概述

HT71XX是一款采用 CMOS 技术的低压差线性稳压器。最大输出电流为 50mA 且允许的最高输入电压为 30V。具有几个固定的输出电压，范围从 2.5V 到 5.0V。COMS 技术可确保其具有低压降和低静态电流的特性。

功能特点

- 低功耗
- 低压降
- 较低的温度系数
- 最高输入电压：30V
- 典型静态电流：1.5uA
- 最大输出电流：50mA
- 输出电压精度：±2%
- 封装类型：SOT-23，SOT-89

应用领域

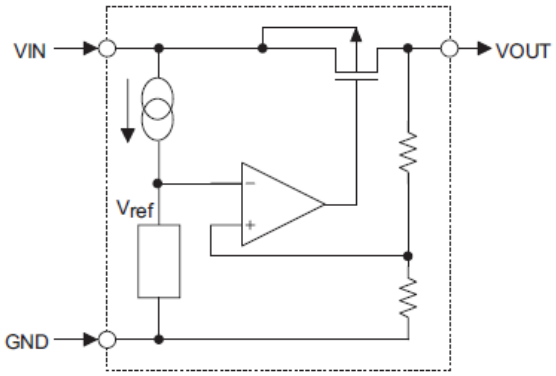
- 电池供电设备
- 通信设备
- 音频/视频设备

选型表

型号	输出电压	封装类型	正印
HT7125	2.5V	SOT-23 SOT-89	71xx(封装为 SOT-23) 71xx(封装为SOT-89)
HT7130	3.0V		
HT7133	3.3V		
HT7136	3.6V		
HT7144	4.4V		
HT7150	5.0V		

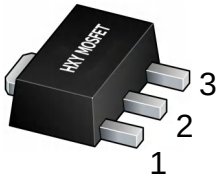
注：“xx”代表输出电压。

电路功能框图



引脚图

SOT-23



SOT-89

引脚说明

引脚序号	引脚名称	说明
1	GND	地
2	VIN	输入脚
3	VOUT	输出脚

极限参数

电源供应电压 ---------- -0.3V ~+30V　　工作环境温度 ---------- -40℃~+85℃
储存温度范围 ---------- -50℃~+125℃

注：这里只强调额定功率，超过极限参数所规定的范围将对芯片造成损害，无法预期芯片在上述标示范围外的工作状态，而且若长期在标示范围外的条件下工作，可能影响芯片的可靠性。

热能信息

符号	参数	封装类型	最大值	单位
θ_{JA}	热阻（与环境连接）（假设无环境气流、无散热片）	SOT-23	500	℃/W
		SOT-89	200	℃/W
P_D	功耗	SOT-23	0.2	W
		SOT89	0.5	W

注： P_D值是在 Ta=25℃时测得。

直流电特性（除特别说明外，T_A =＋25°C）

输出型号 HT7125

参数说明	符号	测试条件	最小值	典型值	最大值	单位
输出电压	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$， $I_{OUT}=10mA$	2.425	2.50	2.575	V
输出电流	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	20	50	—	mA
负载调整率	$\triangle V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ $1mA\leq I_{OUT}\leq 50mA$	—	25	60	mV
低压差	V_{DIF}	$I_{OUT}=1mA$，$\triangle V_{OUT}=2\%$	—	30	100	mV
静态电流	I_{SS}	无负载	—	1.5	3.0	μA
线性调整率	$\triangle V_{OUT}/V_{OUT}*\triangle V_{IN}$	$V_{OUT}+1.0V\leq V_{IN}\leq 24V$， $I_{OUT}=1mA$	—	—	0.2	%/V
输入电压	V_{IN}	—	—	—	24	V
温度系数	$\triangle V_{OUT}/\triangle T_A*V_{OUT}$	$V_{OUT}+2.0V$，$I_{OUT}=10mA$， $-40℃\leq T_A\leq 85℃$	—	100	—	ppm/℃

