



Features

- Low voltage drop:
0.12V@100mA@VOUT=3.3V(Typ.)
- Standby Mode: 0.1uA
- Low temperature coefficient
- High input voltage (up to 8V)
- Output voltage accuracy: tolerance $\pm 2\%$
- SOT23-5、SOT89 and DFN1*1-4L packages

Applications

- Battery-powered equipment
- Communication equipment
- Mobile phones
- Portable games
- Cameras, Video cameras
- Reference voltage sources

General Description

The RT9013 series are highly accurate, low noise, CMOS LDO Voltage Regulators. Offering low output noise, high ripple rejection ratio, low dropout and very fast turn-on times, the RT9013 series is ideal for today's cutting edge mobile phone. Internally the RT9013 includes a reference voltage source, error amplifiers, driver transistors and phase compensators.

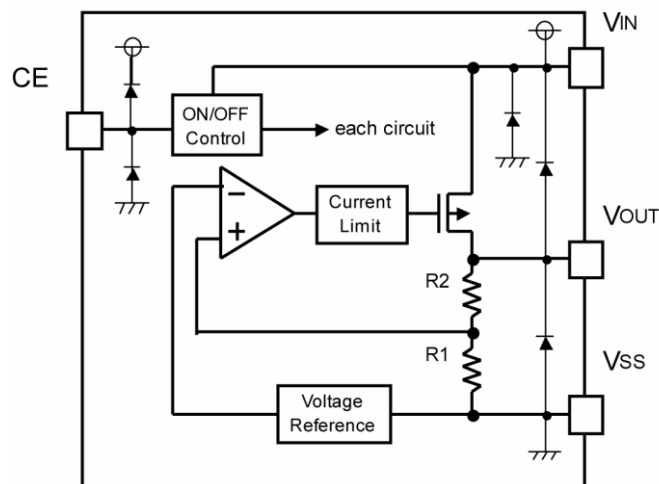
The output voltage is set by current trimming. Voltages are selectable in 100mV steps within a range of 1.2V to 5.0V.

When the CE input pin is low, a built-in pull-down

resistor pulls the output voltage low.

The RT9013 series is also fully compatible with low ESR ceramic capacitors, reducing cost and improving output stability. This high level of output stability is maintained even during frequent load fluctuations, due to the excellent transient response performance and high PSRR achieved across a broad range of frequencies. The CE function allows the output of regulator to be turned off, resulting in greatly reduced power consumption.

Block Diagram



Package and Pin assignment

SOT23-5 (Top View)

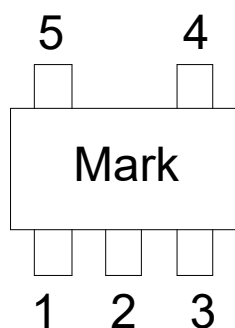


Table1:

PIN NUMBER	SYMBOL	FUNCTION
1	V_{IN}	Power Input Pin
2	GND	Ground
3	CE	Chip Enable Pin
4	NC	No Connection
5	V_{OUT}	Output Pin

SOT89 (Top View)

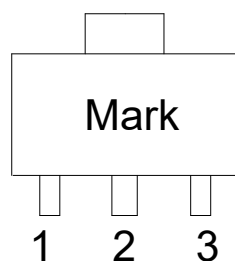


Table2:

PIN NUMBER	SYMBOL	FUNCTION
1	GND	Ground
2	V_{IN}	Power Input Pin
3	V_{OUT}	Output Pin



DFN1x1-4L (Top View)

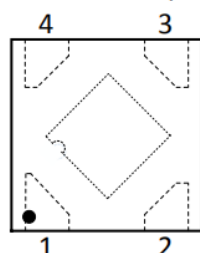


Table3:

PIN NO	SYMBOL	I/O	DESCRIPTION
DFN1×1—4			
1	VOUT	O	Output
2	GND	Ground	Ground
3	CE	I	Enable(Active high, not floating)
4	VIN	Power	Input

