

User Programmable Micro-Power Voltage Detectors

General Description

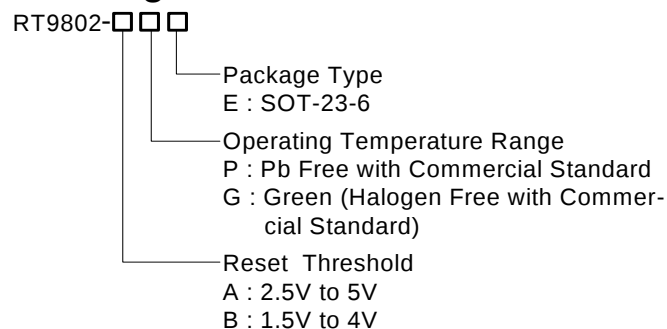
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The RT9802 is a micro-power voltage detector supervising the power supply voltage level for microprocessors (μ P) or digital systems. It provides user programmable threshold levels with 0.1V step ranging from 1.5V to 5V, which covers most digital applications. It features low supply current of 3 μ A. Selection of V_{TH} is easily achieved through 3 pins connected to GND, V_{DD} or floating for different threshold voltage settings. Two versions of threshold voltages, 1.5V to 4V and 2.5V to 5V, which are programmed in factory are offered by customer demands.

The RT9802 performs supervisory function by sending out a reset signal whenever the V_{DD} voltage falls below a preset threshold level. This reset signal will last the whole period before V_{DD} recovering. Reset signal will release after V_{DD} is recovered and lasts for the whole period of Reset Active Time-out period.

RT9802 is CMOS, active-low output and provided in SOT-23-6 package.

Ordering Information



Note :

RichTek Pb-free and Green products are :

- ▶RoHS compliant and compatible with the current requirements of IPC/JEDEC J-STD-020.
- ▶Suitable for use in SnPb or Pb-free soldering processes.
- ▶100%matte tin (Sn) plating.

Features

- User Programmable Threshold 1.5V to 5V in 0.1V Step with $\pm 3\%$ Accuracy
- Low Supply Current 3 μ A
- Quick Reset within 20 μ s
- Built-in Recovery Delay 200ms
- Low Functional Supply Voltage 0.9V
- Small SOT-23-6 Package
- RoHS Compliant and 100% Lead (Pb)-Free

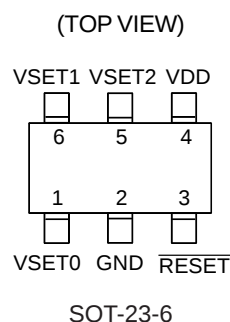
Applications

- Computers
- Controllers
- Intelligent Instruments
- Critical μ P and μ C Power Monitoring
- Portable/Battery-Powered Equipment

Marking Information

For marking information, contact our sales representative directly or through a RichTek distributor located in your area, otherwise visit our website for detail.

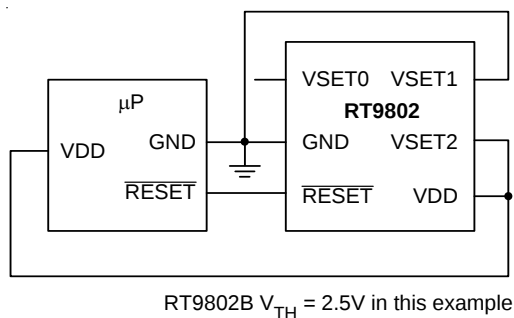
Pin Configurations



Note : There is no pin1 indicator on top mark for SOT-23-6 type, and pin 1 will be lower left pin when reading top mark from left to right.

Typical Application Circuit

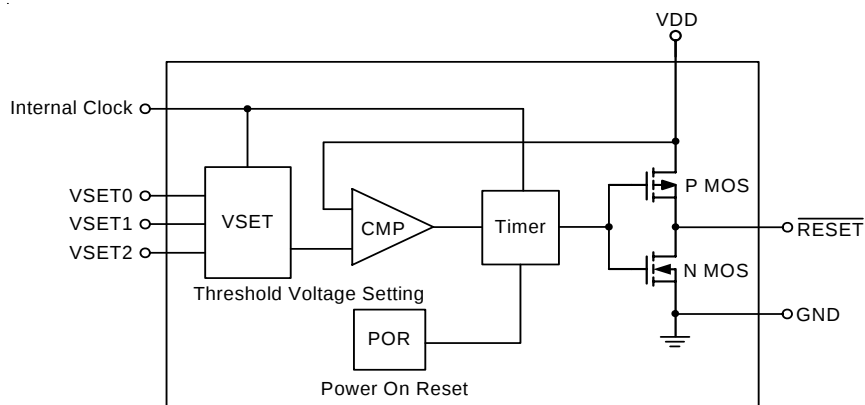
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Functional Pin Description

Pin Name	Pin Function
VSET0	Threshold Voltage Selection Pin 1
GND	Ground Pin
RESET	Reset Pulse Output, Negative Pulse
VDD	Power Pin
VSET1	Threshold Voltage Selection Pin 2
VSET2	Threshold Voltage Selection Pin 3

