



## 概述

HT73XX-1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-89

## 应用领域

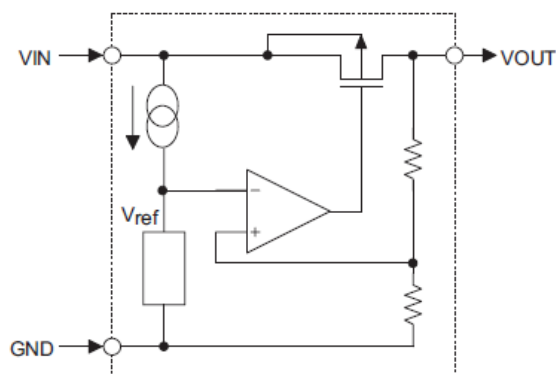
- 电池供电设备
- 通信设备
- 音频/视频设备

## 选型表

| 型号       | 输出电压 | 封装类型                 | 正印                                          |
|----------|------|----------------------|---------------------------------------------|
| HT7325-1 | 2.5V | SOT-23<br><br>SOT-89 | 73xx-1(封装为 SOT-23)<br><br>73xx-1(封装为SOT-89) |
| HT7327-1 | 2.7V |                      |                                             |
| HT7330-1 | 3.0V |                      |                                             |
| HT7333-1 | 3.3V |                      |                                             |
| HT7336-1 | 3.6V |                      |                                             |
| HT7350-1 | 5.0V |                      |                                             |

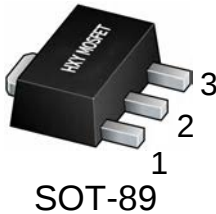
注：“xx”代表输出电压。

## 电路功能框图





引脚图



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 ----- -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  |
|---------------|-------------------------|--------|-----|-----|
| $\theta_{JA}$ | 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   |
|               |                         | 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， $T_A = +25^\circ\text{C}$ ）

**HT7325-1** ( $T_{\text{OPT}}=25^\circ\text{C}$ )

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

**HT7327-1** ( $T_{\text{OPT}}=25^\circ\text{C}$ )

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

**HT7330-1** ( $T_{\text{OPT}}=25^\circ\text{C}$ )

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



HT7333-1 (T<sub>OPT</sub>=25℃)

| 符号                                                         | 参数              | 测试条件                                                        | 最小值   | 典型值  | 最大值   | 单位   |
|------------------------------------------------------------|-----------------|-------------------------------------------------------------|-------|------|-------|------|
| V <sub>OUT</sub>                                           | 输出电压            | V <sub>IN</sub> =4.3V, I <sub>OUT</sub> =40mA               | 3.201 | 3.3  | 3.399 | V    |
| I <sub>OUT</sub>                                           | 输出电流            | V <sub>IN</sub> =4.3V, V <sub>OUT</sub> ≥2.97V              | 250   | —    | —     | mA   |
| ΔV <sub>OUT</sub>                                          | 负载调节            | V <sub>IN</sub> =4.3V,<br>1mA≤I <sub>OUT</sub> ≤60mA        | —     | 45   | 90    | mV   |
| V <sub>DIF</sub>                                           | 跌落电压            | I <sub>OUT</sub> =40mA                                      | —     | 90   | —     | mV   |
| I <sub>SS</sub>                                            | 静态电流            | V <sub>IN</sub> =4.3V, 空载                                   | —     | 2    | 3     | μA   |
| ΔV <sub>OUT</sub> / (ΔV <sub>IN</sub> * V <sub>OUT</sub> ) | Line Regulation | 4.3V≤V <sub>IN</sub> ≤12V,<br>I <sub>OUT</sub> =40mA        | —     | 0.2  | 0.3   | %/V  |
| V <sub>IN</sub>                                            | 输入电压            | —                                                           | —     | —    | 18    | V    |
| ΔV <sub>OUT</sub> / ΔTa                                    | 温度系数            | V <sub>IN</sub> =4.3V, I <sub>OUT</sub> =40mA,<br>0℃≤Ta≤85℃ | —     | ±0.7 | —     | mV/℃ |

