System Reset
Monolithic IC PST596~598 Series

Outline

These ICs function 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, and has a built-in fixed delay time generating circuit. This series has been represented in the past by PST591~595, and these new system reset ICs offer ultra-small size and low current consumption.

Features

1. Fixed delay time setting by counter timer	
2. Low operating limit voltage	0.65V typ.
3. Hysteresis voltage provided in detection voltage	50mV typ.
4. Low current consumption	I_{CCH}=15µA typ.
5. 3 delay time products available	
	PST596 50ms
	PST597 100ms
	PST598 200ms
6. Each product has 10 detection voltage ranks.	C : 4.5V typ. H : 3.1V typ.
	D : 4.2V typ. I : 2.9V typ.
	E : 3.9V typ. J : 2.7V typ.
	F : 3.6V typ. K : 2.5V typ.
	G : 3.3V typ. L : 2.3V typ.

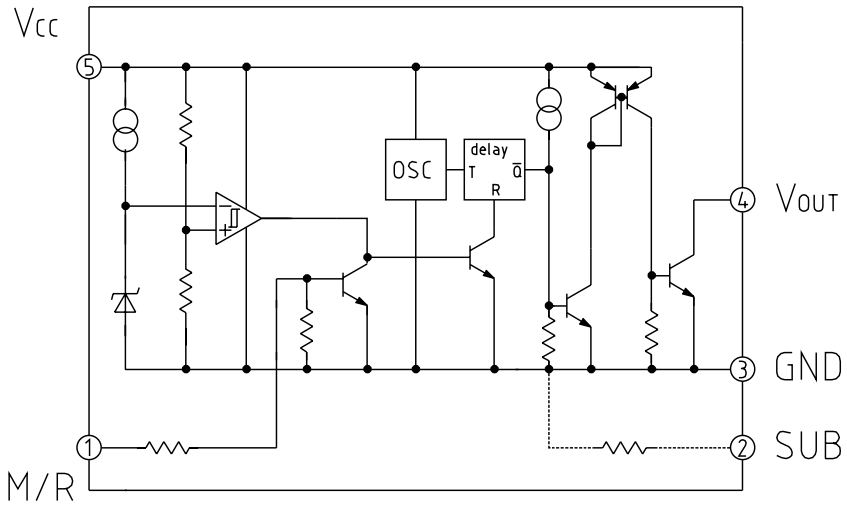
Package

SOT-25A (PST59×□N) (with manual reset pin)
* □contains detection voltage rank.

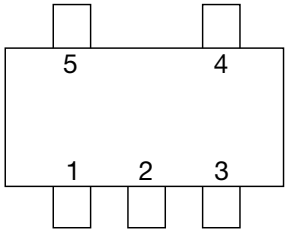
Applications

1. Reset circuits in microcomputers, CPUs and MPUs
2. Logic circuit reset circuits.
3. Battery voltage check circuits.
4. Back-up power supply switching circuits.
5. Level detection circuits.
6. Mechanical reset circuits

Equivalent Circuit Diagram



Pin Assignment



SOT-25
(TOP VIEW)

1	M/R
2	SUB
3	GND
4	VOUT
5	Vcc

Pin Description

Pin No.	Pin name	Function
1	M/R	Manual reset pin *1
2	SUB	SUB pin *2
3	GND	GND pin
4	VOUT	Reset signal output pin
5	Vcc	Power supply pin/Voltage detection pin

*1: Note that the oscilloscope may mis-operate if the M/R pin falls below −0.3V.
*2: Connect to GND.

Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Rating	Units
Storage temperature	TSTG	−40~+125	°C
Operating temperature	TOPR	−20~+75	°C
Power supply voltage	Vcc max.	−0.3~+12	V
Manual reset input voltage	VRES max.	−0.3~+12	V
Allowable loss	Pd	150	mW

Recommended Operating Conditions

Item	Symbol	Rating	Units
Operating temperature	T_{OPR}	–20~+75	℃
Power supply voltage	V_{CC}	–0.3~+12	V

