



概述

HRT9013 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(80 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。

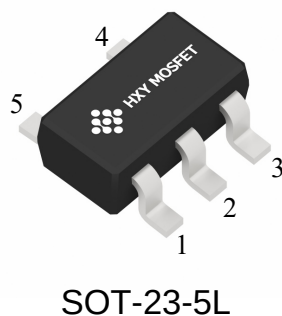
特点

- 输出范围：1.2V-3.3V
- 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: 75 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

应用场合

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

封装脚位描述



SOT-23-5L

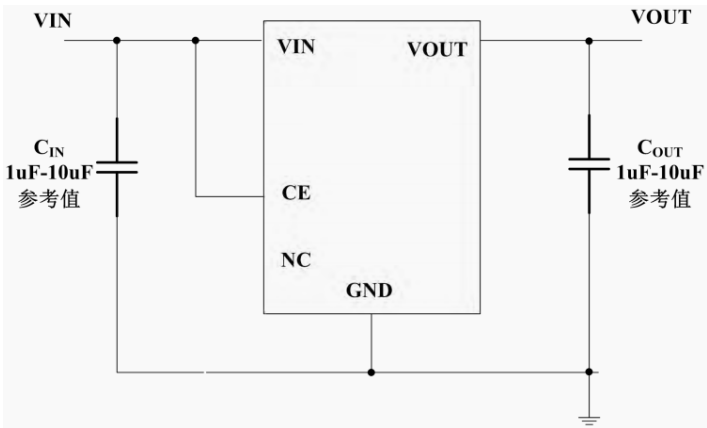
PIN脚位	符号	功能说明
SOT-23-5L		
1	V_{IN}	电源输入端
2	V_{SS}	地
3	CE	使能端
4	NC	悬空
5	V_{OUT}	电源输出端

型号介绍

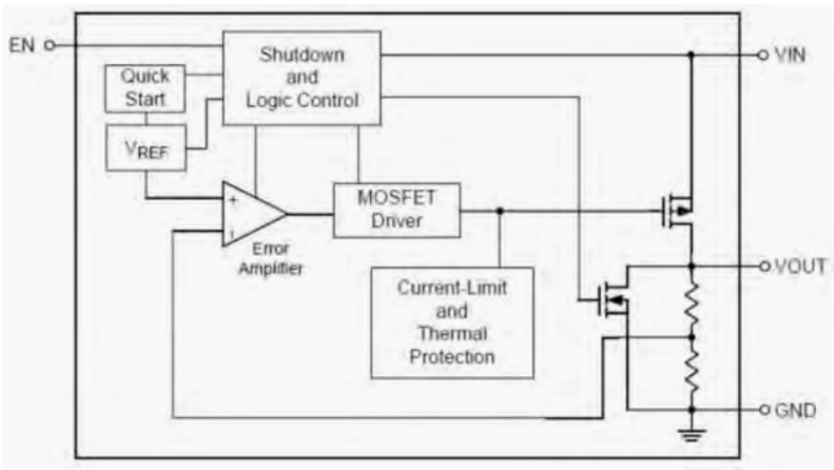
型号名	封装	丝印标识	输出电压	包装信息
HRT9013-12GB	SOT-23-5L	H90WK	1.2V	3000/盘
HRT9013-15GB	SOT-23-5L	H90K9	1.5V	3000/盘
HRT9013-18GB	SOT-23-5L	H90UN	1.8V	3000/盘
HRT9013-25GB	SOT-23-5L	H90V4	2.5V	3000/盘
HRT9013-28GB	SOT-23-5L	H90PJ	2.8V	3000/盘
HRT9013-30GB	SOT-23-5L	H90E6	3.0V	3000/盘
HRT9013-33GB	SOT-23-5L	H90A8	3.3V	3000/盘



典型应用图



功能框图



绝对最大额定值

参数	符号	范围	单位
输入电压	V_{IN}	7	V
输出电流	I_{OUT}	600	mA
输出电压	V_{OUT}	$V_{SS}-0.3 \sim V_{IN} + 0.3$	V
使能电压	V_{CE}	$V_{SS}-0.3 \sim V_{IN} + 0.3$	V
耗散功率	P_D	300	mW
工作温度范围	T_{OPR}	$-40 \sim +80$	$^{\circ}C$
存储温度范围	T_{STG}	$-40 \sim +150$	$^{\circ}C$
焊接温度		260 $^{\circ}C$, 10sec	



