

MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

RT9013

产品手册

概述

RT9013 系列是高纹波抑制率、低功耗、低压差，具有过流和短路保护的 CMOS 降压型电压稳压器。这些器件具有很低的静态偏置电流（60 μ A Typ.），它们能在输入、输出电压差极小的情况下提 500mA 的输出电流，并且仍能保持 良好的调整率。由于输入输出间的电压差很小和静态偏置电流很小，这些器件特别适用于希望延长有 用电池寿命的 电池供电类产品，如计算机、消费类产品和工业设备等。

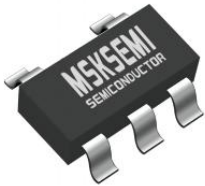
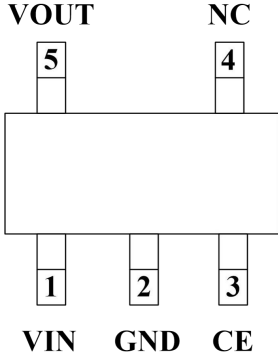
特点

- 输出范围：1.2V-5.0V
- 500mA 输出电流
- 高电源抑制比：75 分贝 1 千赫
- 极低的静态偏置电流：60 μ A（典型）
- 在关机模式下小于 1 μ A
- 交界处的温度运作为 -40 $^{\circ}$ C 至 +85 $^{\circ}$ C

应用范围

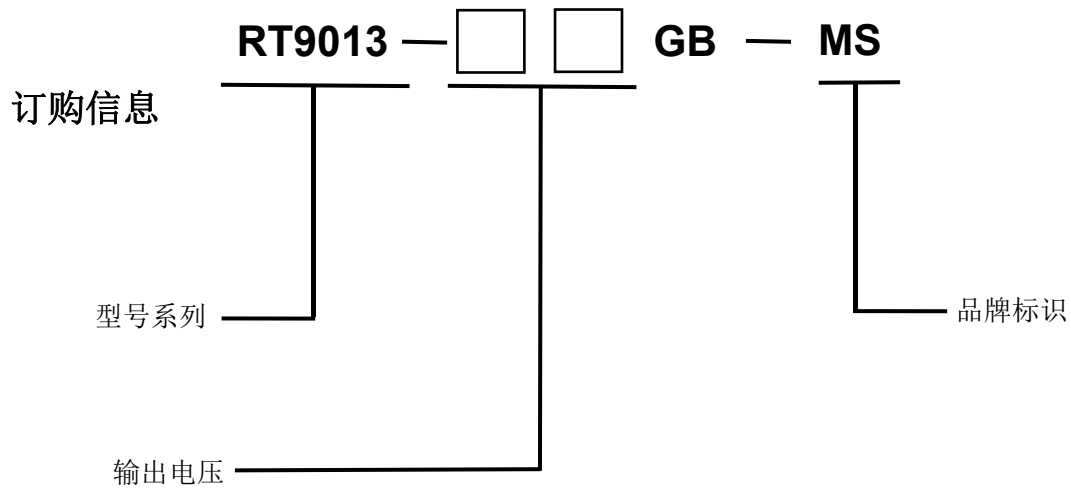
- CDMA / GSM 移动电话
- PDAS/MP3
- WLAN 和蓝牙设备
- 无绳电话
- 电池供电系统