Marking Rule

MARKING	
VOLTAGE(V)	Package
	SOT23-5、SOT23-3
1.2	BB=H3Y
1.5	BS=JHT
1.8	BC=E2H
2.5	BH=M6C
2.8	BJ=G6U
3.0	BK=C0Z
3.3	BE=A1D

Absolute Maximum Ratings

Supply Voltage-0.3V to 8V

Storage Temperature-50℃ to 125℃

Operating Temperature-40℃ to 85℃

Note: These are stress ratings only. Stresses exceeding the range specified under “Absolute Maximum Ratings” may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

Thermal Information

Symbol	Parameter	Package	Max.	Unit
θ_{JA}	Thermal Resistance (Junction to Ambient) (Assume no ambient airflow, no heat sink)	SOT23-5	260	℃/W
		SOT89	200	
		DFN1*1-4	300	
P_D	Power Dissipation	SOT23-5	0.4	W
		SOT89	0.5	
		DFN1*1-4	0.4	

 Note: P_D is measured at $T_a = 25^\circ\text{C}$



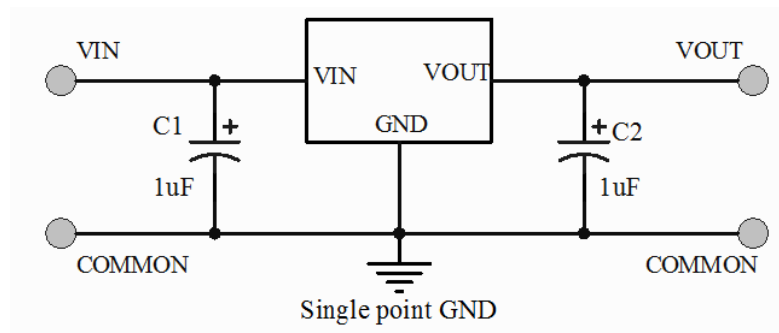
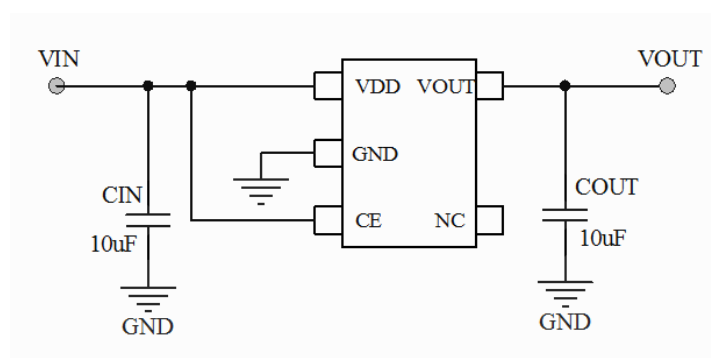
Electrical Characteristics

