

# MSKSEMI 美森科

SEMICONDUCTOR



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## RT9193-XXGB-MS

产品手册

## 概述

RT9193 系列是以 CMOS 工艺制造的高精度，低噪音，快速响应低压差线性稳压器。该系列的稳压器内 置固定的参考电压，误差修正电路，限流电路，相位补偿电路以及低内阻的 MOSFET, 达到高纹波抑制，低 输出噪音，快速响应低压差的性能。

RT9193 系列兼容体积比但电容更小的陶瓷电容，而且不需使用 0.1 pF 的 By-pass 电容，更能节省空 间，降低了成本。因具有高精度的输出稳定性，以及快速瞬态响应性能，从而能应付负载电流的波动，**所以特别适**合应用在手持设备及射频产品上。

通过控制芯片上的 CE 脚，可将输出关断，关断输出后的静态电流只有 1uA (Typ 值)，从而大大降低了功耗。

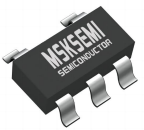
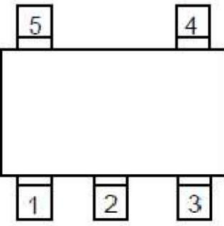
## 产品特点

- 高精度输出电压：±2.0%；
- 可选择输出电压：1.2V~3.6V；
- 极低的静态电流 (Typ. =70uA)；
- 极低的关断电流 (Typ. =1uA)；
- 输入稳定性好：Typ. =0.2%/V；
- 带载能力强：当  $V_{in}=4.3V$  且  $V_{out}=3.3V$  时， $I_{out}=300mA$ ；
- 内置过流保护和负载短路保护；
- 兼容陶瓷电容；
- 封装形式：SOT-23-5