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

Item	Symbol	Measuring circuit	Measurement conditions		Min.	Typ.	Max.	Units
Detection voltage	Vs	1	V_{CC}=H→L R_L=470 V_{OL} ≦ 0.4V	C	4.3	4.5	4.7	V
				D	4.0	4.2	4.4	
				E	3.7	3.9	4.1	
				F	3.4	3.6	3.8	
				G	3.1	3.3	3.5	
				H	2.9	3.1	3.3	
				I	2.75	2.90	3.05	
				J	2.55	2.70	2.85	
				K	2.35	2.50	2.65	
				L	2.15	2.30	2.45	
Hysteresis voltage	⊿Vs	1	V_{CC}=L→H→L, R_L=470		30	50	100	mV
Detection voltage temperature coefficient	Vs/⊿T	1	R_L=470, Ta=–20℃~+75℃			±0.01		%/℃
Low-level output voltage	V_{OL}	1	V_{CC}=Vs min. –0.05V, R_L=470			0.1	0.4	V
Output leakage current	I_{OH}	1	V_{CC}=10V				±0.1	μA
Circuit current while on	I_{CCL}	1	V_{CC}=Vs min. –0.05V, R_L=∞			300	500	μA
Circuit current while off	I_{CCH}	1	V_{CC}=Vs typ./0.85V, R_L=∞			15	25	μA
"H" transport delay time	T_{PLH}	2	R_L=4.7k C_L=100pF *1	PST596	30	50	75	ms
				PST597	60	100	150	
				PST598	120	200	300	
"L" transport delay time	T_{PHL}	2	R_L=4.7k, C_L=100pF, *2			20		μs
Operating power supply voltage	V_{OPL}	1	R_L=4.7k, V_{OL} ≦ 0.4V			0.65	0.85	V
Output current while on 1	$I_{OL}1$	1	V_{CC}=Vs min. –0.05V, R_L=0		8			mA
Output current while on 2	$I_{OL}2$	1	V_{CC}=Vs min. –0.05V, R_L=0 Ta=–20~+75℃		6			mA
M/R pin input H voltage	V_{RESH}				2.0			V
M/R pin input H current	I_{RESH}		V_{RESH}=2.0V			10	60	μA
M/R pin input low voltage	V_{RESL}				–0.3		0.8	V

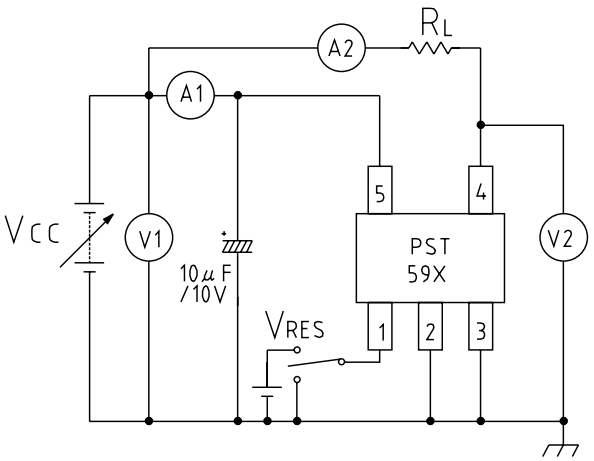
*1 : T_{PLH} ; V_{CC}= (Vs typ.–0.4V) → (Vs typ.+0.4V)

*2 : T_{PLH} ; V_{CC}= (Vs typ.+0.4V) → (Vs typ.–0.4V)

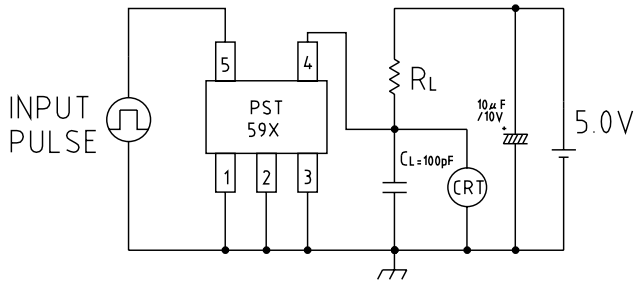
Note 3: Connect manual reset pin to GND when not using.

