

# RT9181

## General Description

The RT9181 is a low dropout voltage regulator with an output 2% accuracy and supply a continuous 150mA current within operating range from a +3V to +5.5V input. The power good function monitors the output voltage and indicates by pulling low the power good output (open drain).

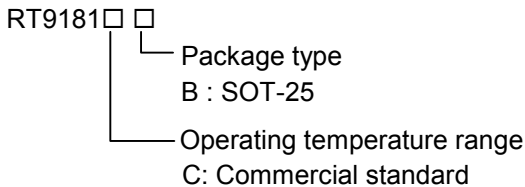
The RT9181 requires a small output capacitor with low ESR for stabilizing output voltage. The device also minimizes output overshoot during power up.

The RT9181 uses an internal PMOS as the pass device, which consumes 160µA supply current independent of load and dropout conditions. The CE pin controls the output and consumes no input bias current. Other features include current limiting, over temperature protection, and under voltage lockout.

## Applications

- Processor Power-Up Sequencing
- Laptop, Notebook, and Palmtop Computers

## Ordering Information



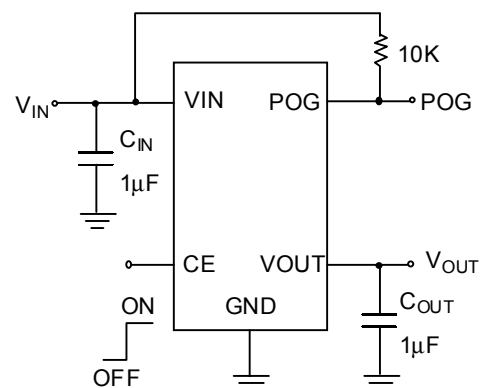
## Features

- Low Dropout Voltage Regulator, Output 1.2V
- Up to 150mA Output Current
- Power Good (POG) Function
- Chip Enable/Shutdown Function
- Load Independent, Low Ground Current, 160µA
- Current Limiting and Thermal Protection
- Under Voltage Lockout (UVLO)
- Low Variation Due to Load and Line Regulation
- Output Stable with Low ESR Capacitors
- SOT-25 Package

## Pin Configurations

Part Number	Pin Configurations
RT9181CB (Plastic SOT-25)	<p>TOP VIEW</p> <p>1. VIN 2. GND 3. CE 4. POG 5. VOUT</p>