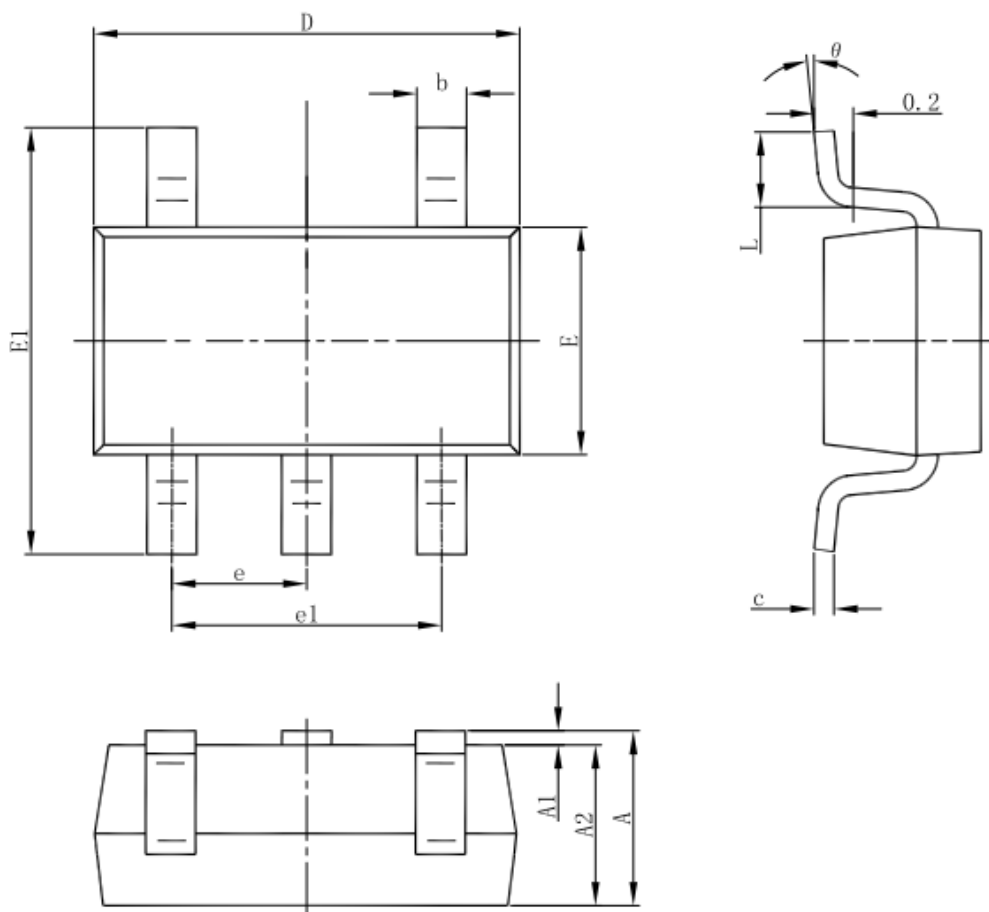
RT9013 series

(Ta=25℃)

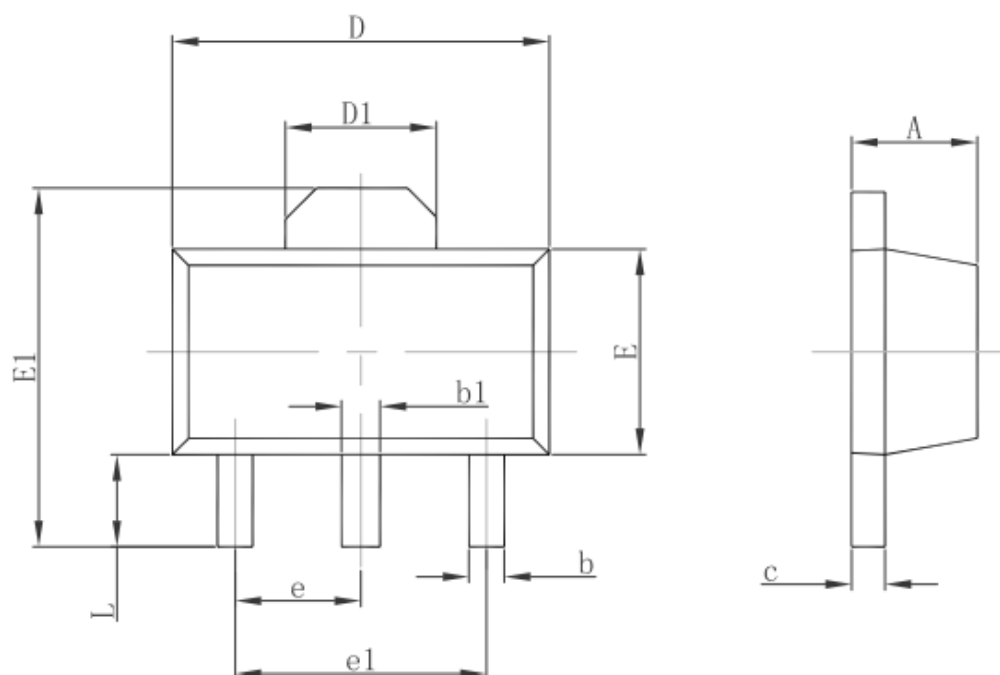
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Output Voltage	Vout	Vin=Vout+1V 1.0mA≤Iout≤30mA	Vout×0.98	--	Vout×1.02	V
Output Current*1	Iout	Vin-Vout=1V	--	500	--	mA
Line Regulation	$\Delta V_{out1}/(\Delta V_{in} \cdot V_{out})$	4.3V≤Vin≤8V Iout=10mA	--	0.05	0.2	%/V
Load Regulation	ΔV_{out}	Vin= 4.3V 1.0mA≤Iout≤100mA	--	10	30	mV
Output voltage Temperature Coefficiency	$\Delta V_{out}/(T_a \cdot V_{out})$	Iout=30mA 0℃≤Ta≤70℃	--	±100	--	Ppm/℃
Supply Current	Iss	--	5	--	30	uA
Input Voltage	Vin	--	--	--	6	V
PSRR	PSRR	F=100Hz, Vin=4.3Vdc+1Vpp	--	60	--	dB

