



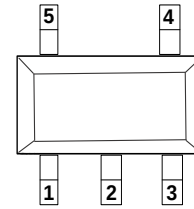
## 概述

LP2985A 是一款高精度、低噪声、低压差、保护功能齐全的 LDO 线性稳压器，输入电压最高可达到 16V，输出电压精度在 $\pm 2\%$ 。峰值电流最大能达到150MA, 流过热电路保护和快速动态响应。ON/OFF 电路的使能脚能够关断输出电压，从而大大降低系统功耗。

## 特点

- 最大输出电流：150MA
- 低压差：104mV@ IOUT =100mA
- 工作电压范围：2.5-16V
- 输出电压精度： $\pm 2\%$
- 低静态功耗：65uA（典型值）
- 电源调整率：30mV（典型值）
- 温度稳定性： $\leq 0.5\%$
- 热关断保护：164℃

## 封装形式



SOT-23-5L

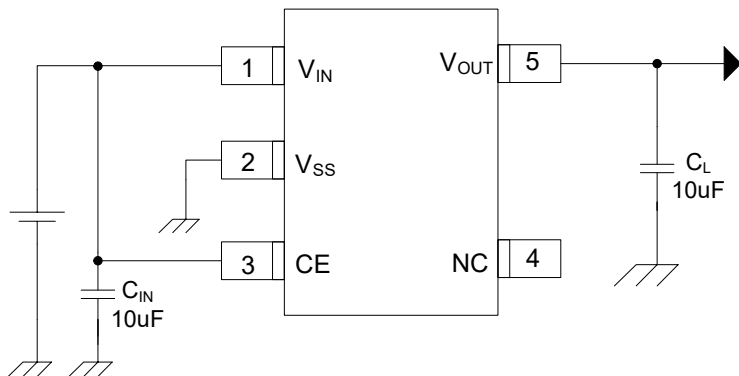
| PIN脚位     | 符号        | 功能说明  |
|-----------|-----------|-------|
| SOT-23-5L |           |       |
| 1         | $V_{IN}$  | 电源输入端 |
| 2         | $V_{SS}$  | 地     |
| 3         | CE        | 使能端   |
| 4         | NC        | 悬空    |
| 5         | $V_{OUT}$ | 电源输出端 |

## 应用场合

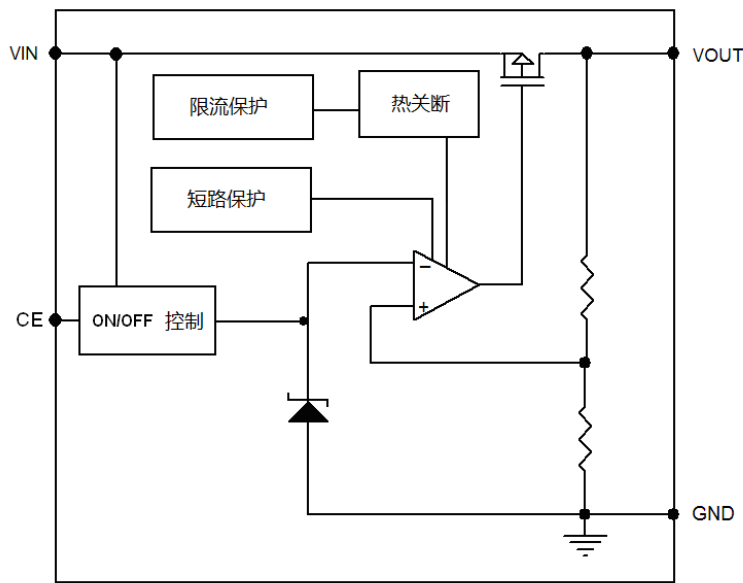
- 消费类和工业设备供电
- 开关电源的后级稳压
- 驱动控制器



典型应用图



功能框图



绝对最大额定值

| 参数     |           | 符号        | 范围                           | 单位          |
|--------|-----------|-----------|------------------------------|-------------|
| 输入电压   |           | $V_{IN}$  | 16                           | V           |
| 输出电流   |           | $I_{OUT}$ | 200                          | mA          |
| 输出电压   |           | $V_{OUT}$ | $V_{SS}-0.3 \sim V_{IN}+0.3$ | V           |
| 使能电压   |           | $V_{CE}$  | $V_{SS}-0.3 \sim V_{IN}+0.3$ | V           |
| 耗散功率   | SOT-23-5L | $P_D$     | 250                          | mW          |
| 工作温度范围 |           | $T_{OPR}$ | $-40 \sim +125$              | $^{\circ}C$ |
| 存储温度范围 |           | $T_{STG}$ | $-40 \sim +150$              | $^{\circ}C$ |
| 焊接温度   |           |           | $260^{\circ}C, 4sec$         |             |



