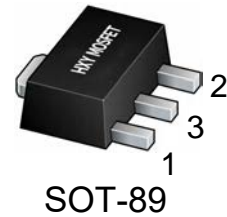




## ■ 产品简介

**HT78XX** 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 (2 $\mu$ A Typ.)，它们能在输入、输出电压差极小的情况下提供400mA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延长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。



| 管脚编号 | 管脚名 | 功能描述 |
|------|-----|------|
| 1    | VSS | 接地   |
| 2    | VOU | 输出   |
| 3    | VIN | 电源输入 |

## ■ 产品特点

- 高精度输出电压： $\pm 2\%$
- 输出电压：2.8V~5.0V(步长 0.1V)
- 极低的静态偏置电流 (Typ. =2.0  $\mu$  A)
- 低的温度调整系数
- 最高输入电压可达 12V
- 输入输出电压差低
- 封装形式：SOT-89

## ■ 产品用途

- 电池供电系统
- 无绳电话设备
- 无线控制系统
- 便携/手掌式计算机
- 便携式消费类设备
- 便携式仪器
- 汽车电子设备

## ■ 极限参数

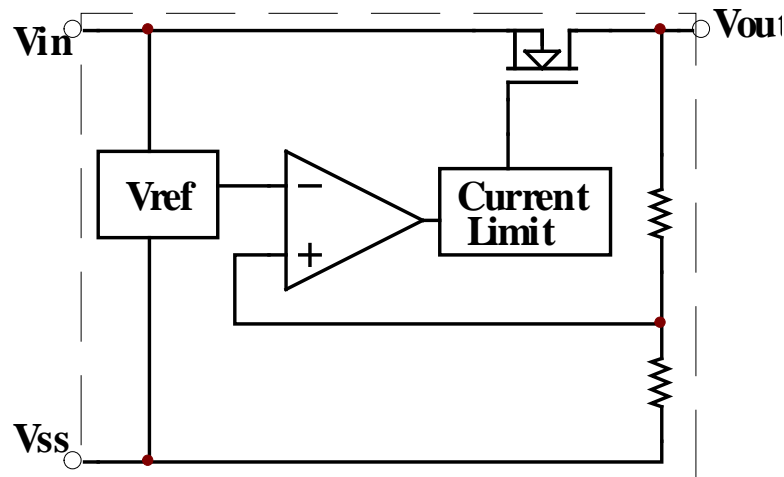
| 项目 | 符号   | 参数     | 极限值               | 单位      |
|----|------|--------|-------------------|---------|
| 电压 | Vin  | 输入电压   | 12                | V       |
|    | Vout | 输出电压   | Vss-0.3 ~Vout+0.3 | V       |
| 电流 | Iout | 输出电流   | 450               | mA      |
| 功耗 | PD   | 最大允许功耗 | 500               | mW      |
| 温度 | Tw   | 工作温度   | -25~+80           | °C      |
|    | Tc   | 存储温度   | -40~+125          | °C      |
|    | Th   | 焊接温度   | 260               | °C, 10s |



## ■ 型号选择

| 型号     | 输出电压 | 封装形式   |
|--------|------|--------|
| HT7828 | 2.8V | SOT-89 |
| HT7830 | 3.0V |        |
| HT7833 | 3.3V |        |
| HT7836 | 3.6V |        |
| HT7850 | 5.0V |        |

