

概述

HT73xx是一款采用 CMOS 技术的低压差线性稳压器。最大输出电流为 250mA 且允许的最高输入电压为 18V。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：18V
- 典型静态电流：2uA
- 最大输出电流：250mA
- 输出电压精度：±2%
- 封装类型：SOT-23/SOT-23-3L/SOT-89

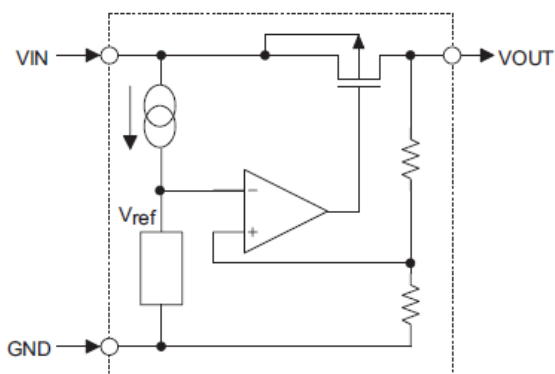
应用领域

- 电池供电设备
- 通信设备
- 音频/视频设备

选型表

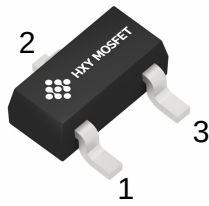
型号	输出电压	封装类型	最小包装数
HT7325	2.5V	SOT-23 SOT-23-3L SOT-89	3000PCS/盘(SOT-23 /SOT-23-3L)
HT7327	2.7V		
HT7330	3.0V		
HT7333	3.3V		
HT7336	3.6V		1000PCS/盘(SOT-89)
HT7340	4.0V		
HT7344	4.4V		
HT7350	5.0V		

电路功能框图

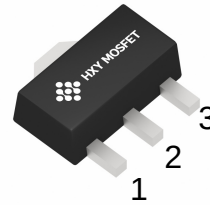




引脚图



SOT-23/
SOT-23-3L



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 ~+18V 工作环境温度 ----- 0℃~+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-23-3L	360	℃/W
		SOT-89	200	℃/W
P_D	功耗	SOT-23	0.2	W
		SOT-23-3L	0.2	W
		SOT-89	0.5	W

注： P_D 值是在 $T_a=25^{\circ}\text{C}$ 时测得。



直流电特性(除特别说明外, $T_A = +25^{\circ}\text{C}$)

HT7325 ($T_{\text{OPT}}=25^{\circ}\text{C}$)

符号	参数	测试条件	最小值	典型值	最大值	单位
V_{OUT}	输出电压	$V_{\text{IN}}=3.5\text{V}$, $I_{\text{OUT}}=40\text{mA}$	2.425	2.5	2.575	V
I_{OUT}	输出电流	$V_{\text{IN}}=3.5\text{V}$, $V_{\text{OUT}} \geq 2.25\text{V}$	180	--	—	mA
ΔV_{OUT}	负载调节	$V_{\text{IN}}=3.5\text{V}$, $1\text{mA} \leq I_{\text{OUT}} \leq 60\text{mA}$	—	45	90	mV
V_{DIF}	跌落电压	$I_{\text{OUT}}=40\text{mA}$	—	110	—	mV
I_{SS}	静态电流	$V_{\text{IN}}=3.5\text{V}$, 空载	—	2	3	μA
$\Delta V_{\text{OUT}} / (\Delta V_{\text{IN}} * V_{\text{OUT}})$	Line Regulation	$3.5\text{V} \leq V_{\text{IN}} \leq 12\text{V}$, $I_{\text{OUT}}=40\text{mA}$	—	0.2	0.3	%/V
V_{IN}	输入电压	—	—	—	18	V
$\Delta V_{\text{OUT}} / \Delta T_a$	温度系数	$V_{\text{IN}}=3.5\text{V}$, $I_{\text{OUT}}=40\text{mA}$, $0^{\circ}\text{C} \leq T_a \leq 85^{\circ}\text{C}$	—	± 0.7	—	mV/ $^{\circ}\text{C}$

HT7327 ($T_{\text{OPT}}=25^{\circ}\text{C}$)

