2 : V<sub>CC</sub>=V<sub>s</sub> min.-0.15V

Measuring Circuit

[1]



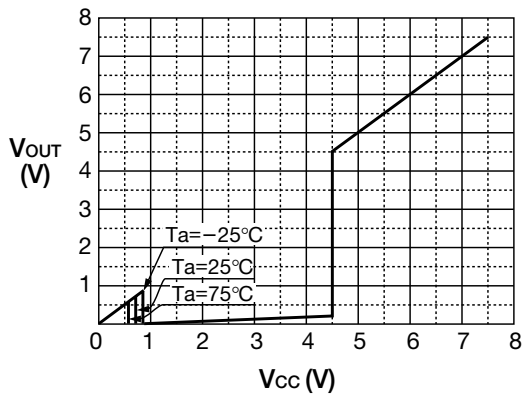
[2]



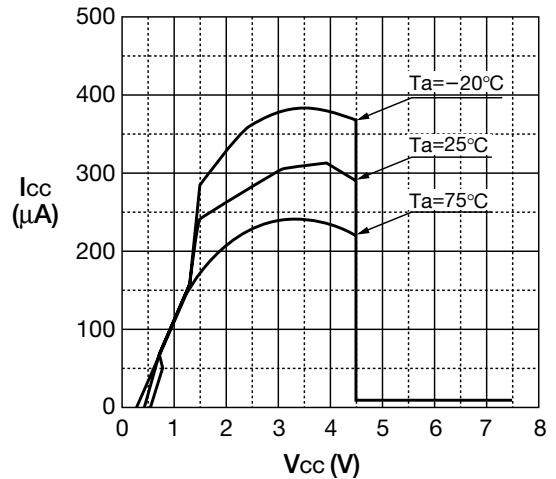
Note: Input model is an example for PST574C.

Characteristics (Example: PST574C)