## ■ 功能框图



## ■ 电学特性 (C<sub>in</sub>=C<sub>out</sub>=10uF, Ta=25°C除特别指定)

| 特性           | 符号  | 条件  | 最小值                           | 典型值                  | 最大值                           | 单位     |
|--------------|---|---|-------------------------------|----------------------|-------------------------------|--------|
| 输出电压         | V <sub>OUT</sub> (E)  | I <sub>OUT</sub> =1mA, V <sub>IN</sub> = V <sub>OUT</sub> (T)+2V                                    | V <sub>OUT</sub> (T)<br>*0.98 | V <sub>OUT</sub> (T) | V <sub>OUT</sub> (T)*<br>1.02 | V      |
| 最大输出电流       | I <sub>OUT</sub> (max)                                      | V <sub>IN</sub> =V <sub>OUT</sub> (T)+2V  | 300                           | 450                  |                               | mA     |
| 低压差          | V <sub>DIF</sub>  | I <sub>OUT</sub> =100mA, ΔV <sub>OUT</sub> =2%  |                               | 195                  | 300                           | mV     |
| 静态电流         | I <sub>SS</sub>   | V <sub>IN</sub> = V <sub>OUT</sub> (T)+2V   |                               | 2                    |                               | μA     |
| 负载稳定度        | ΔV <sub>OUT</sub>   | V <sub>IN</sub> = V <sub>OUT</sub> (T)+2V, 1mA ≤ I <sub>OUT</sub> ≤ 300mA                           |                               | 37                   |                               | mV     |
| 输入稳定度        | ΔV <sub>OUT</sub> /(ΔV <sub>IN</sub><br>•V <sub>OUT</sub> ) | I <sub>OUT</sub> =1mA,<br>V <sub>OUT</sub> (T)+0.5V ≤ V <sub>IN</sub> ≤ 8V                          |                               | 0.1                  | 0.2                           | %/V    |
| 输出电压<br>温度系数 | ΔV <sub>OUT</sub> /(ΔTa<br>•V <sub>OUT</sub> )              | V <sub>IN</sub> = V <sub>OUT</sub> (T)+2V, I <sub>OUT</sub> =10mA<br>-40°C ≤ Ta ≤ 85°C              |                               | ±100                 |                               | ppm/°C |
| 输入电压         | V <sub>IN</sub>   |   |                               | --                   | 10                            | V      |
| 纹波抑制比        | PSRR  | V <sub>IN</sub> = [V <sub>OUT</sub> (T)+1]V +1V <sub>p-p</sub> AC<br>I <sub>OUT</sub> =10mA, f=1kHz |                               | 65                   |                               | dB     |

注：当 V<sub>IN</sub>=V<sub>OUT</sub>+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<sub>DIF</sub>。



## ■ 测试电路

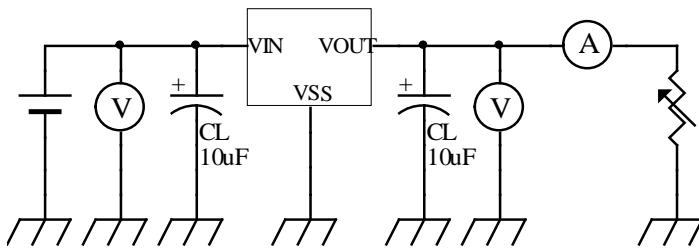


图 1

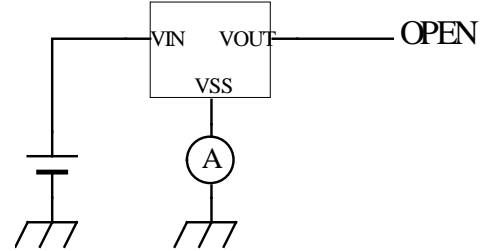
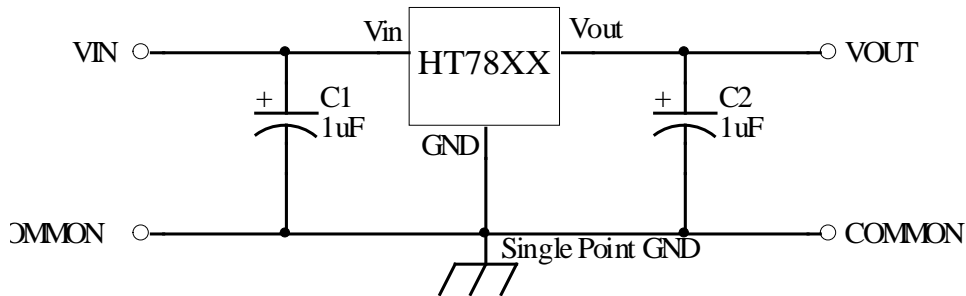
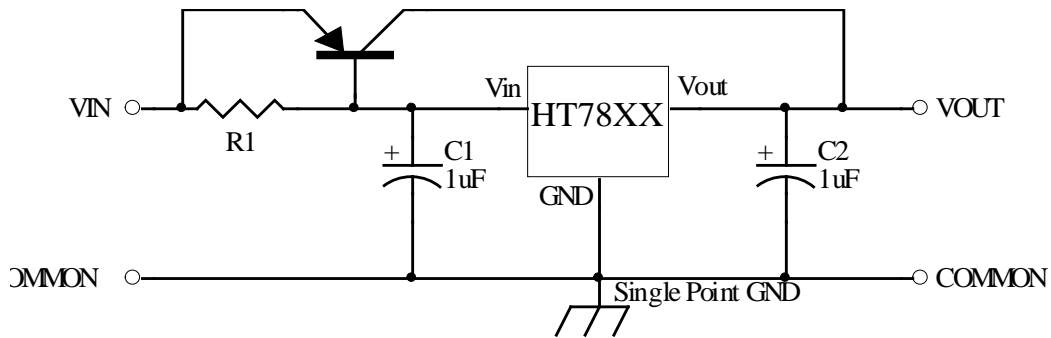