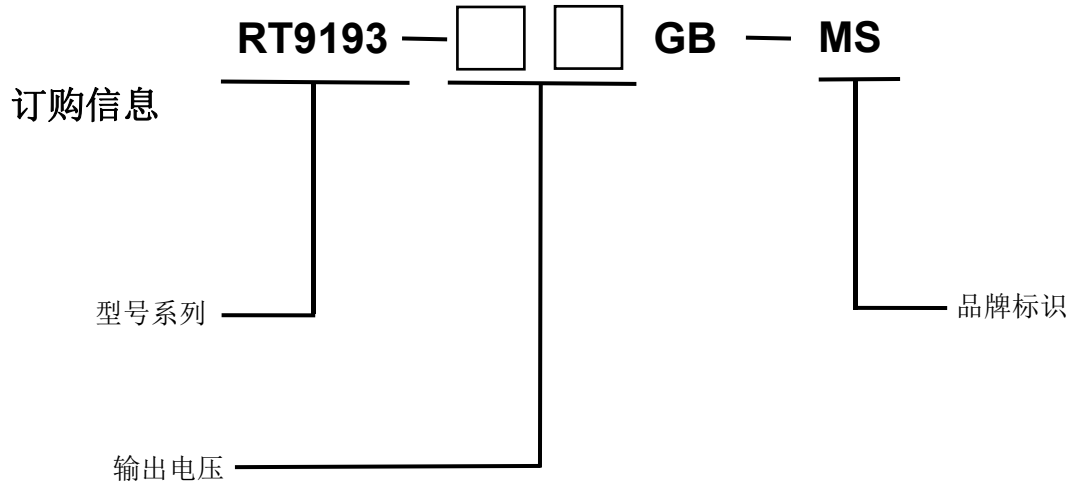
## 产品用途

- 智能手机/移动电话
- 数码相机/摄像机
- 电池供电设备
- 蓝牙及其他射频产品
- 便携式消费类设备

## 封装形式和管脚定义功能

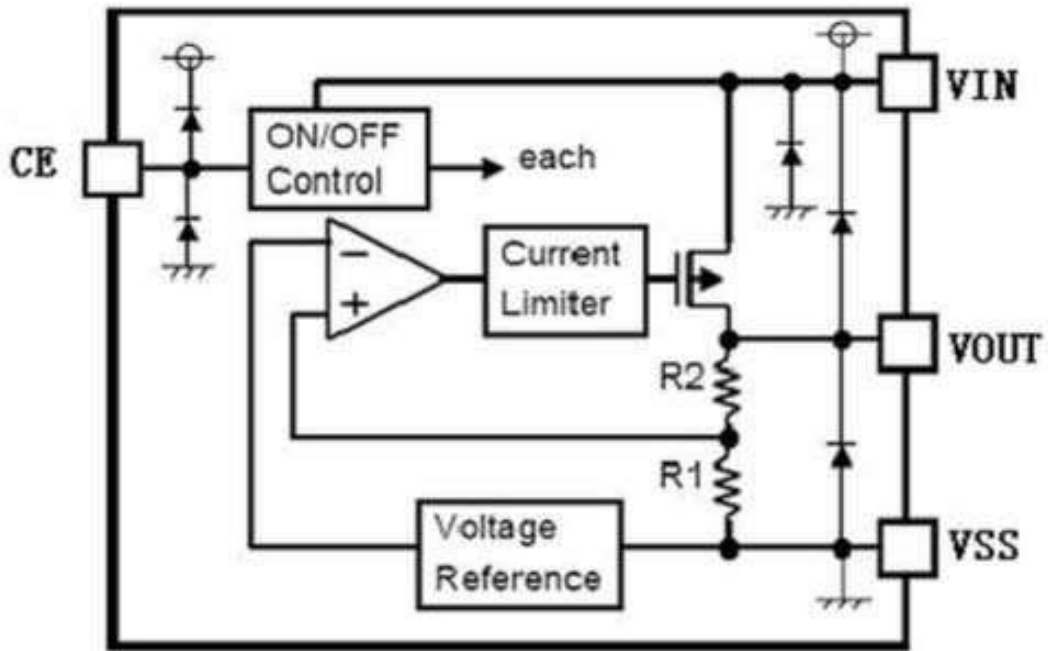
封装	管脚定义
 SOT-23-5	

管脚序号	管脚定义	功能说明
封装		
SOT-23-5		
1	VIN	输入端
2	VSS	接地端
3	CE	使能端
4	NC	空
5	VOUT	输出端



型号	封装	输出电压
RT9193-12GB-MS	SOT-23-5	1.2V
RT9193-15GB-MS	SOT-23-5	1.5V
RT9193-18GB-MS	SOT-23-5	1.8V
RT9193-25GB-M	SOT-23-5	2.5V
RT9193-28GB-MS	SOT-23-5	2.8V
RT9193-30GB-MS	SOT-23-5	3V
RT9193-33GB-MS	SOT-23-5	3.3V