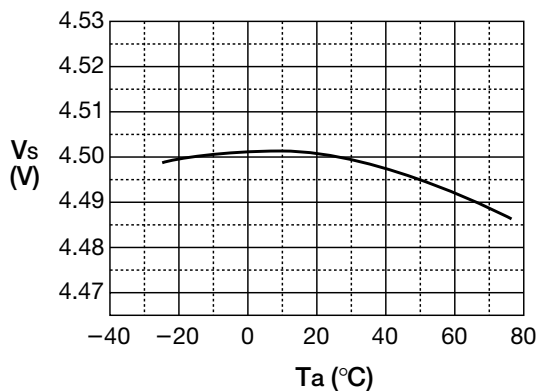
Vcc vs. Vout



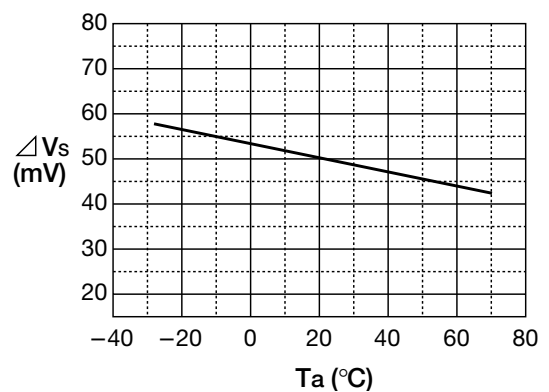
Vcc vs. Icc



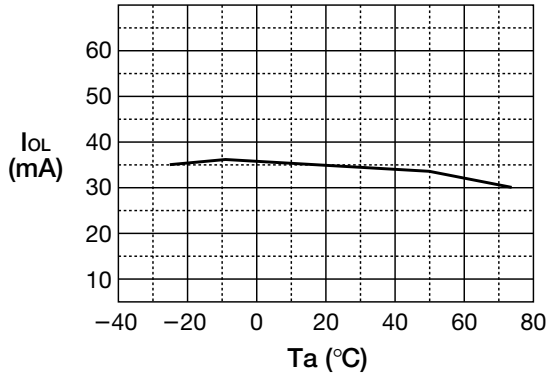
Vs vs. Ta



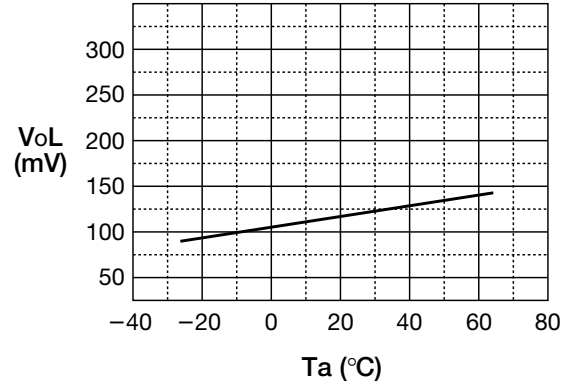
ΔVs vs. Ta



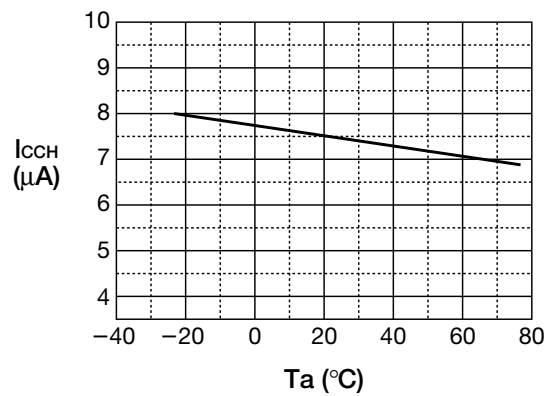
IoL vs. Ta



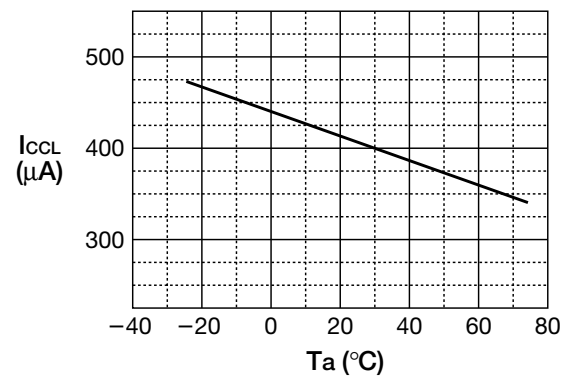
VoL vs. Ta



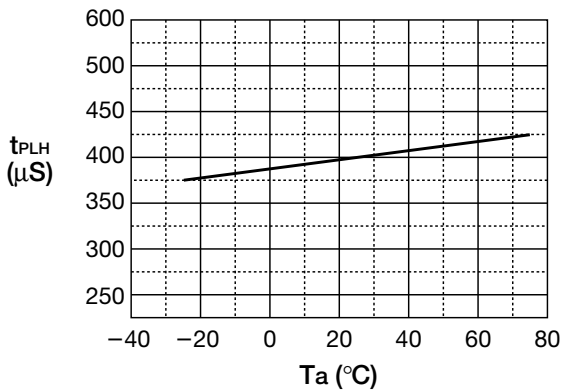
IcCH vs. Ta



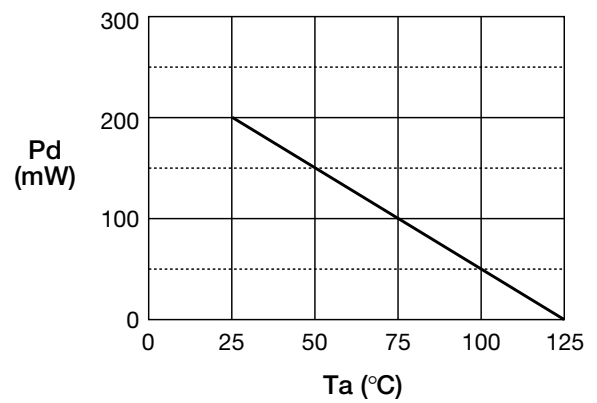
IcCL vs. Ta



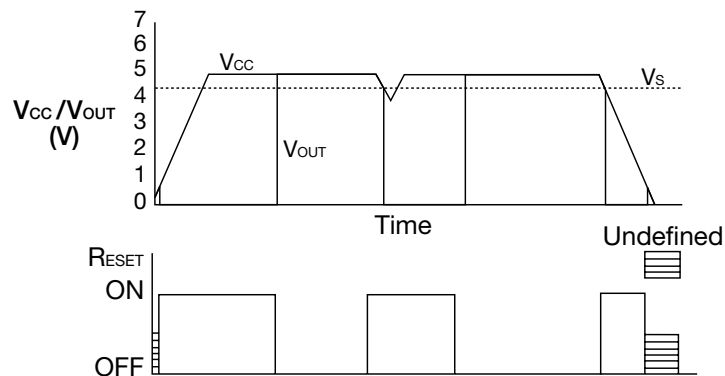
tPLH vs. Ta



Pd vs. Ta

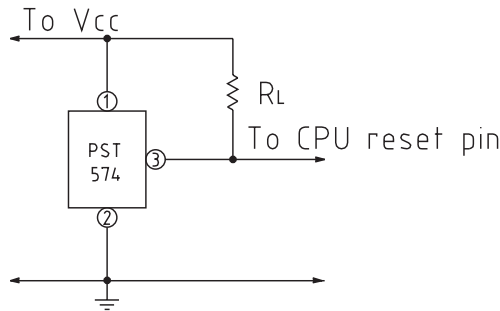


Timing Chart



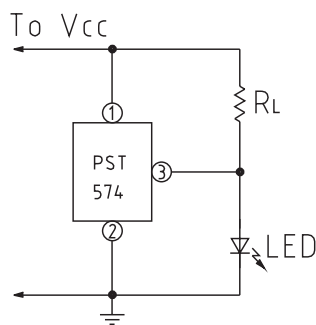
**Application circuits**

**1. Normal hard reset**



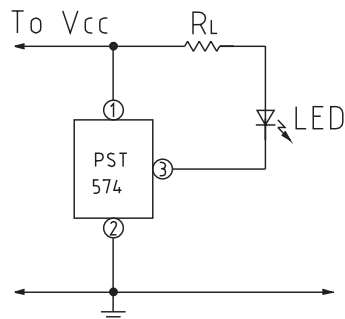
Note: Connect a capacitor between IC pins 1 and 2 if V<sub>CC</sub> line impedance is high.

**2. Battery checker (LED ON for high voltage)**



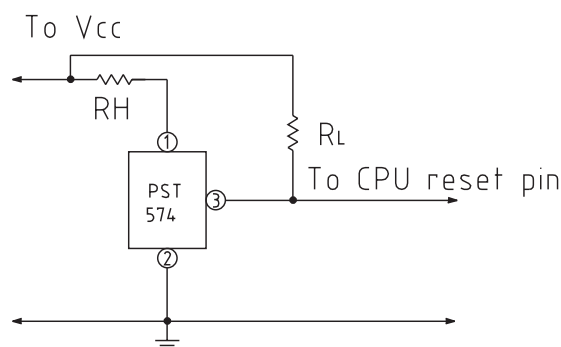
Note: Connect a capacitor between IC pins 1 and 2 if V<sub>CC</sub> line impedance is high.

**3. Battery checker (LED ON for low voltage)**



Note: Connect a capacitor between IC pins 1 and 2 if V<sub>CC</sub> line impedance is high.

**4. Hysteresis voltage UP method**



When increasing hysteresis voltage for stable system operation, determine R<sub>H</sub> as follows and connect externally.

However, I<sub>CC1</sub> is -5000PPM/°C, so perform temperature compensation at R<sub>H</sub> when using over a wide temperature range.

Hysteresis voltage UP amount (ΔV<sub>sup</sub>) is

$$\Delta V_{sup} \cong R_H \times I_{CC1}$$

Total hysteresis voltage (ΔV<sub>total</sub>) is

$$\Delta V_{total} \cong V_s + \Delta V_{sup}$$

(Operation will be destabilized if R<sub>H</sub> is raised too much.)

Note: Connect a capacitor between IC pins 1 and 2 if V<sub>CC</sub> line impedance is high.

This datasheet has been downloaded from:

[www.DatasheetCatalog.com](http://www.DatasheetCatalog.com)

Datasheets for electronic components.