Typical Application Circuit

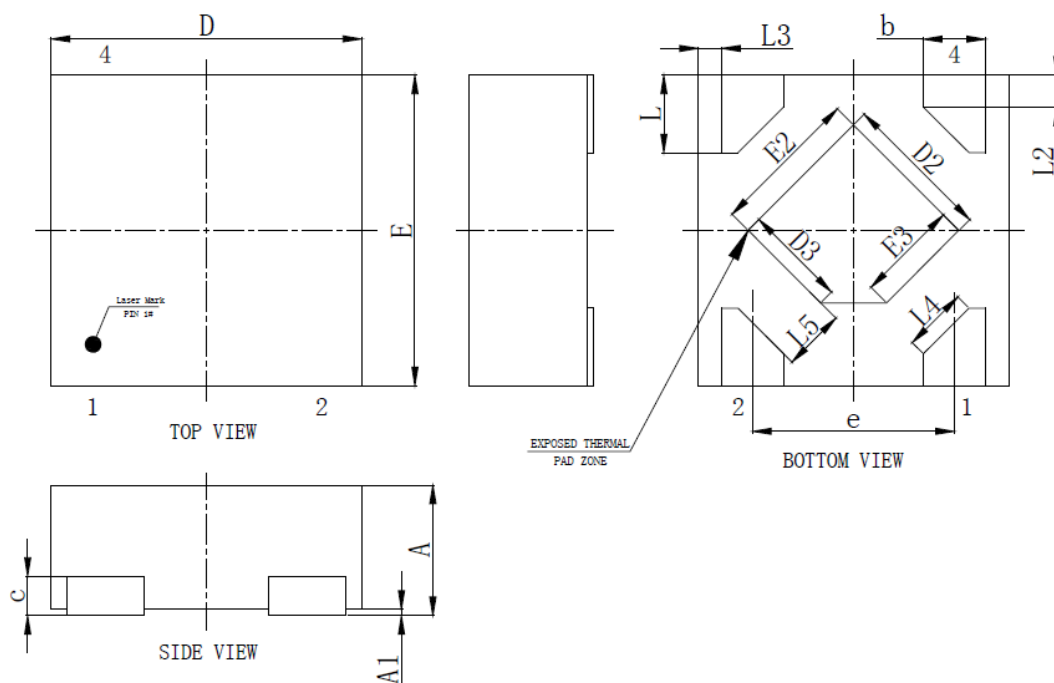


**Packaging Information****SOT23-5 Outline Dimensions**

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

**3-pin SOT89 Outline Dimensions**

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047

**DFN1*1-4 Outline Dimensions**

SYMBOL	MILLIMETER		
	MIN	MID	MAX
A	0.45	0.50	0.55
A1	0.00	0.02	0.05
b	0.15	0.20	0.25
c	0.127REF		
D	0.95	1.00	1.05
D2	0.38	0.48	0.58
D3	0.23	0.33	0.43
e	0.65BSC		
E	0.95	1.00	1.05
E2	0.38	0.48	0.58
E3	0.23	0.33	0.43
L	0.20	0.25	0.30
L2	0.103REF		
L3	0.075REF		
L4	0.208REF		
L5	0.200REF		