Function Block Diagram



Absolute Maximum Ratings

- Terminal Voltage (with Respect to GND)
 - V_{DD} ----- -0.3V to 6.0V
 - All Other Inputs ----- -0.3V to $V_{DD}+0.3V$
- Input Current, V_{DD} ----- 20mA
- Continuous Power Dissipation, P_D @ $T_A = 25^\circ C$
 - SOT-23-6 ----- 0.25W
- Operating Junction Temperature Range ----- $-40^\circ C$ to $125^\circ C$
- Storage Temperature Range ----- $-65^\circ C$ to $125^\circ C$
- Package Thermal Resistance
 - SOT-23-6, θ_{JA} ----- $250^\circ C/W$
- Lead Temperature (Soldering, 10 sec.) ----- $260^\circ C$

Electrical Characteristics

($V_{DD} = 3.0$, unless specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Operating VDD (V_{OUT}) Range	V_{DD}		0.9	--	6	V
Supply Current	I_{DD}	$V_{DD} = 1.5V \sim 3.5V, I_{OUT} = 0$	--		3	μA
		$V_{DD} = 3.5V \sim 5V, I_{OUT} = 0$			3.3	
Reset Threshold	V_{TH}	$T_A = 27^\circ C$	--	Note1	--	V
Threshold Voltage Accuracy	ΔV_{TH}	$T_A = 27^\circ C$	--		3	%
VCC Drop to Reset Delay	t_{RD}	Drop = -125mV	--	--	20	μs
Reset Active Time Out Period	t_{RP}	$V_{DD} \geq 1.02 \times V_{TH}$, Programmable	--	200	--	ms
VSET Pin Input Threshold	V_{IL}	$T_A = 27^\circ C$	--	$0.2V_{DD}$	--	V
	V_{IH}	$T_A = 27^\circ C$	--	$0.85V_{DD}$	--	
RESET Output Voltage	V_{OL}	$V_{DD} < V_{TH}, I_{SINK} = 3.5mA$	--	0.4	--	V

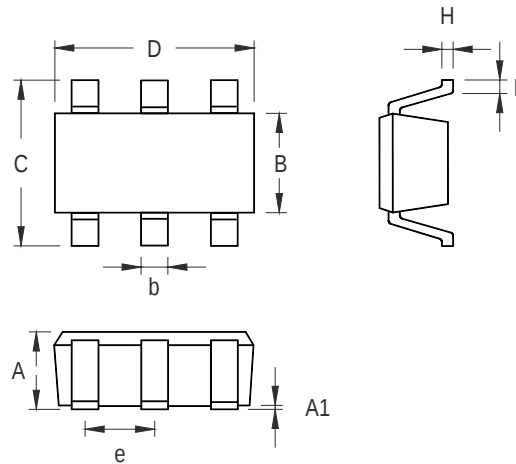
Note 1: Pin Conditions for Programmable Threshold Voltage Setting

RT9802A	RT9802B	VSET0 input	VSET1 input	VSET2 input
5	4	V _{DD}	V _{DD}	V _{DD}
4.9	3.9	V _{DD}	V _{DD}	floating
4.8	3.8	V _{DD}	V _{DD}	GND
4.7	3.7	V _{DD}	floating	V _{DD}
4.6	3.6	V _{DD}	floating	floating
4.5	3.5	V _{DD}	floating	GND
4.4	3.4	V _{DD}	GND	V _{DD}
4.3	3.3	V _{DD}	GND	floating
4.2	3.2	V _{DD}	GND	GND
4.1	3.1	floating	V _{DD}	V _{DD}
4	3	floating	V _{DD}	floating
3.9	2.9	floating	V _{DD}	GND
3.8	2.8	floating	floating	V _{DD}
3.7	2.7	floating	floating	floating
3.6	2.6	floating	floating	GND
3.5	2.5	floating	GND	V _{DD}
3.4	2.4	floating	GND	floating
3.3	2.3	floating	GND	GND
3.2	2.2	GND	V _{DD}	V _{DD}
3.1	2.1	GND	V _{DD}	floating
3	2	GND	V _{DD}	GND
2.9	1.9	GND	floating	V _{DD}
2.8	1.8	GND	floating	floating
2.7	1.7	GND	floating	GND
2.6	1.6	GND	GND	V _{DD}
2.5	1.5	GND	GND	floating

V_{DD}: bond to V_{DD}; 0: bond to GND; f: no bonding

Outline Dimension

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Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.889	1.295	0.031	0.051
A1	0.000	0.152	0.000	0.006
B	1.397	1.803	0.055	0.071
b	0.250	0.560	0.010	0.022
C	2.591	2.997	0.102	0.118
D	2.692	3.099	0.106	0.122
e	0.838	1.041	0.033	0.041
H	0.080	0.254	0.003	0.010
L	0.300	0.610	0.012	0.024

SOT-23-6 Surface Mount Package

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