## 电气参数

LP2985A SOT-23-5L  $V_{OUT}(T)=3.3V$  ( $C_i=C_o=10\mu F$ ,  $T_a=25^\circ C$  除特别指定)

| 特性           | 符号                                               | 测试条件                                                                        | 最小值                     | 典型值       | 最大值                     | 单位              |
|--------------|--------------------------------------------------|-----------------------------------------------------------------------------|-------------------------|-----------|-------------------------|-----------------|
| 输出电压         | $V_{OUT}(E)$                                     | $I_{OUT}=1mA$ , $V_{IN}=5V$ ,<br>$V_{CE}=1.6V$                              | $V_{OUT(T)}^*$<br>0.975 |           | $V_{OUT(T)}^*$<br>1.025 | V               |
| 最大输出电流       | $I_{OUT} (max)$                                  | $V_{IN}=4.3V$                                                               | —                       | 150       | —                       | mA              |
| 负载稳定度        | $\Delta V_{OUT}$                                 | $V_{IN}=V_{CE}=4.3V$ ,<br>$1mA \leq I_{OUT} \leq 100mA$                     | —                       | 8         | —                       | mV              |
| 输入稳定度        | $\Delta V_{OUT}/(\Delta V_{IN} \bullet V_{OUT})$ | $I_{OUT}=10mA$ ,<br>$4.3V \leq V_{IN} \leq 15V$                             | —                       | 0.39      | —                       | %/V             |
| 跌落压差         | $V_{drop1}$                                      | $V_{IN}=4.3V$ , $I_{OUT}=10mA$                                              |                         | 30        |                         | mV              |
|              | $V_{drop2}$                                      | $V_{IN}=4.3V$ , $I_{OUT}=100mA$                                             |                         | 310       |                         | mV              |
| 静态电流         | $I_{SS1}$                                        | $V_{IN}=V_{CE}=5V$                                                          | —                       | 50        | —                       | $\mu A$         |
|              | $I_{SS2}$                                        | $V_{IN}=5V$ , $V_{CE}=V_{SS}$                                               | —                       | —         | 1                       | $\mu A$         |
| CE 输入电压      | $V_{CEH}$                                        |                                                                             | $0.3V_{IN}$             | —         | $V_{IN}$                | V               |
|              | $V_{CEL}$                                        |                                                                             | 0                       | —         | 0.5                     | V               |
| CE 输入电流      | $I_{CE}$                                         | $V_{CE}=0V$ to $V_{IN}$                                                     | —                       | —         | 1                       | $\mu A$         |
| 纹波抑制比        | PSRR                                             | $V_{IN}=V_{CE}=4.3V+1V_{p-pAC}$<br>$I_{OUT}=10mA$ , $f=1kHz$                | —                       | 40        | —                       | dB              |
| 输出电压<br>温度系数 | $\Delta V_{OUT}/(\Delta T_a \bullet V_{OUT})$    | $V_{IN}=V_{CE}=5V$ , $I_{OUT}=10mA$<br>$0^\circ C \leq T_a \leq 60^\circ C$ | —                       | $\pm 270$ | —                       | ppm/ $^\circ C$ |
| 输入电压         | $V_{IN}$                                         |                                                                             | 1.8                     |           | 15                      | V               |

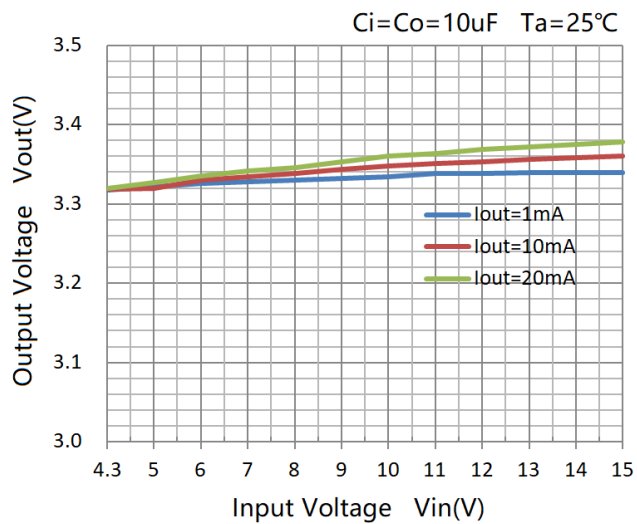
### 注：

- 1、 $V_{OUT}(T)$ ：规定的输出电压。
- 2、 $V_{OUT}(E)$ ：有效输出电压。
- 3、 $I_{OUT}(max)$ ：缓慢增加输出电流，当输出电压 $\leq V_{OUT}(E)*95\%$ 时的电流值。
- 4、 $V_{drop} = V_{IN1} - V_{OUT}(E)s$   
 $V_{IN1}$  = 逐渐减小输入电压，当输出电压降为  $V_{OUT}(E)1$  的 98% 时的输入电压。  
 $V_{OUT}(E)s = V_{OUT}(E)1 * 98\%$ ;  
 $V_{OUT}(E)1$  = 当  $V_{IN} = V_{OUT}(T) + 1V$ ， $I_{out}$  = 某一数值时的输出电压值。