参考信息

封装	管脚分布图
	
SOT-23-5	

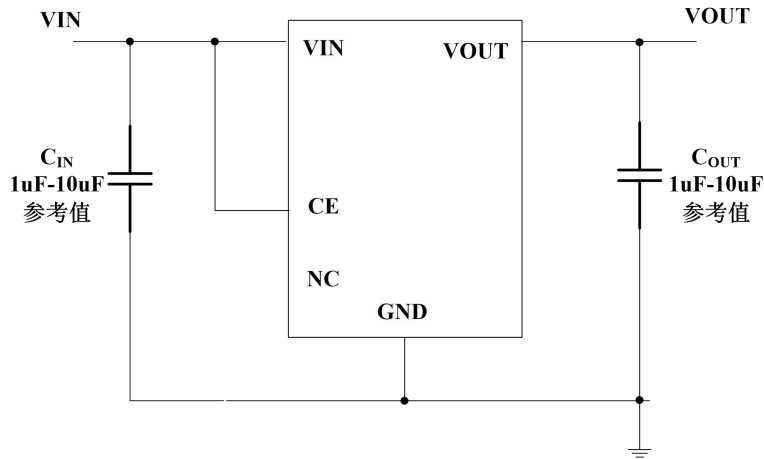
管脚描述

管脚号	管脚名	描述
1	VIN	电源端
2	GND	接地端
3	CE	即EN，使能端
4	NC	悬空
5	VOUT	输出端



型号	封装	输出电压
RT9013-12GB-MS	SOT-23-5	1.2V
RT9013-15GB-MS	SOT-23-5	1.5V
RT9013-18GB-MS	SOT-23-5	1.8V
RT9013-25GB-M	SOT-23-5	2.5V
RT9013-28GB-MS	SOT-23-5	2.8V
RT9013-30GB-MS	SOT-23-5	3V
RT9013-33GB-MS	SOT-23-5	3.3V

典型应用



封装耗散等级

封装	Pd (mW)
SOT-23-5L	300

ESD 与 Latch-up 等级

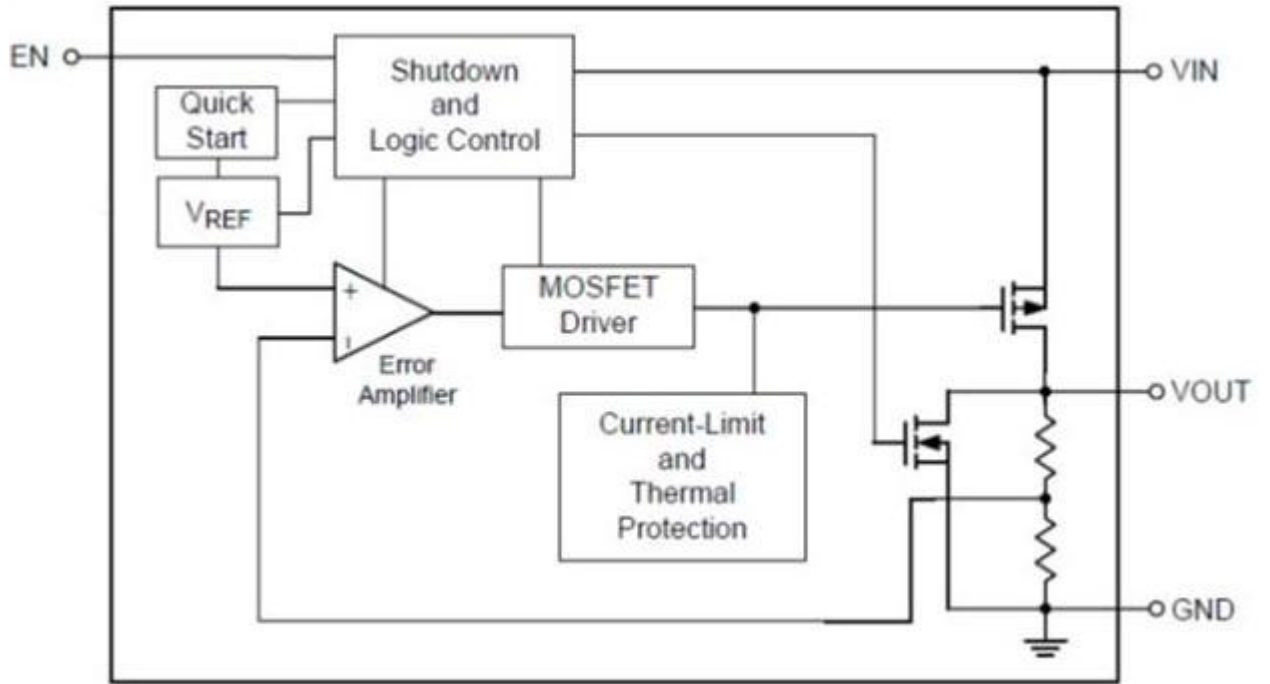
人体模型 ESD 级别	4000V
机器模型 ESD 级别	400V
Latcu-up 级别	400mA