符号	参数	测试条件	最小值	典型值	最大值	单位
V_{OUT}	输出电压	$V_{\text{IN}}=3.7\text{V}$, $I_{\text{OUT}}=40\text{mA}$	2.619	2.7	2.781	V
I_{OUT}	输出电流	$V_{\text{IN}}=3.7\text{V}$, $V_{\text{OUT}} \geq 2.43\text{V}$	200	--	—	mA
ΔV_{OUT}	负载调节	$V_{\text{IN}}=3.7\text{V}$, $1\text{mA} \leq I_{\text{OUT}} \leq 60\text{mA}$	—	45	90	mV
V_{DIF}	跌落电压	$I_{\text{OUT}}=40\text{mA}$	—	100	—	mV
I_{SS}	静态电流	$V_{\text{IN}}=3.7\text{V}$, 空载	—	2	3	μA
$\Delta V_{\text{OUT}} / (\Delta V_{\text{IN}} * V_{\text{OUT}})$	Line Regulation	$3.7\text{V} \leq V_{\text{IN}} \leq 12\text{V}$, $I_{\text{OUT}}=40\text{mA}$	—	0.2	0.3	%/V
V_{IN}	输入电压	—	—	—	18	V
$\Delta V_{\text{OUT}} / \Delta T_a$	温度系数	$V_{\text{IN}}=3.7\text{V}$, $I_{\text{OUT}}=40\text{mA}$, $0^{\circ}\text{C} \leq T_a \leq 85^{\circ}\text{C}$	—	± 0.7	—	mV/ $^{\circ}\text{C}$

HT7330 ($T_{\text{OPT}}=25^{\circ}\text{C}$)

符号	参数	测试条件	最小值	典型值	最大值	单位
V_{OUT}	输出电压	$V_{\text{IN}}=4\text{V}$, $I_{\text{OUT}}=40\text{mA}$	2.91	3	3.09	V
I_{OUT}	输出电流	$V_{\text{IN}}=4\text{V}$, $V_{\text{OUT}} \geq 2.7\text{V}$	250	--	—	mA
ΔV_{OUT}	负载调节	$V_{\text{IN}}=4\text{V}$, $1\text{mA} \leq I_{\text{OUT}} \leq 60\text{mA}$	—	45	90	mV
V_{DIF}	跌落电压	$I_{\text{OUT}}=40\text{mA}$	—	95	—	mV
I_{SS}	静态电流	$V_{\text{IN}}=4\text{V}$, 空载	—	2	3	μA
$\Delta V_{\text{OUT}} / (\Delta V_{\text{IN}} * V_{\text{OUT}})$	Line Regulation	$4\text{V} \leq V_{\text{IN}} \leq 12\text{V}$, $I_{\text{OUT}}=40\text{mA}$	—	0.2	0.3	%/V
V_{IN}	输入电压	—	—	—	18	V
$\Delta V_{\text{OUT}} / \Delta T_a$	温度系数	$V_{\text{IN}}=4\text{V}$, $I_{\text{OUT}}=40\text{mA}$, $0^{\circ}\text{C} \leq T_a \leq 85^{\circ}\text{C}$	—	± 0.7	—	mV/ $^{\circ}\text{C}$



HT7333 ($T_{OPT}=25^{\circ}\text{C}$)

符号	参数	测试条件	最小值	典型值	最大值	单位
V_{OUT}	输出电压	$V_{IN}=4.3\text{V}$, $I_{OUT}=40\text{mA}$	3.201	3.3	3.399	V
I_{OUT}	输出电流	$V_{IN}=4.3\text{V}$, $V_{OUT}\geq 2.97\text{V}$	250	—	—	mA
ΔV_{OUT}	负载调节	$V_{IN}=4.3\text{V}$, $1\text{mA}\leq I_{OUT}\leq 60\text{mA}$	—	45	90	mV
V_{DIF}	跌落电压	$I_{OUT}=40\text{mA}$	—	90	—	mV
I_{SS}	静态电流	$V_{IN}=4.3\text{V}$, 空载	—	2	3	μA
$\Delta V_{OUT} / (\Delta V_{IN} * V_{OUT})$	Line Regulation	$4.3\text{V}\leq V_{IN}\leq 12\text{V}$, $I_{OUT}=40\text{mA}$	—	0.2	0.3	%/V
V_{IN}	输入电压	—	—	—	18	V
$\Delta V_{OUT} / \Delta T_a$	温度系数	$V_{IN}=4.3\text{V}$, $I_{OUT}=40\text{mA}$, $0^{\circ}\text{C}\leq T_a\leq 85^{\circ}\text{C}$	—	± 0.7	—	mV/ $^{\circ}\text{C}$