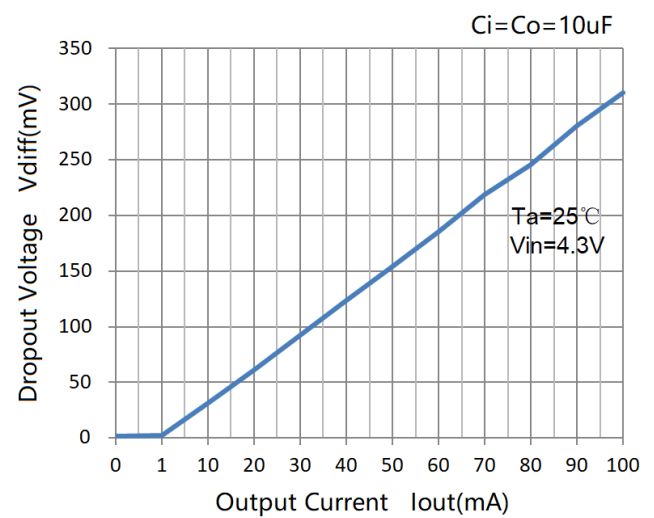


## 特性曲线 (3.3V输出)

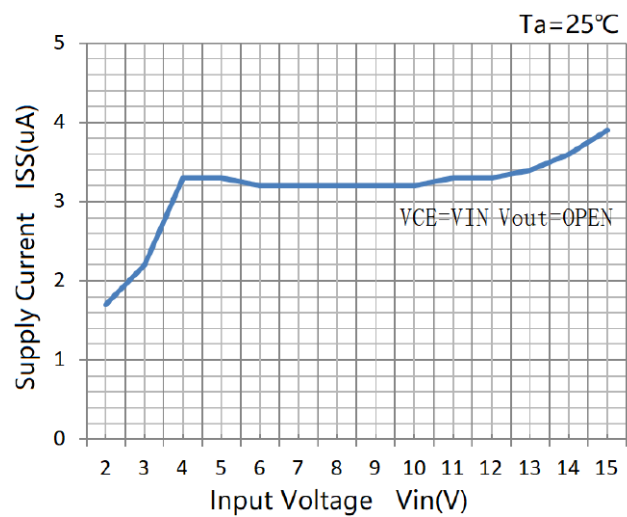
### 1、输出电压和输入电压



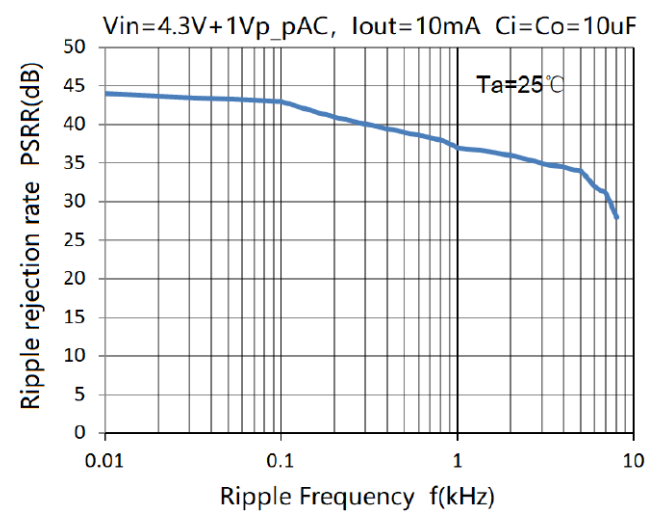
### 2、Dropout 电压和输出电流



### 3、输入电压和静态电流



### 4、纹波抑制





## 应用信息

### 1. 输入电容的选择

建议选用10uF的钽电容，可以兼容绝大多数的设备。

### 2. 输出电容的选择

输出电容对系统的稳定性有着至关重要的影响。输出电容的选用必须同时考虑容值和ESR(等效串联电阻)这两点。

LP2985A使用的钽电容容值最小为10uF，电容ESR阻值应小于0.5Ω。增大输出电容有助于提高系统稳定性和瞬态响应。

### 3. 负载线性度

LP2985A的输出电压指输出端管脚和地面之间的电压。在某些情况下,线电阻负载上的电压可能引起负载电压的误读。为了获得最佳的负载线性度,采取一些预防措施是很有必要的。图1显示了一个典型应用电路。Rt1和Rt2也有阻抗。很明显,V<sub>LOAD</sub>小于输出电压V<sub>out</sub>。在这种情况下, R<sub>LOAD</sub>两端的负载线性度将小于规格书参数表中的数据。为了改善这种情况,应该将负载直接接在输出和地两端。