极限参数

参数	符号	极限值	单位
Vin 脚电压	VIN	7	V
Vout 脚电流	Iout	600	mA
Vout 脚电压	Vout	V _{SS} -0.3 ~ Vout+0.3	V
工作温度	T _{opr}	-40~+85	°C
存贮温度	T _{stg}	-55~+125	°C
焊接温度和时间	T _{solder}	260°C, 10s	°C

注释：超出“绝对极限参数”可能损毁器件。推荐工作范围内器件可以工作，但不保证其特性。长时间运行在绝对极限参数条件下可能会影响器件的可靠性。

结构框图



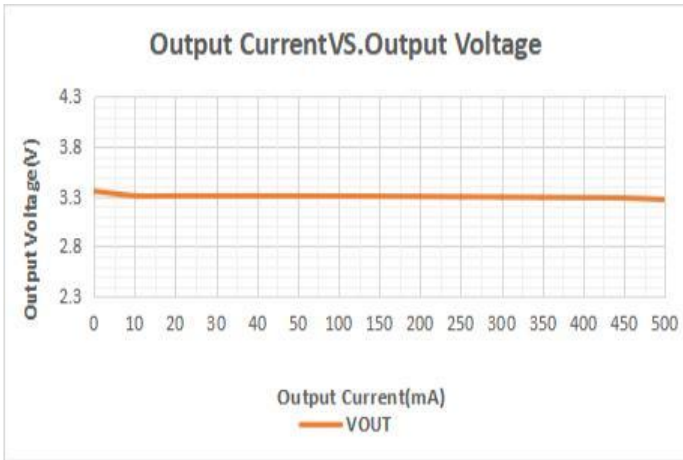
主要参数及工作特性

($V_{in}=V_{out}+1V$, $C_{in}=C_{out}=1\mu$, $T_a=25C$ 。除特别指定)

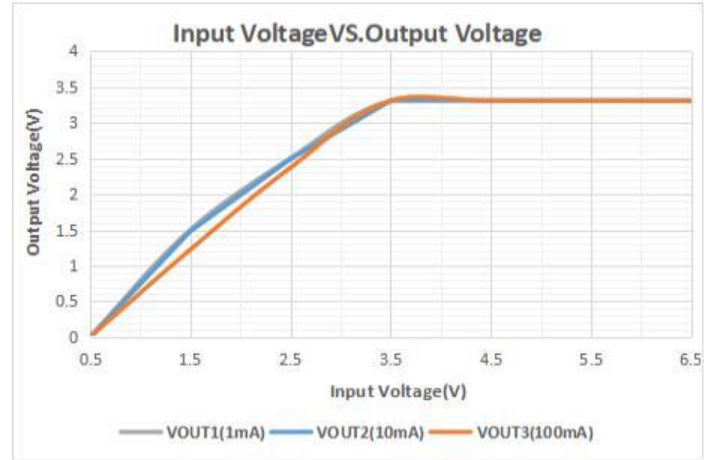
特性	符号	条件	最小值	典型值	最大值	单位
输出电压	$V_{OUT(E)}$ (Note 2)	$I_{OUT}=40mA$, $V_{IN}=V_{out}+1V$	$\times 0.98$	$V_{OUT(T)}$ (Note 1)	$\times 1.02$	V
输入电压	V_{IN}				5.5	V
最大输出电流	I_{OUTmax}	$V_{IN}=V_{out}+1V$		500		mA
CE 使能电压	V_{CE} (Note3)	$V_{IN}=V_{out}+1V$		1.1		mV
负载特性	ΔV_{OUT}	$V_{IN}=V_{out}+1V$, $1mA \leq I_{OUT} \leq 100mA$		50		mV
压差 (Note 3)	V_{dif1}	$I_{OUT} = 100mA$		100		mV
	V_{dif2}	$I_{OUT} = 200mA$		300		mV
静态电流	I_{SS}	$V_{IN}=V_{out}+1V$		60		μA
关断电流	I_{CEL}	$V_{ce} = 0V$		1		μA
电源电压调整率	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT}=40mA$ $V_{out}+1V \leq V_{IN} \leq 8V$		0.03		%/V
输出噪声	e_n	$I_{OUT} = 40mA$, $300Hz \sim 50kHz$		50		μV_{rms}
纹波抑制比	PSRR	$V_{in} = [V_{out}+1]V$ $+ 1V_{p-pAC}$ $I_{OUT}=40mA, f=1kHz$		75		dB