功能框图

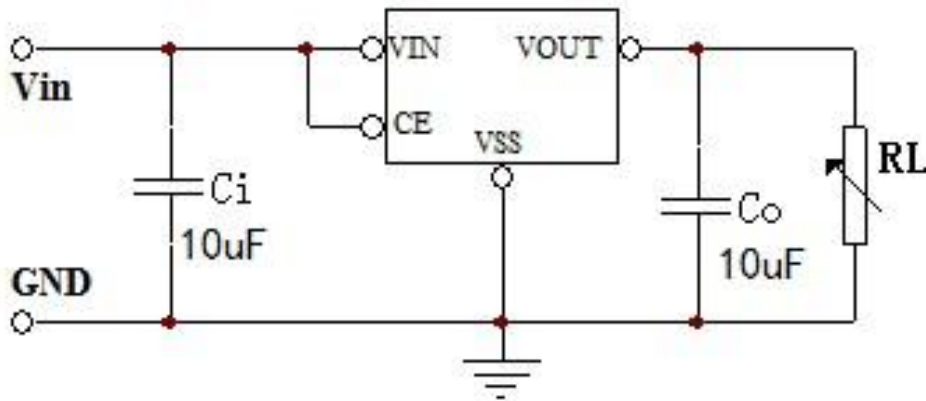


极限参数

项目	符号	说明		极限值	单位
电压	Vin	输入电压		6	V
	Vout	输出电压		$V_{SS}-0.3 \sim V_{in}+0.3$	V
电流	Iout	输出电流		450	mA
功耗	PD	SOT-23-5	最大允许功耗	300	mW
温度	TOPR	工作温度		$-40 \sim +85$	$^{\circ}C$
	Tstg	存储温度		$-40 \sim +125$	$^{\circ}C$
	Tsolder	焊接温度		$260^{\circ}C, 10s$	

注：极限参数是指无论在任何条件下都不能超过的极限值。万一超过此极限值，将有可能造成产品劣化等物理性损伤；同时在接近极限参数下，不能全部保证芯片可以正常工作。

典型应用



**电学特性** RT9193  $V_{OUT}(T) = 3.3V$  ( $C_i=C_o=10\mu F, T_a=25^\circ C$  除特别指定)

特性	符号	测试条件	最小值	典型值	最大值	单位
输出电压	$V_{OUT}(E)$	$I_{OUT}=1mA, V_{IN}=5V,$ $V_{CE}=1.6V$	3.24	3.300	3.360	V
最大输出电流	$I_{OUT}(max)$	$V_{IN}=4.3V$		300		mA
负载稳定度	$\Delta V_{QUT}$	$V_{IN}=V_{CE}=4.3V,$ $1mA \leq I_{OUT} \leq 100mA$		12		mV
输入稳定度	$\Delta V_{OUT}/(\Delta V_{IN} \cdot V_{QUT})$	$I_{OUT}=10mA, 4.3V < V_{IN} < 7V$		0.2		%/V
跌落压差	$V_{drop1}$	$V_{IN}=4.3V, I_{OUT}=10mA$		35		mV
	$V_{drop2}$	$V_{IN}=4.3V, I_{OUT}=100mA$		280		mV
静态电流	$I_{SS1}$	$V_{IN}=V_{CE}=5V$	—	70	—	$\mu A$
	$I_{SS2}$	$V_{IN}=5V, V_{CE}=V_{SS}$			1.0	$\mu A$
CE 输入电压	$V_{CEH}$		1.6		$V_{IN}$	V
	$V_{CEL}$		0		0.5	V
CE 输入电流	$I_{CE}$	$V_{CE}=0V$ to $V_{IN}$			0.5	$\mu A$
纹波抑制比	PSRR	$V_{IN}=V_{CE}=4.3V+1VP-PAC$ $I_{OUT}=10mA, f=1kHz$		70		dB
输出电压 温度系数	$\Delta V_{OUT}/(AT_a \cdot V_{OUT})$	$V_{IN}=V_{CE}=4.3V,$ $I_{OUT}=3.3mA$ $0^\circ C < T_a < 60^\circ C$		$\pm 290$		ppm/ $^\circ C$
输入电压	$V_{IN}$		1.2		6	V

注:

- $V_{OUT}(T)$ : 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,  $V_{IN}=(V_{OUT}(E)+1.0V)$  时的输出电压。。)
- $I_{OUT}(max)$ : 缓慢增加  $V$  输出电流, 当输出电压  $V_{OUT}(E)$  \*95% 时的电流值。

