

## Micro-Power Voltage Detectors

### General Description

The RT9811 is a micro-power voltage detector with de-glitched manual reset input supervising the power supply voltage level for microprocessors ( $\mu P$ ) or digital systems. It provides internally fixed threshold levels with 0.1V per step ranging from 1.5V to 5V, which covers most digital applications. It features low supply current of 2.5 $\mu A$ .

The RT9811 performs supervisory function by sending out a reset signal whenever the VDD voltage falls below a preset threshold level. This reset signal will last the whole period before VDD recovering. Once VDD recovered up-crossing the threshold level, the reset signal will be released after a certain delay time. A 5% hysteresis splits the rising and falling threshold levels. To pull reset signal low manually, just pull the manual reset input ( $\overline{MR}$ ) below the specified  $V_{IL}$  level.

RT9811 is provided in SOT-25 package.

### Applications

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

### Ordering Information

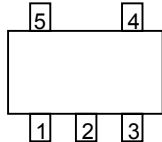
RT9811-□□□□

- Package Type  
B : SOT-25
- Operating temperature range  
C: Commercial standard
- Reset Threshold  
15 : 1.5V  
16 : 1.6V  
:  
49 : 4.9V  
50 : 5.0V

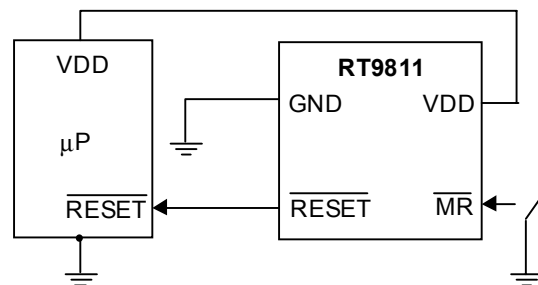
### Features

- Internally Fixed Threshold 1.5V to 5V in 0.1V Step
- $\pm 2\%$  Accuracy
- Low Supply Current 2.5 $\mu A$
- No External Components Required
- Quick Reset within 20 $\mu S$
- Built-in Recovery Delay 400mS
- 100nS Glitch Immunity of Manual Reset Input
- Low Functional Supply Voltage 0.9V
- Small 4-Pin SOT-25 Package

### Pin Configurations

Part Number	Pin Configurations
RT9811-□□CB (SOT-25)	<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>TOP VIEW</p> <ol style="list-style-type: none"> <li>1. GND</li> <li>2. NC</li> <li>3. <math>\overline{RESET}</math></li> <li>4. <math>\overline{MR}</math></li> <li>5. VDD</li> </ol> </div> </div>

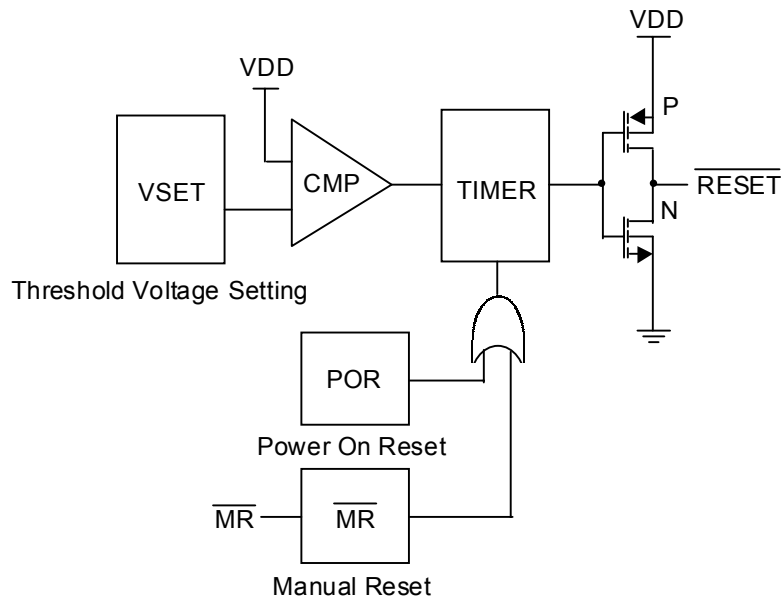
### Typical Application Circuit



**Pin Description**

Pin Name	Pin Function
GND	Ground Pin
NC	Not Connected
$\overline{\text{RESET}}$	Reset Pulse Output, Negative Pulse
$\overline{\text{MR}}$	Manual Reset Input, Pull Low to Reset, Internally Pulled High with 1 $\mu$ A Current Source
VDD	Power Pin