HT7336-1 (T<sub>OPT</sub>=25℃)

| 符号                                                         | 参数              | 测试条件                                                        | 最小值   | 典型值  | 最大值   | 单位   |
|------------------------------------------------------------|-----------------|-------------------------------------------------------------|-------|------|-------|------|
| V <sub>OUT</sub>                                           | 输出电压            | V <sub>IN</sub> =4.5V, I <sub>OUT</sub> =40mA               | 3.495 | 3.6  | 3.705 | V    |
| I <sub>OUT</sub>                                           | 输出电流            | V <sub>IN</sub> =4.5V, V <sub>OUT</sub> ≥3.15V              | 250   | —    | —     | mA   |
| ΔV <sub>OUT</sub>                                          | 负载调节            | V <sub>IN</sub> =4.5V,<br>1mA≤I <sub>OUT</sub> ≤60mA        | —     | 45   | 90    | mV   |
| V <sub>DIF</sub>                                           | 跌落电压            | I <sub>OUT</sub> =40mA                                      | —     | 80   | —     | mV   |
| I <sub>SS</sub>                                            | 静态电流            | V <sub>IN</sub> =4.5V, 空载                                   | —     | 2    | 3     | μA   |
| ΔV <sub>OUT</sub> / (ΔV <sub>IN</sub> * V <sub>OUT</sub> ) | Line Regulation | 4.5V≤V <sub>IN</sub> ≤12V,<br>I <sub>OUT</sub> =40mA        | —     | 0.2  | 0.3   | %/V  |
| V <sub>IN</sub>                                            | 输入电压            | —                                                           | —     | —    | 18    | V    |
| ΔV <sub>OUT</sub> / ΔTa                                    | 温度系数            | V <sub>IN</sub> =4.5V, I <sub>OUT</sub> =40mA,<br>0℃≤Ta≤85℃ | —     | ±0.7 | —     | mV/℃ |

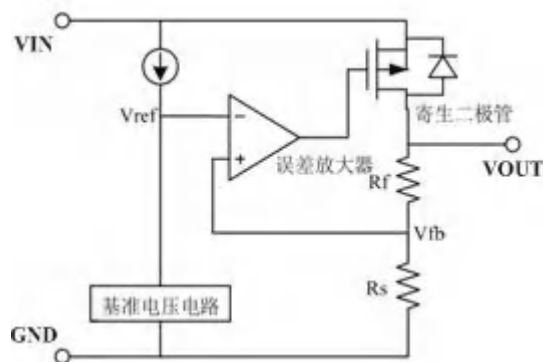
HT7350-1 (T<sub>OPT</sub>=25℃)

| 符号                                                         | 参数              | 测试条件                                                      | 最小值  | 典型值  | 最大值  | 单位   |
|------------------------------------------------------------|-----------------|-----------------------------------------------------------|------|------|------|------|
| V <sub>OUT</sub>                                           | 输出电压            | V <sub>IN</sub> =6V, I <sub>OUT</sub> =40mA               | 4.85 | 5    | 5.15 | V    |
| I <sub>OUT</sub>                                           | 输出电流            | V <sub>IN</sub> =2.8V, V <sub>OUT</sub> ≥4.5V             | 250  | —    | —    | mA   |
| ΔV <sub>OUT</sub>                                          | 负载调节            | V <sub>IN</sub> =6V, 1mA≤I <sub>OUT</sub> ≤60mA           | —    | 45   | 90   | mV   |
| V <sub>DIF</sub>                                           | 跌落电压            | I <sub>OUT</sub> =40mA                                    | —    | 60   | —    | mV   |
| I <sub>SS</sub>                                            | 静态电流            | V <sub>IN</sub> =6V, 空载                                   | —    | 2    | 3    | μA   |
| ΔV <sub>OUT</sub> / (ΔV <sub>IN</sub> * V <sub>OUT</sub> ) | Line Regulation | 6V≤V <sub>IN</sub> ≤12V, I <sub>OUT</sub> =40mA           | —    | 0.2  | 0.3  | %/V  |
| V <sub>IN</sub>                                            | 输入电压            | —                                                         | —    | —    | 18   | V    |
| ΔV <sub>OUT</sub> / ΔTa                                    | 温度系数            | V <sub>IN</sub> =6V, I <sub>OUT</sub> =40mA,<br>0℃≤Ta≤85℃ | —    | ±0.7 | —    | mV/℃ |