HT7336 ($T_{OPT}=25^{\circ}\text{C}$)

符号	参数	测试条件	最小值	典型值	最大值	单位
V_{OUT}	输出电压	$V_{IN}=4.5\text{V}$, $I_{OUT}=40\text{mA}$	3.495	3.6	3.705	V
I_{OUT}	输出电流	$V_{IN}=4.5\text{V}$, $V_{OUT}\geq 3.15\text{V}$	250	—	—	mA
ΔV_{OUT}	负载调节	$V_{IN}=4.5\text{V}$, $1\text{mA}\leq I_{OUT}\leq 60\text{mA}$	—	45	90	mV
V_{DIF}	跌落电压	$I_{OUT}=40\text{mA}$	—	80	—	mV
I_{SS}	静态电流	$V_{IN}=4.5\text{V}$, 空载	—	2	3	μA
$\Delta V_{OUT} / (\Delta V_{IN} * V_{OUT})$	Line Regulation	$4.5\text{V}\leq V_{IN}\leq 12\text{V}$, $I_{OUT}=40\text{mA}$	—	0.2	0.3	%/V
V_{IN}	输入电压	—	—	—	18	V
$\Delta V_{OUT} / \Delta T_a$	温度系数	$V_{IN}=4.5\text{V}$, $I_{OUT}=40\text{mA}$, $0^{\circ}\text{C}\leq T_a\leq 85^{\circ}\text{C}$	—	± 0.7	—	mV/ $^{\circ}\text{C}$

HT7340 ($T_{OPT}=25^{\circ}\text{C}$)

符号	参数	测试条件	最小值	典型值	最大值	单位
V_{OUT}	输出电压	$V_{IN}=5.4\text{V}$, $I_{OUT}=40\text{mA}$	3.92	4.0	4.08	V
I_{OUT}	输出电流	$V_{IN}=5.4\text{V}$, $V_{OUT}\geq 3.96\text{V}$	250	—	—	mA
ΔV_{OUT}	负载调节	$V_{IN}=5.4\text{V}$, $1\text{mA}\leq I_{OUT}\leq 60\text{mA}$	—	45	90	mV
V_{DIF}	跌落电压	$I_{OUT}=40\text{mA}$	—	75	—	mV
I_{SS}	静态电流	$V_{IN}=5.4\text{V}$, 空载	—	2	3	μA
$\Delta V_{OUT} / (\Delta V_{IN} * V_{OUT})$	Line Regulation	$5.4\text{V}\leq V_{IN}\leq 12\text{V}$, $I_{OUT}=40\text{mA}$	—	0.2	0.3	%/V
V_{IN}	输入电压	—	—	—	18	V
$\Delta V_{OUT} / \Delta T_a$	温度系数	$V_{IN}=5.4\text{V}$, $I_{OUT}=40\text{mA}$, $0^{\circ}\text{C}\leq T_a\leq 85^{\circ}\text{C}$	—	± 0.7	—	mV/ $^{\circ}\text{C}$



HT7344 ($T_{OPT}=25^{\circ}\text{C}$)

符号	参数	测试条件	最小值	典型值	最大值	单位
V_{OUT}	输出电压	$V_{IN}=5.4\text{V}$, $I_{OUT}=40\text{mA}$	4.312	4.4	4.488	V
I_{OUT}	输出电流	$V_{IN}=5.4\text{V}$, $V_{OUT}\geq 3.96\text{V}$	250	—	—	mA
ΔV_{OUT}	负载调节	$V_{IN}=5.4\text{V}$, $1\text{mA}\leq I_{OUT}\leq 60\text{mA}$	—	45	90	mV
V_{DIF}	跌落电压	$I_{OUT}=40\text{mA}$	—	70	—	mV
I_{SS}	静态电流	$V_{IN}=5.4\text{V}$, 空载	—	2	3	μA
$\Delta V_{OUT} / (\Delta V_{IN} * V_{OUT})$	Line Regulation	$5.4\text{V}\leq V_{IN}\leq 12\text{V}$, $I_{OUT}=40\text{mA}$	—	0.2	0.3	%/V
V_{IN}	输入电压	—	—	—	18	V
$\Delta V_{OUT} / \Delta T_a$	温度系数	$V_{IN}=5.4\text{V}$, $I_{OUT}=40\text{mA}$, $0^{\circ}\text{C}\leq T_a\leq 85^{\circ}\text{C}$	—	± 0.7	—	mV/ $^{\circ}\text{C}$

