



## 概述

HT73XX-A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

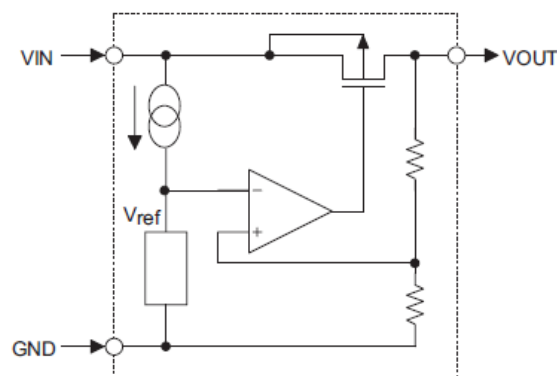
- 电池供电设备
- 通信设备
- 音频/视频设备

## 选型表

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

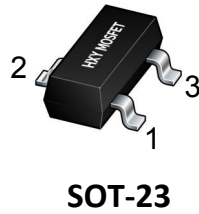
注：“xx”代表输出电压。

## 电路功能框图

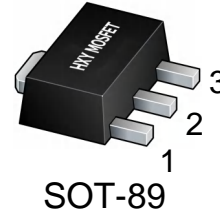




## 引脚图



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 ~+18V      工作环境温度 ----- -40°C~+85°C  
储存温度范围 ----- -50°C~+125°C

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 | °C/W |
|               |                         | SOT-89 | 200 | °C/W |
| $P_D$         | 功耗                      | SOT-23 | 0.2 | W    |
|               |                         | SOT89  | 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-A** ( $T_{\text{OPT}}=25^\circ\text{C}$ )

| 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            | --   | --    | --        | 12    | 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-A** ( $T_{\text{OPT}}=25^\circ\text{C}$ )

| 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            | --   | --    | --        | 12    | 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-A** ( $T_{\text{OPT}}=25^\circ\text{C}$ )

| 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            | --   | --   | --        | 12   | 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-A** (T<sub>OPT</sub>=25°C)

| 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            | —   | —     | —    | 12    | V     |
| ΔV <sub>OUT</sub> / ΔTa                                    | 温度系数            | V <sub>IN</sub> =4.3V, I <sub>OUT</sub> =40mA,<br>0°C≤Ta≤85°C | —     | ±0.7 | —     | mV/°C |

**HT7336-A** (T<sub>OPT</sub>=25°C)

| 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            | —   | —     | —    | 12    | V     |
| ΔV <sub>OUT</sub> / ΔTa                                    | 温度系数            | V <sub>IN</sub> =4.5V, I <sub>OUT</sub> =40mA,<br>0°C≤Ta≤85°C | —     | ±0.7 | —     | mV/°C |

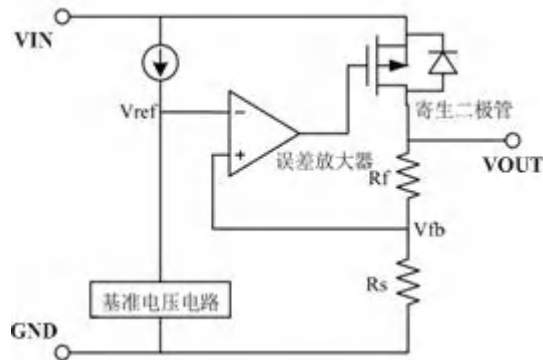
**HT7350-A** (T<sub>OPT</sub>=25°C)

| 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            | —   | —    | —    | 12   | V     |
| ΔV <sub>OUT</sub> / ΔTa                                    | 温度系数            | V <sub>IN</sub> =6V, I <sub>OUT</sub> =40mA,<br>0°C≤Ta≤85°C | —    | ±0.7 | —    | mV/°C |