注：当 $V_{IN}=V_{OUT}+2.0V$, 固定负载条件下使输出电压下降 2%，此时输入电压和输出电压的差值为低压差值 V_{DIF}。

输出型号 HT7130

参数说明	符号	测试条件	最小值	典型值	最大值	单位
输出电压	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$， $I_{OUT}=10mA$	2.91	3.00	3.09	V
输出电流	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	20	50	—	mA
负载调整率	$\triangle V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ $1mA\leqslant I_{OUT}\leqslant 50mA$	—	25	60	mV
低压差	V_{DIF}	$I_{OUT}=1mA$，$\triangle V_{OUT}=2\%$	—	30	100	mV
静态电流	I_{SS}	无负载	—	1.5	3.0	μA
线性调整率	$\triangle V_{OUT}/V_{OUT}*\triangle V_{IN}$	$V_{OUT}+1.0V\leqslant V_{IN}\leqslant 24V$， $I_{OUT}=1mA$	—	—	0.2	%/V
输入电压	V_{IN}	—	—	—	24	V
温度系数	$\triangle V_{OUT}/\triangle T_A*V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$，$I_{OUT}=10mA$， $-40℃\leqslant T_A\leqslant 85℃$	—	100	—	ppm/℃

注：当 $V_{IN}=V_{OUT}+2.0V$, 固定负载条件下使输出电压下降 2%，此时输入电压和输出电压的差值为低压差值 V_{DIF}。

输出型号 HT7133

参数说明	符号	测试条件	最小值	典型值	最大值	单位
输出电压	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$， $I_{OUT}=10mA$	3.201	3.30	3.399	V
输出电流	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	20	50	—	mA
负载调整率	$\triangle V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ $1mA \leqslant I_{OUT} \leqslant 50mA$	—	25	60	mV
低压差	V_{DIF}	$I_{OUT}=1mA$，$\triangle V_{OUT}=2\%$	—	25	55	mV
静态电流	I_{SS}	无负载	—	1.5	3.0	μA
线性调整率	$\triangle V_{OUT}/V_{OUT}*\triangle V_{IN}$	$V_{OUT}+1.0V \leqslant V_{IN} \leqslant 24V$， $I_{OUT}=1mA$	—	—	0.2	%/V
输入电压	V_{IN}	—	—	—	24	V
温度系数	$\triangle V_{OUT}/\triangle T_A*V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$，$I_{OUT}=10mA$， $-40℃ \leqslant T_A \leqslant 85℃$	—	100	—	ppm/℃

注：当 $V_{IN}=V_{OUT}+2.0V$, 固定负载条件下使输出电压下降 2%，此时输入电压和输出电压的差值为低压差值 V_{DIF}。

输出型号 HT7136

参数说明	符号	测试条件	最小值	典型值	最大值	单位
输出电压	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$ ，$I_{OUT}=10mA$	3.492	3.60	3.708	V
输出电流	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	20	50	—	mA
负载调整率	$\triangle V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ $1mA \leqslant I_{OUT} \leqslant 50mA$	—	25	60	mV
低压差	V_{DIF}	$I_{OUT}=1mA$，$\triangle V_{OUT}=2\%$	—	25	55	mV
静态电流	I_{SS}	无负载	—	1.5	3.0	μA
线性调整率	$\triangle V_{OUT}/V_{OUT}*\triangle V_{IN}$	$V_{OUT}+1.0V \leqslant V_{IN} \leqslant 24V$， $I_{OUT}=1mA$	—	—	0.2	%/V
输入电压	V_{IN}	—	—	—	24	V
温度系数	$\triangle V_{OUT}/\triangle T_A*V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$，$I_{OUT}=10mA$， $-40℃ \leqslant T_A \leqslant 85℃$	—	100	—	ppm/℃