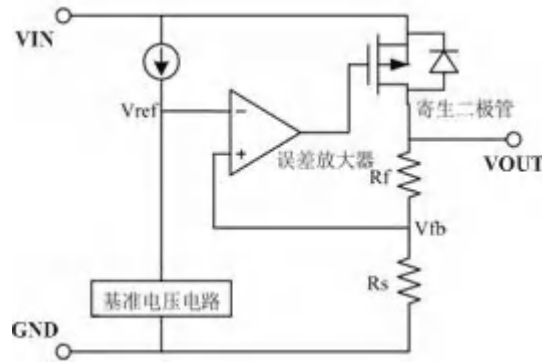
HT7350 ($T_{OPT}=25^{\circ}\text{C}$)

符号	参数	测试条件	最小值	典型值	最大值	单位
V_{OUT}	输出电压	$V_{IN}=6\text{V}$, $I_{OUT}=40\text{mA}$	4.85	5	5.15	V
I_{OUT}	输出电流	$V_{IN}=2.8\text{V}$, $V_{OUT}\geq 4.5\text{V}$	250	—	—	mA
ΔV_{OUT}	负载调节	$V_{IN}=6\text{V}$, $1\text{mA}\leq I_{OUT}\leq 60\text{mA}$	—	45	90	mV
V_{DIF}	跌落电压	$I_{OUT}=40\text{mA}$	—	60	—	mV
I_{SS}	静态电流	$V_{IN}=6\text{V}$, 空载	—	2	3	μA
$\Delta V_{OUT} / (\Delta V_{IN} * V_{OUT})$	Line Regulation	$6\text{V}\leq V_{IN}\leq 12\text{V}$, $I_{OUT}=40\text{mA}$	—	0.2	0.3	%/V
V_{IN}	输入电压	—	—	—	18	V
$\Delta V_{OUT} / \Delta T_a$	温度系数	$V_{IN}=6\text{V}$, $I_{OUT}=40\text{mA}$, $0^{\circ}\text{C}\leq T_a\leq 85^{\circ}\text{C}$	—	± 0.7	—	mV/ $^{\circ}\text{C}$



功能描述

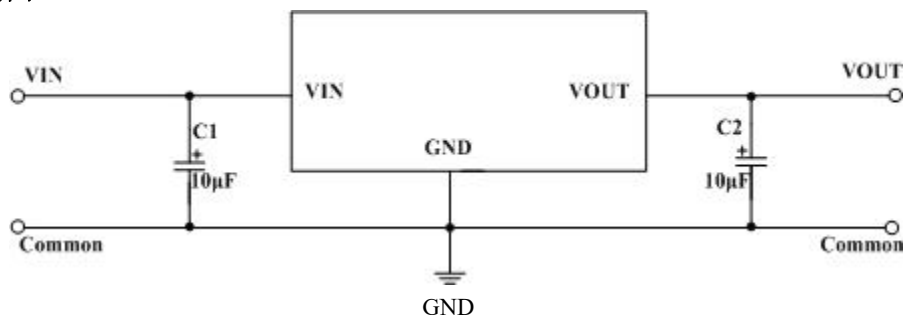
误差放大器根据反馈电阻 R_s 及 R_f 所构成的分压电阻的输入电压 V_{fb} 同基准电压 (V_{ref}) 相比较。通过此误差放大器向输出晶体管提供必要的门极电压，而使输出电压不受输入电压或温度变化的影响而保持一定。



- 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 $2.2\mu F$ 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。