## Typical Application Circuit

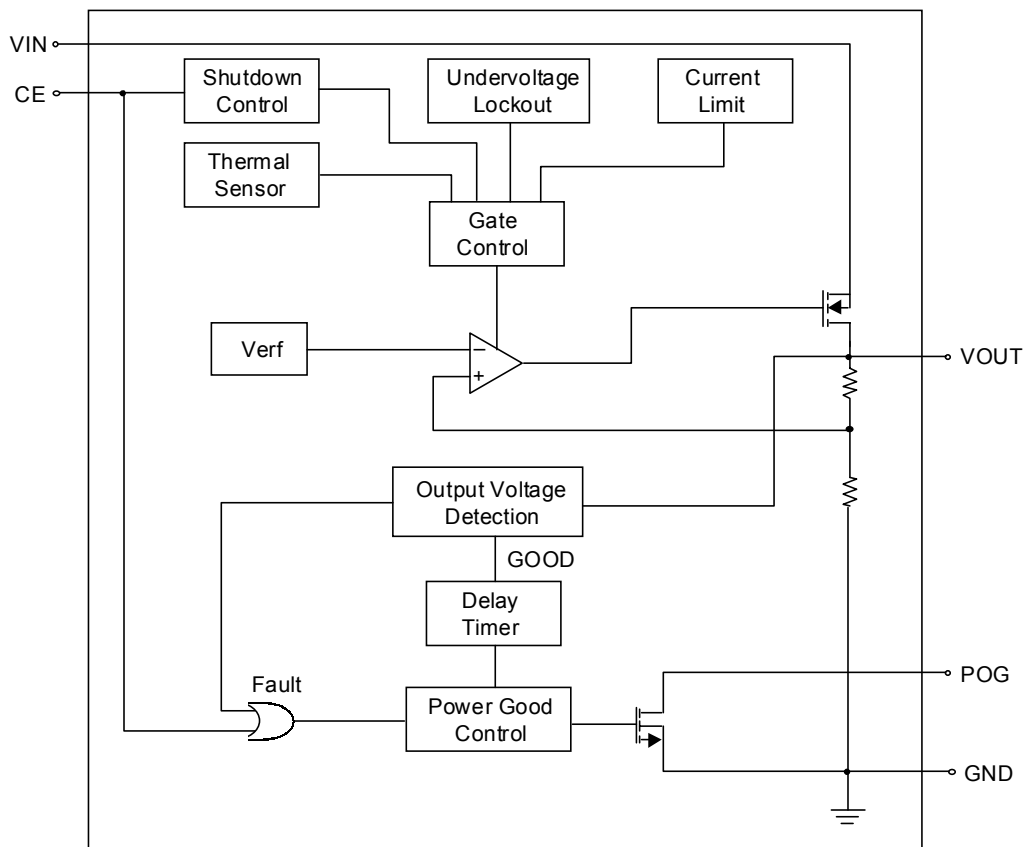


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## Pin Description

Pin Name	Pin Function
VIN	Input Pin
GND	Power Ground Pin
CE	Enable/Shutdown Input (Active High)
POG	Power Good Indicator
VOUT	Output Pin

## Function Block Diagram



# RT9181

## Absolute Maximum Ratings

• Input Voltage, $V_{IN}$ .....	7V
• CE Input Voltage .....	7V
• Power Good Output Voltage .....	7V
• Power Dissipation, $P_D$ @ $T_A = 25^\circ\text{C}$ SOT-25 .....	570mW
• Junction Temperature Range .....	$-40^\circ\text{C} \sim 125^\circ\text{C}$
• Storage Temperature Range .....	$-65^\circ\text{C} \sim 150^\circ\text{C}$
• Operating Temperature Range .....	$0^\circ\text{C} \sim 70^\circ\text{C}$
• Lead Temperature (Soldering, 10 sec.) .....	$260^\circ\text{C}$

## Electrical Characteristics

( $V_{IN} = 5\text{V}$ ,  $C_{IN} = C_{OUT} = 1\mu\text{F}$ ,  $T_A = 25^\circ\text{C}$ , unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Input Voltage Range	$V_{IN}$		3	--	5.5	V
Output Voltage Accuracy	$\Delta V_{OUT}$	$I_L = 25\text{mA}$	1.182	1.2	1.218	%
		$I_L = 0.1\text{mA}$ , $T_A = 0^\circ\text{C}$ to $70^\circ\text{C}$ (Note)	-2	--	+2	
Output Load Current		Continuous	150	--	--	mA
Current Limit	$I_{LIMIT}$	$R_{LOAD} = 1\Omega$	160	300	--	mA
GND Current	$I_G$	No Load	90	160	250	$\mu\text{A}$
Line Regulation	$\Delta V_{LINE}$	$V_{IN} = 3$ to $5.5\text{V}$ , $I_{OUT} = 0.1\text{mA}$	-0.3	--	+0.3	%
Load Regulation	$\Delta V_{LOAD}$	$I_L = 0.1\text{mA}$ to $150\text{mA}$	--	--	+3	%
Dropout Voltage	$V_{DROP}$	$I_L = 150\text{mA}$	--	1	--	V
CE Input High Threshold		$V_{IN} = 3$ to $5.5\text{V}$	2	--	--	V
CE Input Low Threshold		$V_{IN} = 3$ to $5.5\text{V}$	--	--	0.8	V
CE Input Bias Current		CE = GND or $V_{IN}$	--	--	100	nA
CE Supply Current		CE = GND	--	0.01	--	$\mu\text{A}$
$V_{POGH}$ Power Good Low Threshold		Output falls % of $V_{OUT}$ (power NOT timer (Power good))	85	--	--	%
$V_{POGH}$ Power Good High Threshold		Output reaches % of $V_{OUT}$ , start delay timer (power good)	--	--	90	%
$V_{OL}$ Power Good Output Logic Low		Fault condition, $I_{OL} = 100\mu\text{A}$	--	--	0.4	V
$t_{d(POG)}$ Delay Time to Power Good		See timing diagram	1	2	5	mS
Power Up Overshoot		Maximum voltage overshoot allowed on output during power-up	--	1	--	%
Thermal Shutdown Temperature	$T_{SD}$		--	150	--	$^\circ\text{C}$
Thermal Shutdown Hysteresis			--	20	--	$^\circ\text{C}$
Output Voltage AC PSRR		100Hz, $C_{OUT} = 1\mu\text{F}$ , $R_{LOAD} = 100\Omega$	--	62	--	dB

Note: Assured by design, not tested in production