图 2

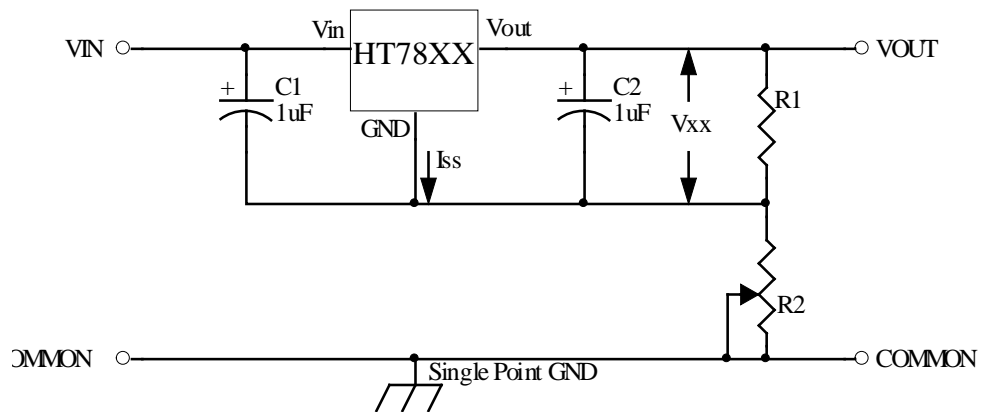
### 1、基本电路



### 2、大输出电流正电压型电压调整器



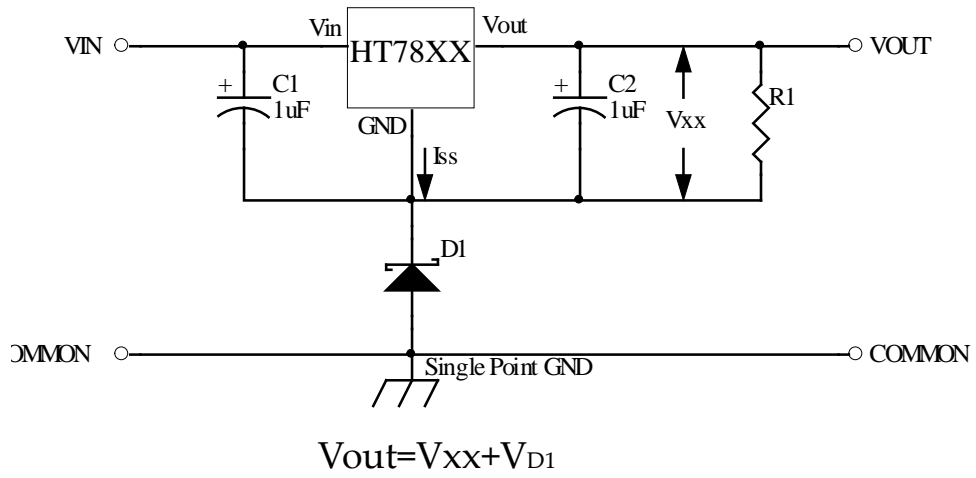
### 3、提高输出电压值电路 (1)