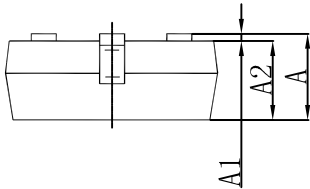
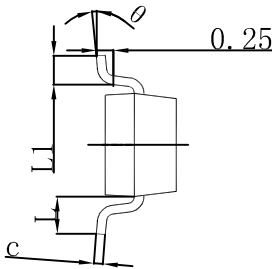
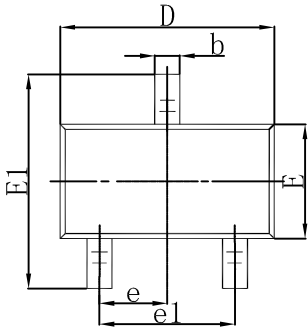
典型应用线路图

1、基本应用图





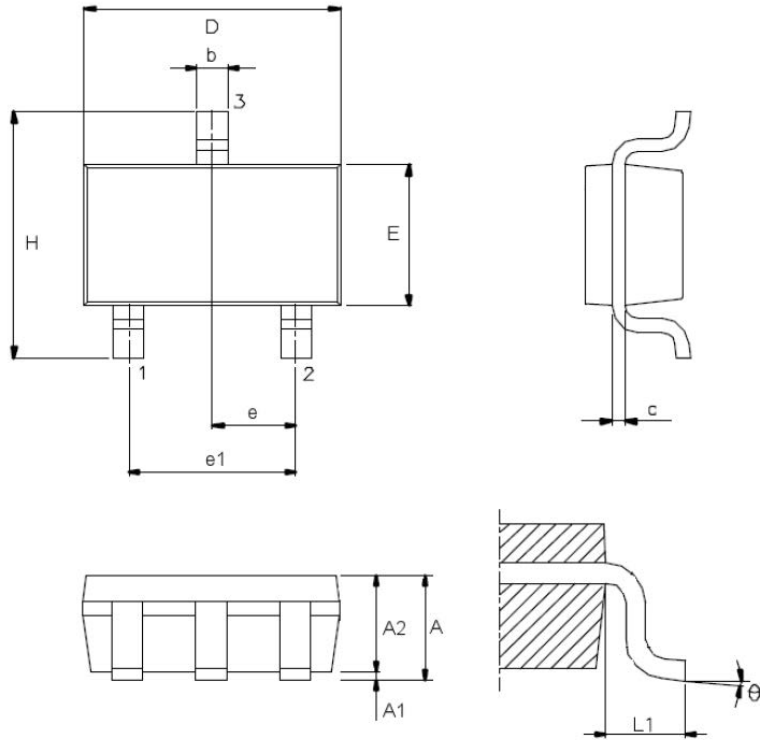
封装尺寸
SOT-23



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°



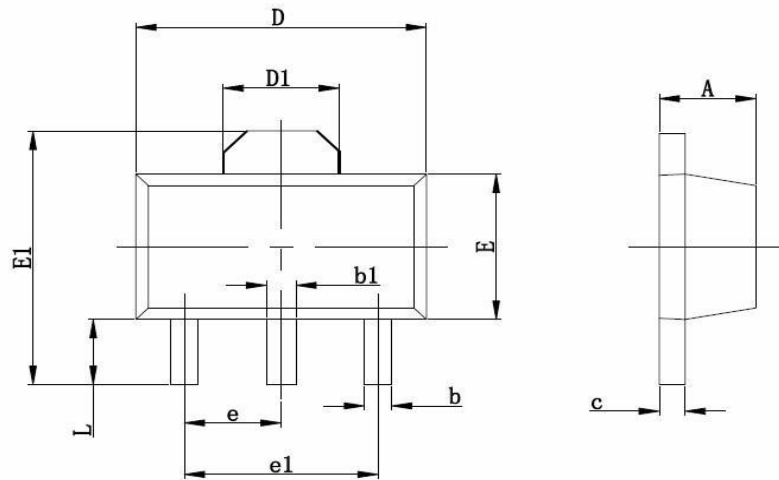
SOT-23-3L



符号	尺寸（单位：mm）		
	最小	典型	最大
A	—	—	1.45
A1	—	—	0.15
A2	0.90	1.15	1.30
b	0.30	—	0.50
C	0.08	—	0.22
D	—	2.90	—
E	—	1.60	—
e	—	0.95	—
e1	—	1.90	—
H	—	2.80	—
L1	—	0.60	—
θ	0°	—	9°



SOT-89



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



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