**Function Block Diagram**



**Absolute Maximum Ratings**

- Terminal Voltage (with Respect to GND)
  - VDD ----- -0.3V to 6.0V
  - All Other Inputs ----- -0.3V to VDD+0.3V
- Input Current, VDD ----- 20mA
- $\overline{MR}$  ----- 1mA
- Output Current,  $\overline{RESET}$  ----- 20mA
- Power Dissipation,  $P_D$  @  $T_A = 25^\circ C$ 
  - SOT-25 ----- 0.25W
- Operating Junction Temperature Range -----  $-40^\circ C \sim 125^\circ C$
- Storage Temperature Range -----  $-65^\circ C \sim 125^\circ C$
- Package Thermal Resistance
  - SOT-25,  $\theta_{JA}$  -----  $250^\circ C/W$
- Lead Temperature (Soldering, 5sec.) -----  $260^\circ C$

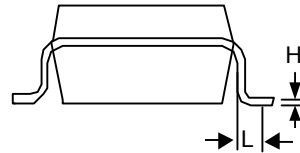
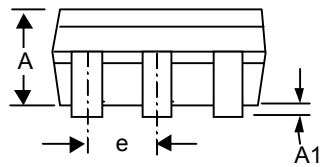
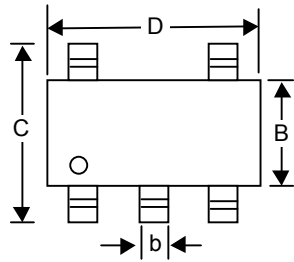
**Electrical Characteristics**

(VDD = 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	$I_{DD}$	$V_{DD} = 1.5V \sim 5V, I_{OUT} = 0$	--	2.5	--	$\mu A$
Reset Threshold	$V_{TH}$	$T_A = 27^\circ C$	--	Note1	--	V
Threshold Voltage Accuracy	$\Delta V_{TH}$	$T_A = 27^\circ C$	--	--	2	%
VCC Drop to Reset Delay	$t_{RD}$	$V_{DD} = 5V, Drop = -20mV$	--	25	--	$\mu S$
		$V_{DD} = 1.5V, Drop = -20mV$	--	5	--	
Reset Active Time Out Period	$t_{RP}$	$V_{DD} \geq 1.02 \times V_{TH}$	--	400	--	mS
$\overline{MR}$ Minimum Pulse Width	$t_{MR}$	Determined by $t_{RP}$	--	400	--	mS
$\overline{MR}$ to Reset Delay	$t_{MD}$		--	0.8	--	$\mu S$
$\overline{MR}$ Glitch Immunity			--	100	--	nS
$\overline{MR}$ Input Threshold	$V_{IH}$	$V_{DD} = 3.3V$	--	$0.85V_{DD}$	--	V
	$V_{IL}$		--	$0.2V_{DD}$	--	
$\overline{RESET}$ Output Voltage	$V_{OH}$	$V_{DD} > V_{TH}, I_{SOURCE} > 1mA$	--	$0.8V_{DD}$	--	V
	$V_{OL}$	$V_{DD} < V_{TH}, I_{SINK} > 3.5mA$	--	$0.2V_{DD}$	--	

Note1: 1.5V ~ 5V, step 0.1V

Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.889	1.295	0.035	0.051
A1	0.000	0.152	0.000	0.006
B	1.397	1.803	0.055	0.071
b	0.356	0.559	0.014	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	0.102	0.254	0.004	0.010
L	0.356	0.610	0.014	0.024

SOT- 25 Surface Mount Package



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