电气参数

($C_i=C_o=10\mu F$, $T_a=25^\circ C$ 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	$V_{OUT}(E)$	$I_{OUT}=1mA$, $V_{IN}=5V$, $V_{CE}=1.6V$	$V_{OUT(T)}^*$ 0.98	$V_{OUT(T)}$	$V_{OUT(T)}^*$ 1.02	V
最大输出电流	$I_{OUT} (max)$	$V_{IN}=V_{OUT}+1V$		500		mA
负载稳定度	ΔV_{OUT}	$V_{IN}=V_{OUT}+1V$, $1mA \leq I_{OUT} \leq 100mA$		50		mV
输入稳定度	$\Delta V_{OUT}/(\Delta V_{IN} \cdot V_{OUT})$	$I_{OUT}=40mA$, $4.3V \leq V_{IN} \leq 15V$		0.39		%/V
跌落压差	V_{drop1}	$V_{IN}=4.3V$, $I_{OUT}=100mA$		100		mV
	V_{drop2}	$V_{IN}=4.3V$, $I_{OUT}=200mA$		300		mV
静态电流	I_{SS1}	$V_{IN}=V_{CE}=5V$		75		μA
	I_{SS2}	$V_{IN}=5V$, $V_{CE}=V_{SS}$			1	μA
CE 输入电压	V_{CEH}		0.3		V_{IN}	V
	V_{CEL}		0		0.5	V
CE 输入电流	I_{CE}	$V_{CE}=0V$ to V_{IN}			1	μA
纹波抑制比	PSRR	$V_{IN}=(V_{OUT}+1)+1V_{p-pAC}$ $I_{OUT}=40mA$, $f=1kHz$		75		dB
输出噪声	en	$I_{OUT}=40mA$, 300Hz~50kHz		50		μV_{rms}
输入电压	V_{IN}				7	V

注：1、 $V_{OUT}(T)$ ：规定的输出电压。

2、 $V_{OUT}(E)$ ：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。

3、 V_{CE} ：考虑到高低温和工艺偏差，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。

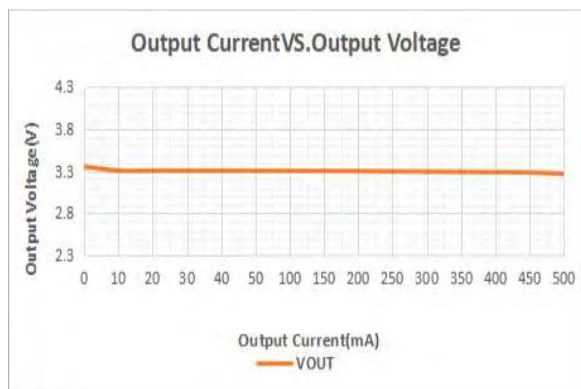
4、 $V_{dif} : V_{IN1} - V_{OUT}(E)'$

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。

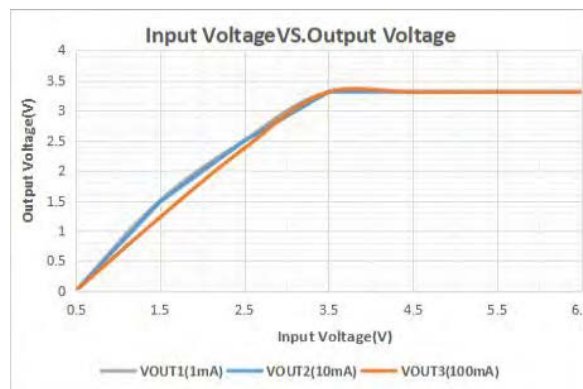
$V_{OUT}(E)' = V_{OUT}(E) \times 98\%$ 。