## 功能描述

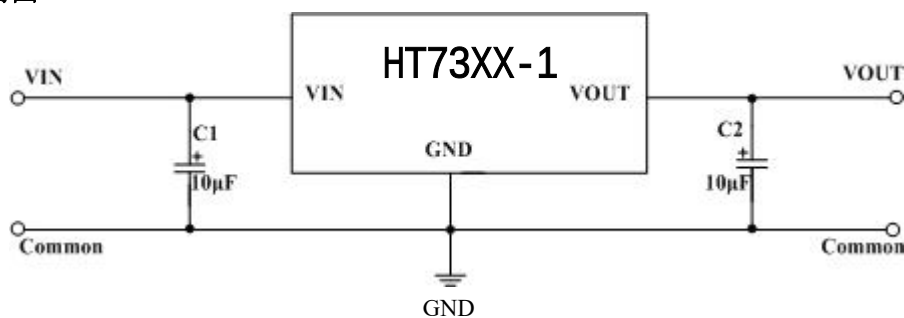
误差放大器根据反馈电阻  $R_s$  及  $R_f$  所构成的分压电阻的输入电压  $V_{fb}$  同基准电压 ( $V_{ref}$ ) 相比较。通过此误差放大器向输出晶体管提供必要的门极电压，而使输出电压不受输入电压或温度变化的影响而保持一定。



- 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。

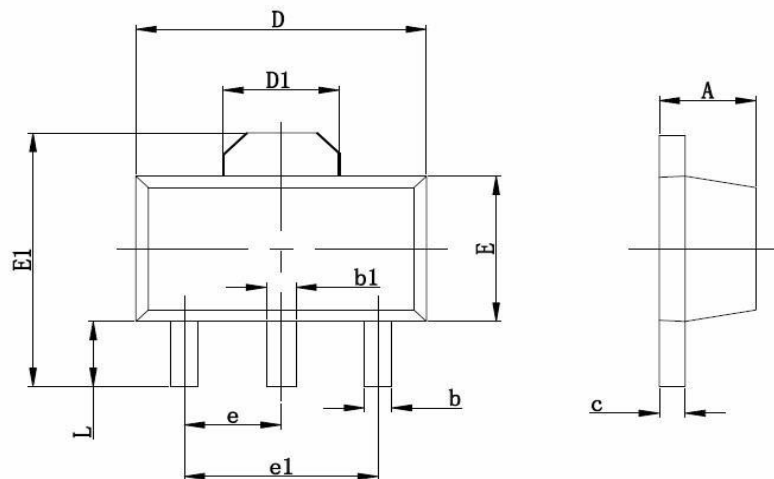
## 典型应用线路图

### 1、基本应用图





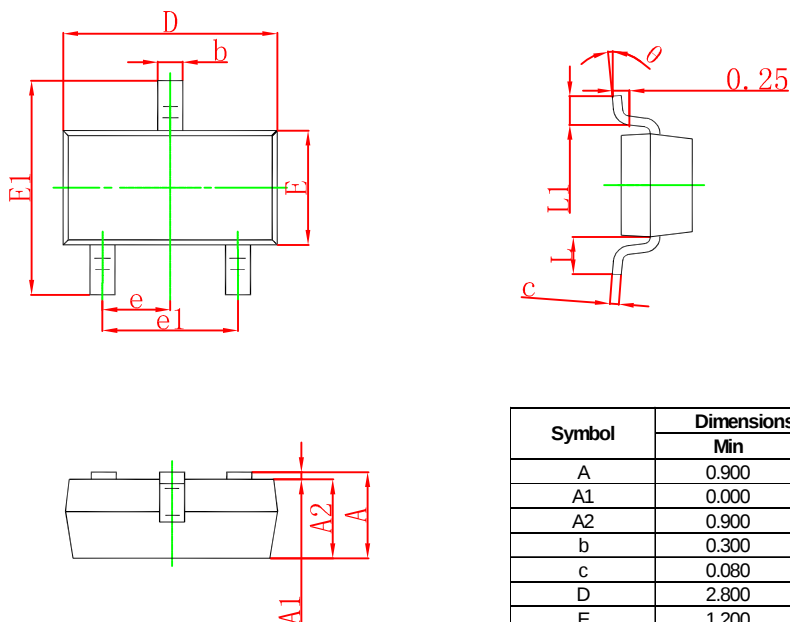
## SOT-89 Package Outline Dimensions



| 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 |

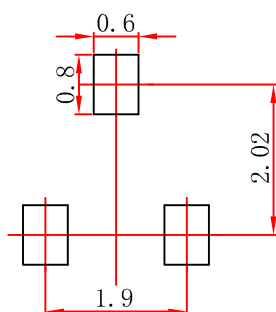


## SOT-23 Package Outline Dimensions



| 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:  $\pm 0.05\text{mm}$ .  
3. The pad layout is for reference purposes only.



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