Measuring Circuit

[1]

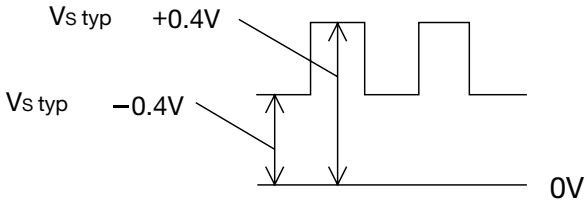


[2]

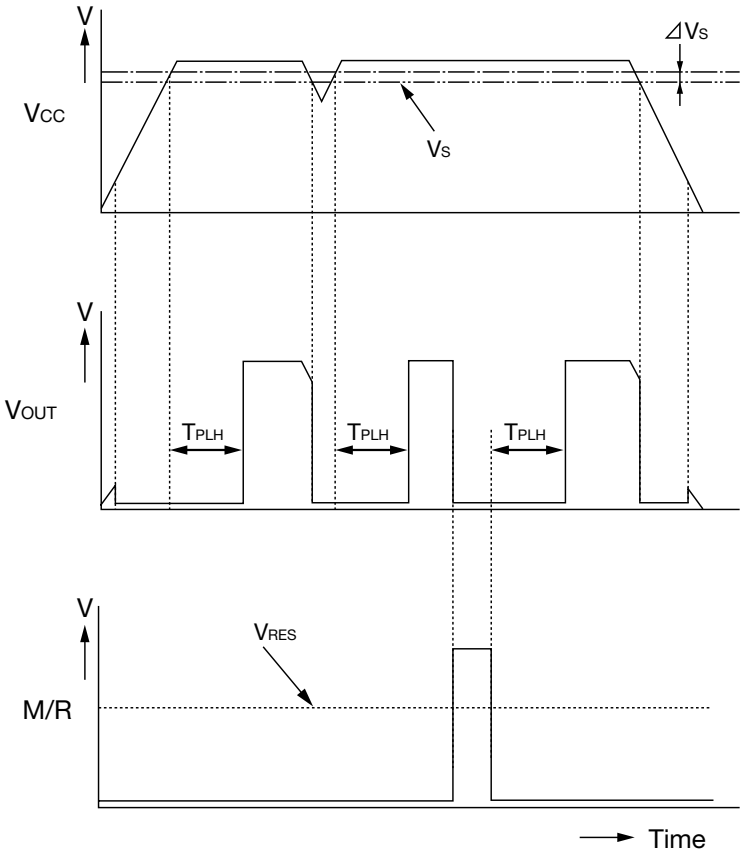


A : DC ammeter
V : DC voltmeter
CRT: Oscilloscope

INPUT PULSE



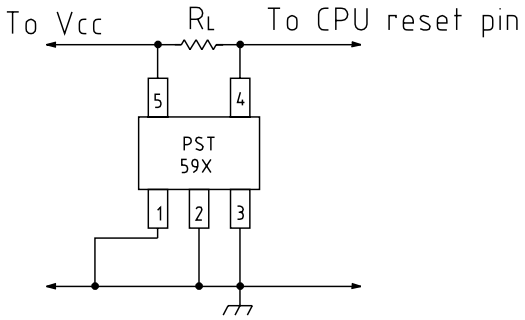
Timing Chart



Note: Thoroughly check the actual operation of the circuit, then set the manual reset when pressing the manual switch ON to about 15μs.

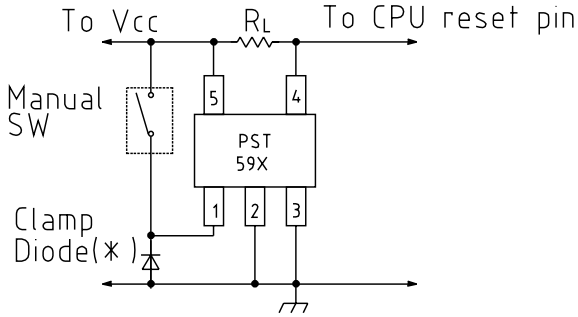
Application circuits

1. Normal hard reset



Note: Connect a capacitor between IC V_{CC} and GND pins if V_{CC} line impedance is high.

2. Manual reset



V_{OUT} pin low for manual switch ON.
V_{OUT} pin high for manual switch OFF.

Note1: *Mount a clamp diode if it is possible that the M/R pin might go below −0.3V.

Note2: Thoroughly check the actual operation of the circuit, then set the manual reset when pressing the manual switch ON to about 15μs.

Characteristics

V_{CC} vs V_{OUT}