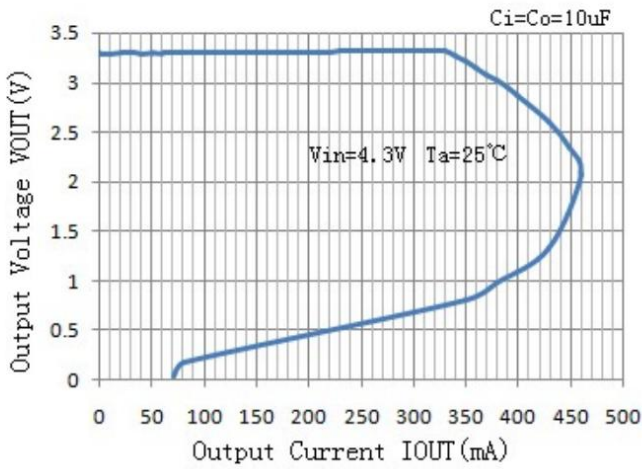
 4、 $drop = V_{INI} - V_{OUT}(E)$ 
 $V_{INI}$  = 逐渐减小输入电压, 当输出电压降为  $V_{OUT}(E)$  的 98% 时的输入电压。

 $V_{OUT}(E)S = V_{OUT}(E)1 * 98\%$ ;

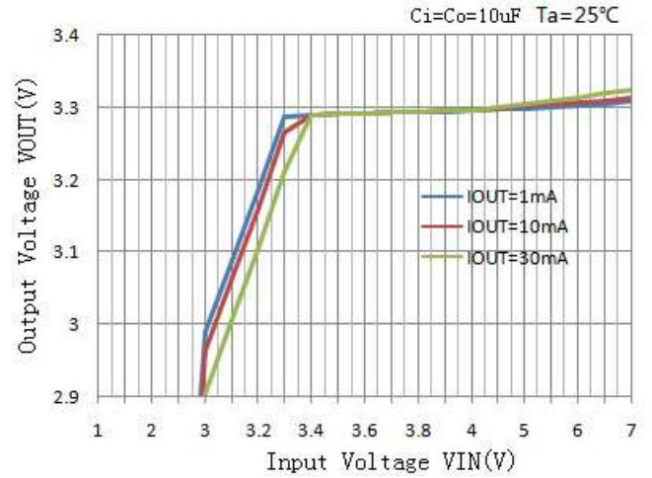
 $V_{OUT}(E)1$  = 当  $V_{IN} = V_{OUT}(T) + 1V$ ,  $I_{OUT} = K$  一数值时的输出电压值。

特性曲线 (3.3V 输出)