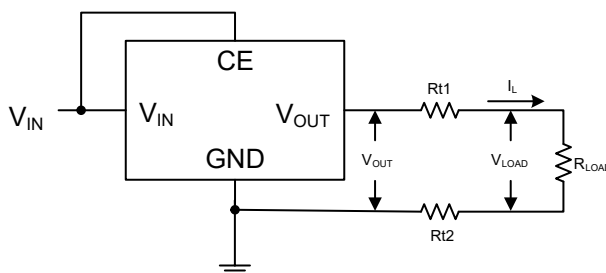
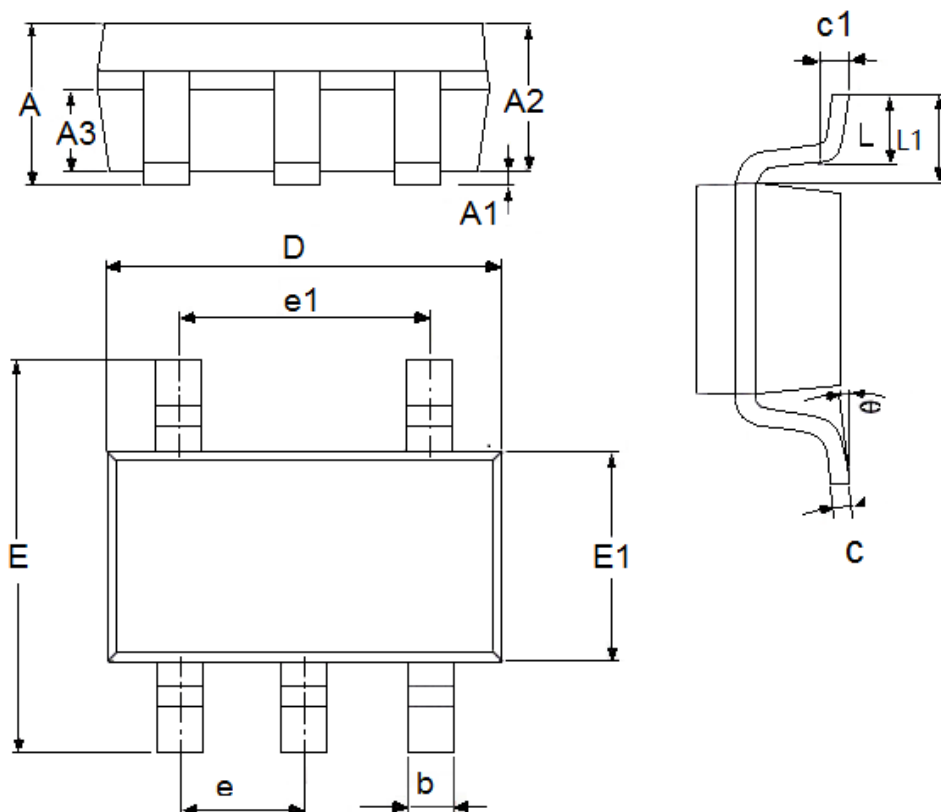


图1. 典型应用电路图



## 封装信息

### ● SOT-23-5L



| 参数 | 尺寸 (mm)   |      | 尺寸 (Inch)   |        |
|----|-----------|------|-------------|--------|
|    | 最小值       | 最大值  | 最小值         | 最大值    |
| A  | 1.05      | 1.45 | 0.0413      | 0.0571 |
| A1 | 0         | 0.15 | 0.0000      | 0.0059 |
| A2 | 0.9       | 1.3  | 0.0354      | 0.0512 |
| A3 | 0.6       | 0.7  | 0.0236      | 0.0276 |
| b  | 0.25      | 0.5  | 0.0098      | 0.0197 |
| c  | 0.1       | 0.23 | 0.0039      | 0.0091 |
| D  | 2.82      | 3.05 | 0.1110      | 0.1201 |
| e1 | 1.9(TYP)  |      | 0.0748(TYP) |        |
| E  | 2.6       | 3.05 | 0.1024      | 0.1201 |
| E1 | 1.5       | 1.75 | 0.0512      | 0.0689 |
| e  | 0.95(TYP) |      | 0.0374(TYP) |        |
| L  | 0.25      | 0.6  | 0.0098      | 0.0236 |
| L1 | 0.59(TYP) |      | 0.0232(TYP) |        |
| θ  | 0         | 8°   | 0.0000      | 8°     |
| c1 | 0.2(TYP)  |      | 0.0079(TYP) |        |



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