注：当 $V_{IN}=V_{OUT}+2.0V$, 固定负载条件下使输出电压下降 2%，此时输入电压和输出电压的差值为低压差值 V_{DIF}。

输出型号 HT7144

参数说明	符号	测试条件	最小值	典型值	最大值	单位
输出电压	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$ ，$I_{OUT}=10mA$	4.268	4.4	4.532	V
输出电流	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	20	50	—	mA
负载调整率	$\triangle V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ $1mA \leqslant I_{OUT} \leqslant 50mA$	—	25	60	mV
低压差	V_{DIF}	$I_{OUT}=1mA$，$\triangle V_{OUT}=2\%$	—	25	55	mV
静态电流	I_{SS}	无负载	—	1.5	3.0	μA
线性调整率	$\triangle V_{OUT}/V_{OUT}*\triangle V_{IN}$	$V_{OUT}+1.0V \leqslant V_{IN} \leqslant 24V$， $I_{OUT}=1mA$	—	—	0.2	%/V
输入电压	V_{IN}	—	—	—	24	V
温度系数	$\triangle V_{OUT}/\triangle T_A*V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$，$I_{OUT}=10mA$， $-40℃ \leqslant T_A \leqslant 85℃$	—	100	—	ppm/℃

注：当 $V_{IN}=V_{OUT}+2.0V$, 固定负载条件下使输出电压下降 2%，此时输入电压和输出电压的差值为低压差值 V_{DIF}。

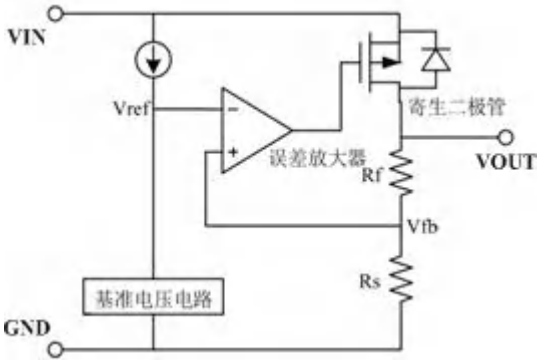
输出型号 HT7150

参数说明	符号	测试条件	最小值	典型值	最大值	单位
输出电压	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$ ，$I_{OUT}=10mA$	4.850	5.0	5.150	V
输出电流	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	20	50	—	mA
负载调整率	$\triangle V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ $1mA \leqslant I_{OUT} \leqslant 70mA$	—	25	60	mV
低压差	V_{DIF}	$I_{OUT}=1mA$，$\triangle V_{OUT}=2\%$	—	25	55	mV
静态电流	I_{SS}	无负载	—	1.5	3.0	μA
线性调整率	$\triangle V_{OUT}/V_{OUT}*\triangle V_{IN}$	$V_{OUT}+1.0\ V \leqslant V_{IN} \leqslant 24V$， $I_{OUT}=1mA$	—	—	0.2	%/V
输入电压	V_{IN}	—	—	—	24	V
温度系数	$\triangle V_{OUT}/\triangle T_A*V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$，$I_{OUT}=10mA$， $-40℃ \leqslant T_A \leqslant 85℃$	—	100	—	ppm/℃