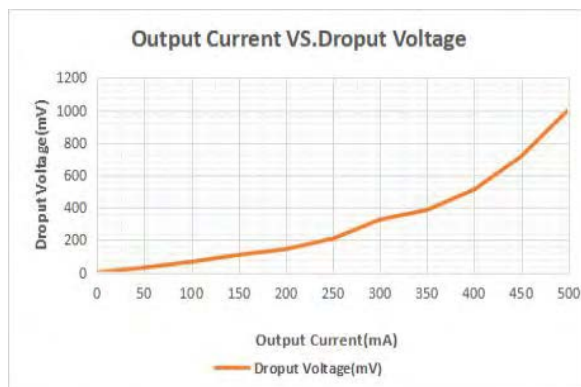
特性曲线



输出电流与输出电压关系



输入电压与输出电压关系

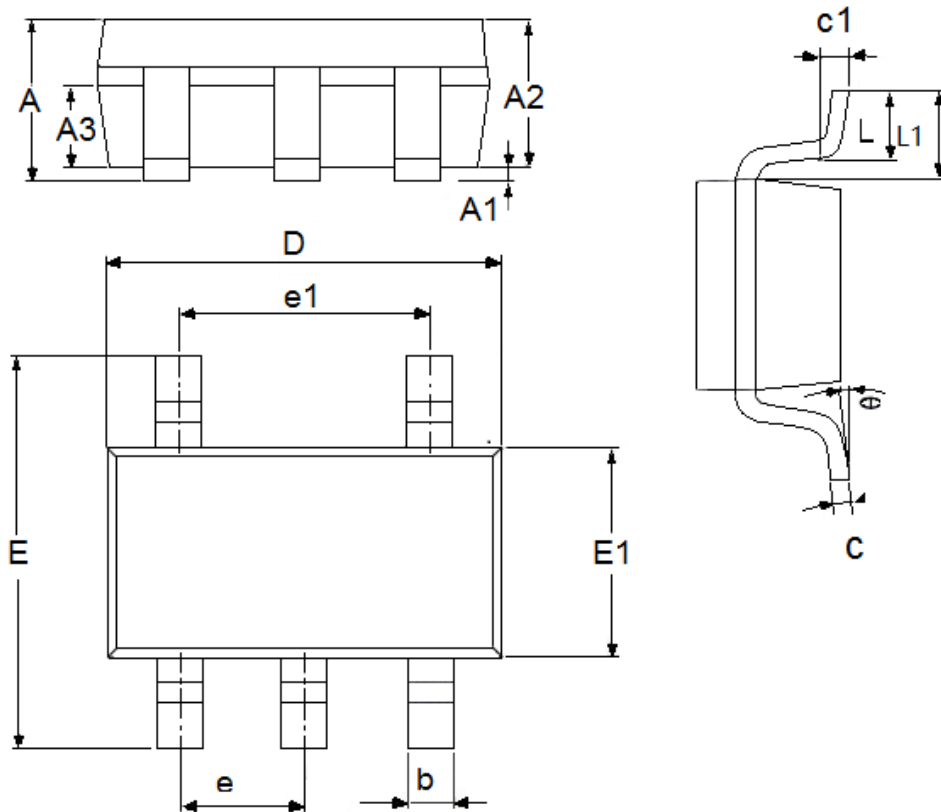


输出电流与压差的关系



封装信息

● SOT-23-5L



参数	尺寸 (mm)		尺寸 (Inch)	
	最小值	最大值	最小值	最大值
A	1.05	1.45	0.0413	0.0571
A1	0	0.15	0.0000	0.0059
A2	0.9	1.3	0.0354	0.0512
A3	0.6	0.7	0.0236	0.0276
b	0.25	0.5	0.0098	0.0197
c	0.1	0.23	0.0039	0.0091
D	2.82	3.05	0.1110	0.1201
e1	1.9(TYP)		0.0748(TYP)	
E	2.6	3.05	0.1024	0.1201
E1	1.5	1.75	0.0512	0.0689
e	0.95(TYP)		0.0374(TYP)	
L	0.25	0.6	0.0098	0.0236
L1	0.59(TYP)		0.0232(TYP)	
θ	0	8°	0.0000	8°
c1	0.2(TYP)		0.0079(TYP)	



Attention

- Any and all HUA XUAN YANG ELECTRONICS products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your HUA XUAN YANG ELECTRONICS representative nearest you before using any HUA XUAN YANG ELECTRONICS products described or contained herein in such applications.
- HUA XUAN YANG ELECTRONICS assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein.
- Specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
- HUA XUAN YANG ELECTRONICS CO.,LTD. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.
- In the event that any or all HUA XUAN YANG ELECTRONICS products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.
- No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of HUA XUAN YANG ELECTRONICS CO.,LTD.
- Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. HUA XUAN YANG ELECTRONICS believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.
- Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the HUA XUAN YANG ELECTRONICS product that you intend to use.