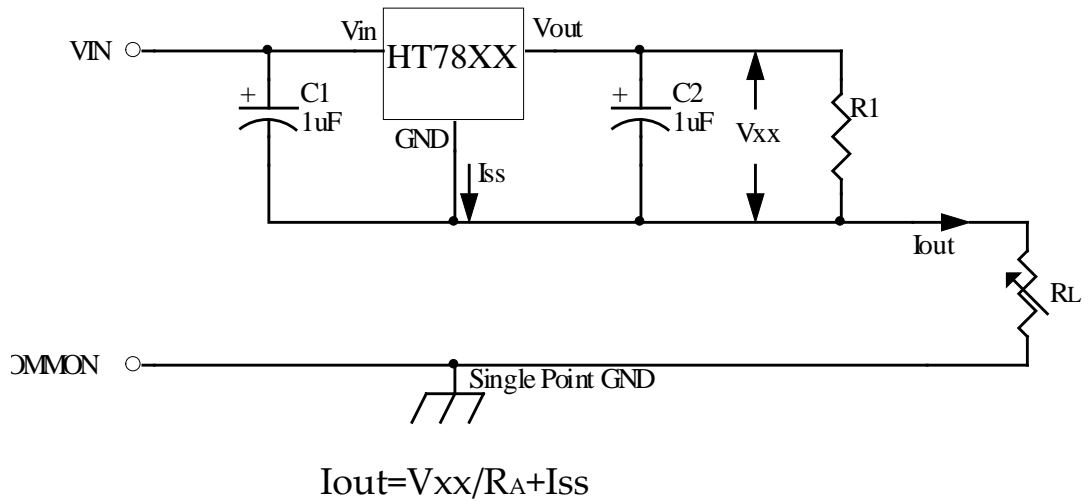
$$V_{out} = V_{xx}(1 + R_2/R_1) + I_{ss}R_2$$



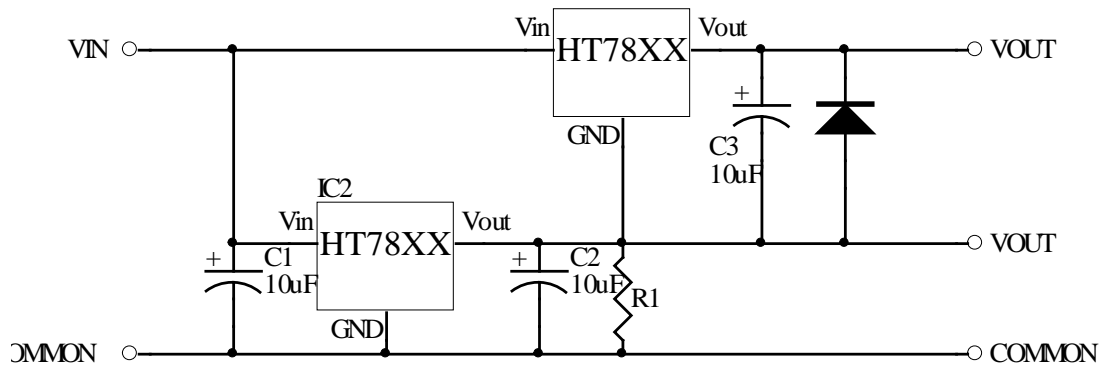
#### 4、提高输出电压电路 (2)



#### 5、恒流调整器



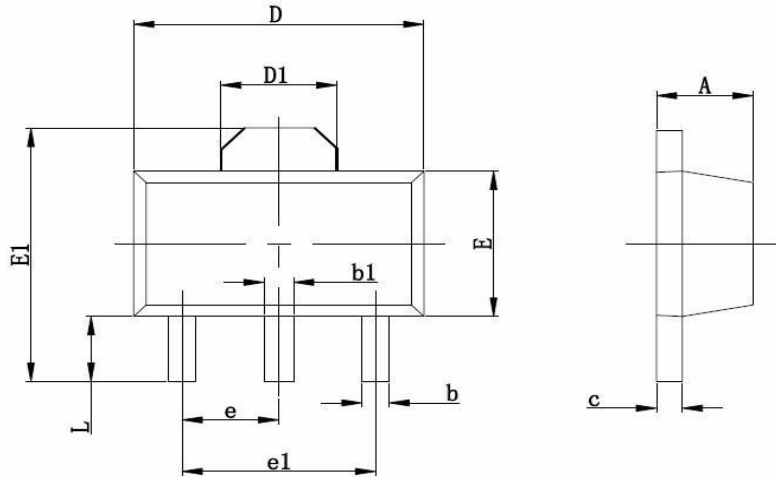
#### 6、双输出





■ 封装信息

**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 |



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