注：当 $V_{IN}=V_{OUT}+2.0V$, 固定负载条件下使输出电压下降 2%，此时输入电压和输出电压的差值为低压差值 V_{DIF}。

功能描述

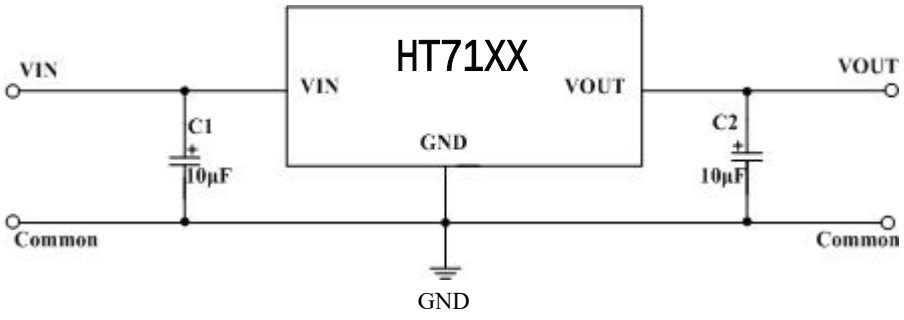
误差放大器根据反馈电阻 Rs 及 Rf 所构成的分压电阻的输入电压 Vfb 同基准电压（Vref）相比较。通过此误差放大器向输出晶体管提供必要的门极电压，而使输出电压不受输入电压或温度变化的影响而保持一定。



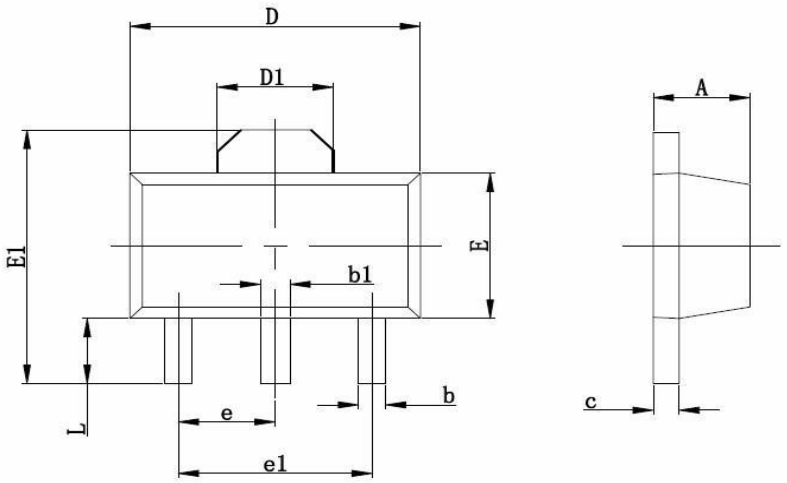
1、 应用时尽量将电容接到 VIN 和 VOUT 脚位附近。
2、 电路内部使用了相位补偿电路和利用输出电容的 ESR 来补偿。所以输出到地一定要接大于 2.2μF 的电容器，推荐使用钽电容。
3、 注意输入输出电压、负载电流的使用条件，避免 IC 内部的功耗超出封装允许的最大功耗值。

典型应用线路图

1、基本应用图

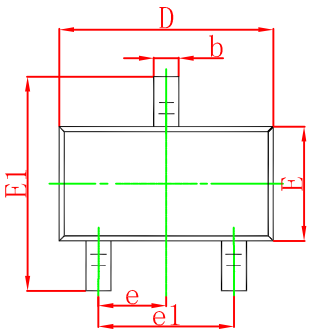


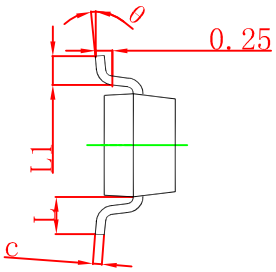
SOT-89 Package Outline Dimensions

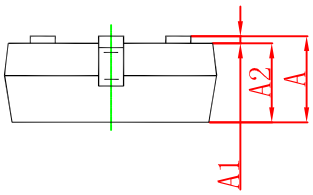


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.350	0.520	0.013	0.197
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF		0.061 REF	
E	2.350	2.550	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP		0.060TYP	
e1	3.000 TYP		0.118TYP	
L	0.900	1.100	0.035	0.047

SOT-23 Package Outline Dimensions

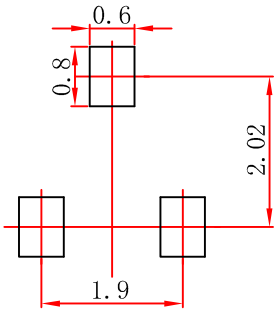






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



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

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