- 注释:**
- $V_{OUT(T)}$: 规定的输出电压
 - $V_{OUT(E)}$: 有效输出电压 (即当 I_{OUT} 保持一定数值, $V_{IN} = (V_{OUT(T)}+1.0V)$ 时的输出电压。
 - V_{CE} : 考虑到高温和工艺偏差, 建议客户将 CE PIN 的使能电压设置为 1.1V, 保留有余量。
芯片内部 CE PIN 对 GND PIN 之间有内置 1M Ω 电阻。
 - V_{dif} : $V_{IN1} - V_{OUT(E)}$
 V_{IN1} : 逐渐减小输入电压, 当输出电压降为 $V_{OUT(E)}$ 98% 时的输入电压。
 $V_{OUT(E)'} = V_{OUT(E)} \times 98\%$

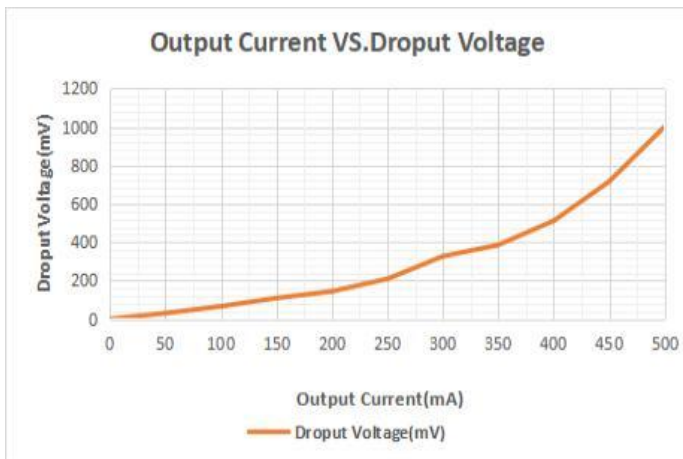
特性曲线



输出电流与输出电压关系

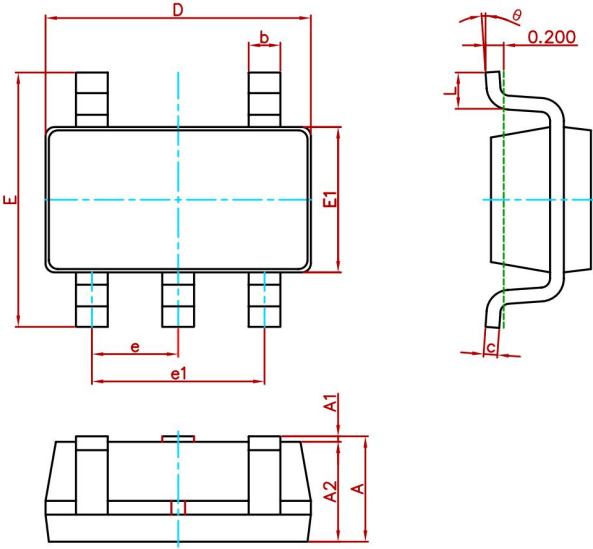


输入电压与输出电压关系



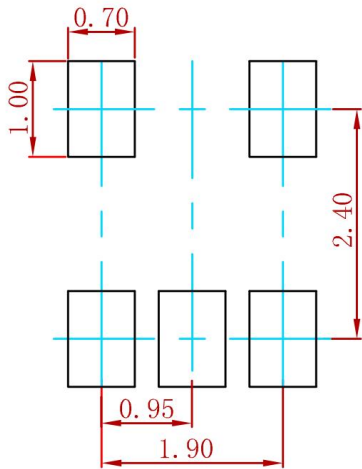
输出电流与压差的关系

封装说明



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	2.650	2.950	0.104	0.116
E1	1.500	1.700	0.059	0.067
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°

焊盘布局



Note:
 1. Controlling dimension: in millimeters.
 2. General tolerance: ±0.05mm.
 3. The pad layout is for reference purposes only.

卷轴规格

P/N	PKG	QTY
RT9013	SOT-23-5	3000

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