

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 (μP) 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 μA .

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 μP and μC Power Monitoring
- Portable/Battery-Powered Equipment

Ordering Information

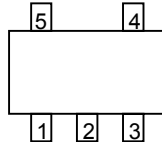
RT9811-□□□□

- 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

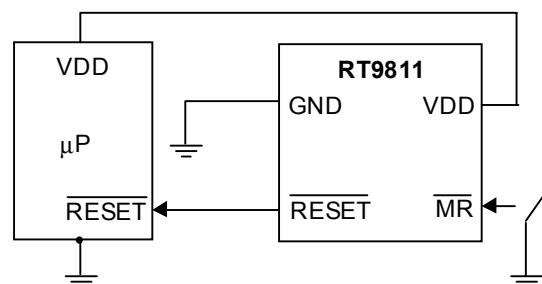
Features

- Internally Fixed Threshold 1.5V to 5V in 0.1V Step
- $\pm 2\%$ Accuracy
- Low Supply Current 2.5 μA
- No External Components Required
- Quick Reset within 20 μs
- 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)	TOP VIEW  1. GND 2. NC 3. $\overline{RESET}$ 4. $\overline{MR}$ 5. VDD

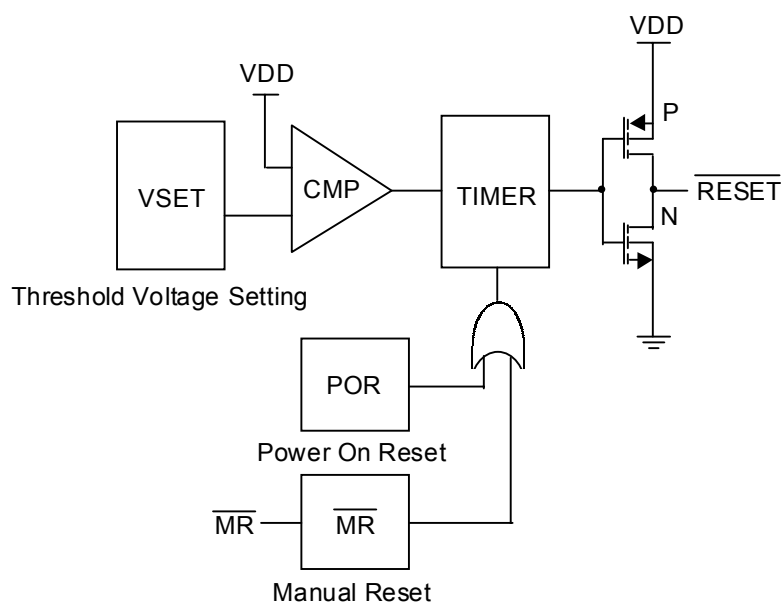
Typical Application Circuit



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 μ 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
- $\overline{\text{MR}}$ ----- 1mA
- Output Current, $\overline{\text{RESET}}$ ----- 20mA
- Power Dissipation, P_D @ $T_A = 25^\circ\text{C}$
 - SOT-25 ----- 0.25W
- Operating Junction Temperature Range ----- $-40^\circ\text{C} \sim 125^\circ\text{C}$
- Storage Temperature Range ----- $-65^\circ\text{C} \sim 125^\circ\text{C}$
- Package Thermal Resistance
 - SOT-25, θ_{JA} ----- 250°C/W
- Lead Temperature (Soldering, 5sec.) ----- 260°C

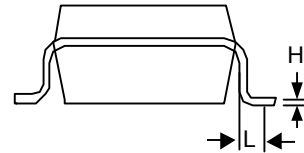
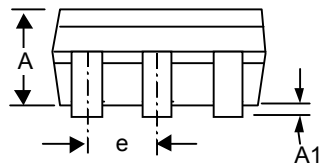
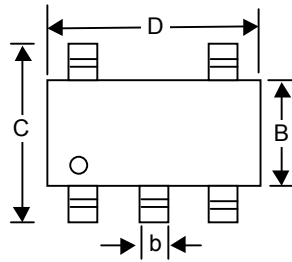
Electrical Characteristics

(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	--	μA
Reset Threshold	V_{TH}	$T_A = 27^\circ\text{C}$	--	Note1	--	V
Threshold Voltage Accuracy	ΔV_{TH}	$T_A = 27^\circ\text{C}$	--	--	2	%
VCC Drop to Reset Delay	t_{RD}	$V_{DD} = 5V, \text{Drop} = -20mV$	--	25	--	μS
		$V_{DD} = 1.5V, \text{Drop} = -20mV$	--	5	--	
Reset Active Time Out Period	t_{RP}	$V_{DD} \geq 1.02 \times V_{TH}$	--	400	--	mS
$\overline{\text{MR}}$ Minimum Pulse Width	t_{MR}	Determined by t_{RP}	--	400	--	mS
$\overline{\text{MR}}$ to Reset Delay	t_{MD}		--	0.8	--	μS
$\overline{\text{MR}}$ Glitch Immunity			--	100	--	nS
$\overline{\text{MR}}$ Input Threshold	V_{IH}	$V_{DD} = 3.3V$	--	$0.85V_{DD}$	--	V
	V_{IL}		--	$0.2V_{DD}$	--	
$\overline{\text{RESET}}$ 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

RICHTEK TECHNOLOGY CORP.

Headquarter

6F, No. 35, Hsintai Road, Chupei City

Hsinchu, Taiwan, R.O.C.

Tel: (8863)5510047 Fax: (8863)5537749

RICHTEK TECHNOLOGY CORP.

Taipei Office (Marketing)

8F-1, No. 137, Lane 235, Paochiao Road, Hsintien City

Taipei County, Taiwan, R.O.C.

Tel: (8862)89191466 Fax: (8862)89191465

Email: marketing@richtek-ic.com.tw