## 功能描述

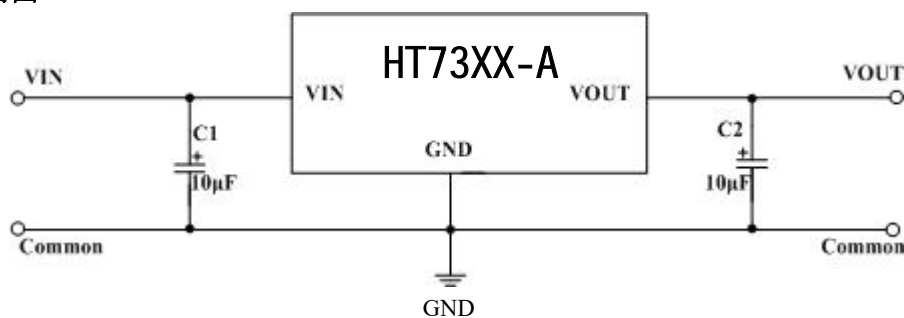
误差放大器根据反馈电阻  $R_s$  及  $R_f$  所构成的分压电阻的输入电压  $V_{fb}$  同基准电压 ( $V_{ref}$ ) 相比较。通过此误差放大器向输出晶体管提供必要的门极电压，而使输出电压不受输入电压或温度变化的影响而保持一定。



- 1、应用时尽量将电容接到  $V_{IN}$  和  $V_{OUT}$  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，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。

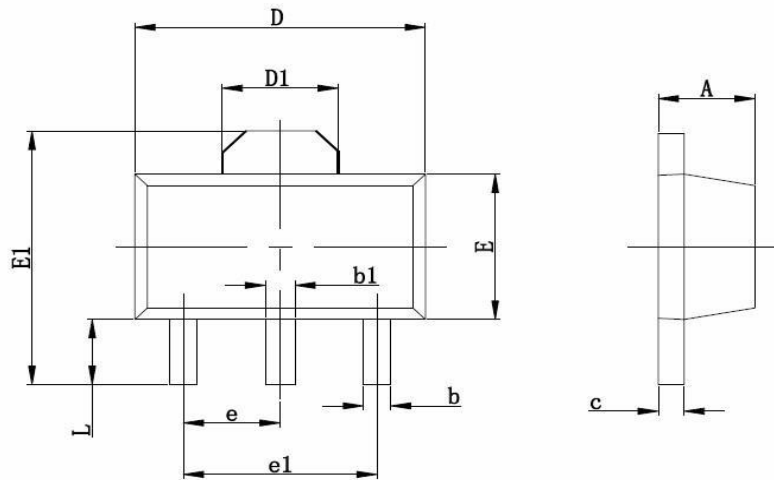
## 典型应用线路图

### 1、基本应用图





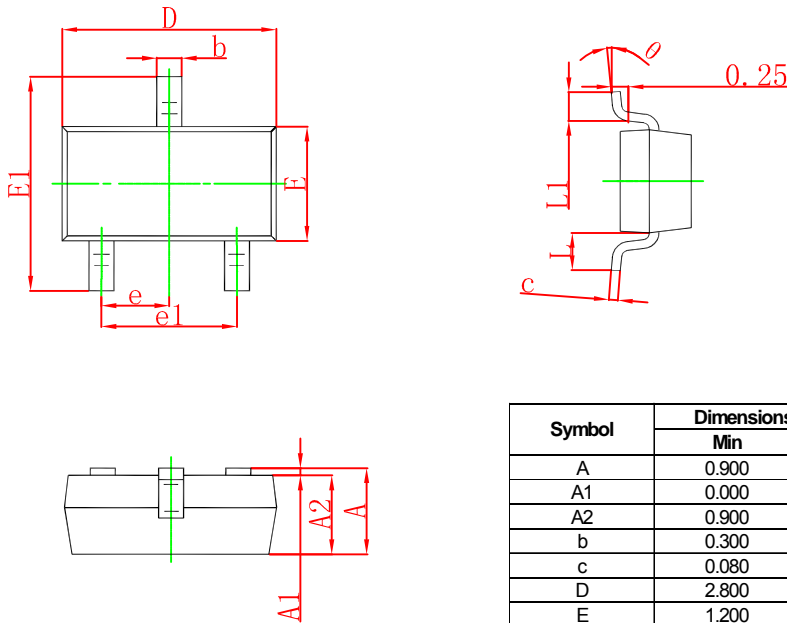
### SOT-89 Package Outline Dimensions



| 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 |

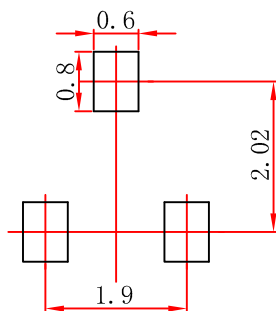


### SOT-23 Package Outline Dimensions



| 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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