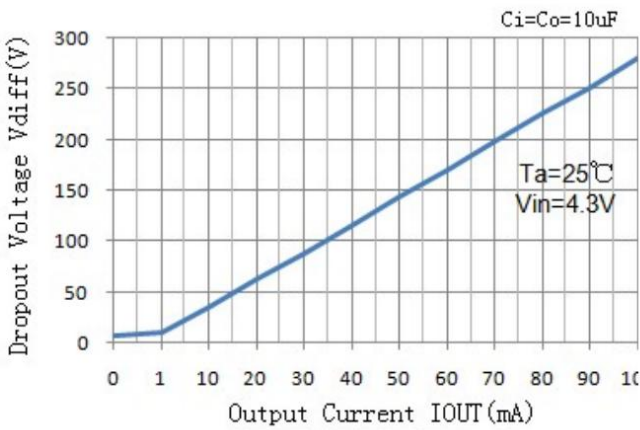
1、输出电压和输出电流



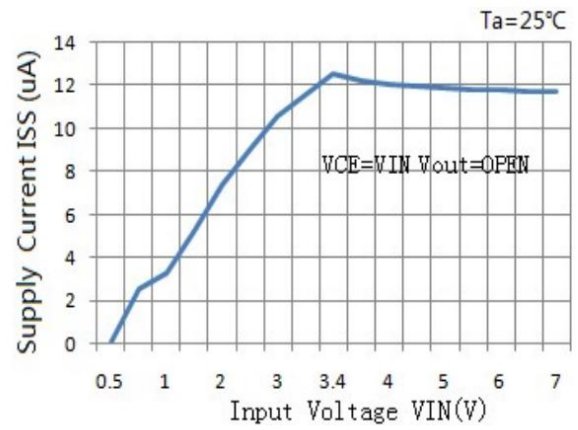
2、输出电压和输入电压



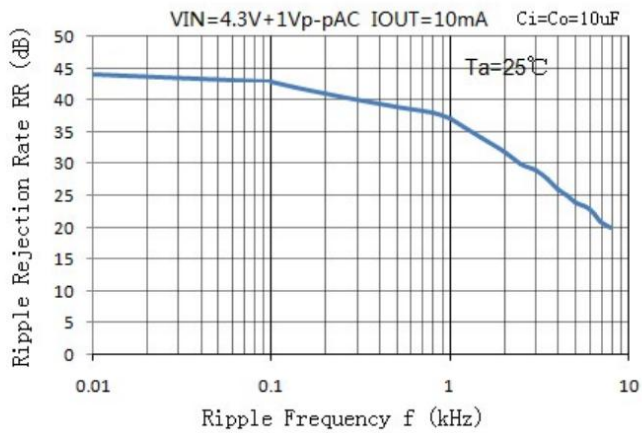
3、Dropout 电压和输出电流



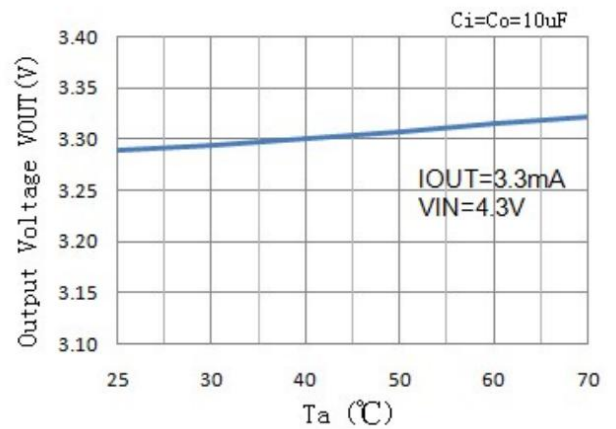
4、输入电压和静态电流



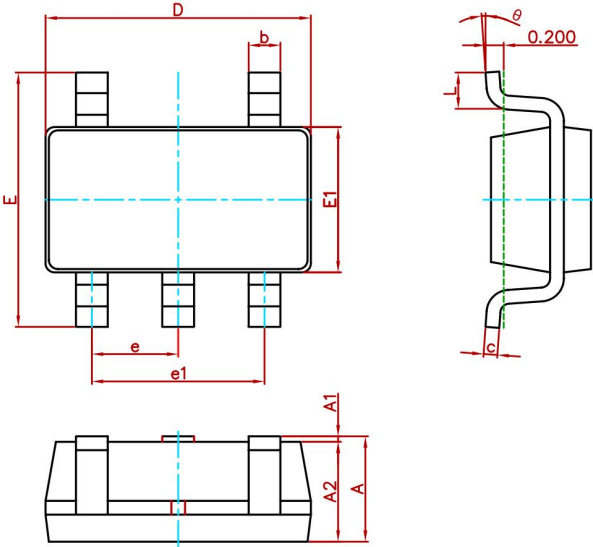
5、纹波抑制



6、输出电压和温度

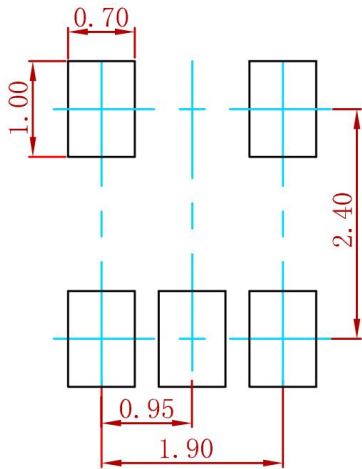


封装说明



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
RT9193-XXGB-MS	SOT-23-5	3000

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