



概述

HSPX3819 系列是一组低压差 (LDO) 转换器，具有 2.8V 至 20V 宽电压输入范围、低压差、低功耗和小型化封装的等特性，输出电压范围为 3.0-5.0V。

HSPX3819 低至 1.8uA 低静态电流特性，电路也带有CE使能控制端口，可使电路进入休眠状态。特别适合用于电池供电、长时间待机系统设备应用，能帮助降低系统设备的待机功耗，有效延长待机时间和电池使用寿命。

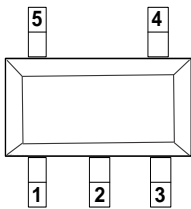
特点

- 输入输出电压差低
- 温度漂移系数小
- 耐压 20V
- 工作静态电流 1.8μA，最大 4μA
- 休眠静态电流最大 0.2μA
- 输出电压精度：±2%
- 输出过载保护
- 带有 CE 使能控制端口
- 工作温度 -20℃ ~+105℃

应用场合

- 手持式、电池供电设备
- 通信设备
- 音频、视频设备
- 低功耗微处理器
- 笔记本电脑、掌上型电脑和 PDA
- 车载导航系统
- 工业控制
- 智能家居

封装脚位描述



SOT-23-5L

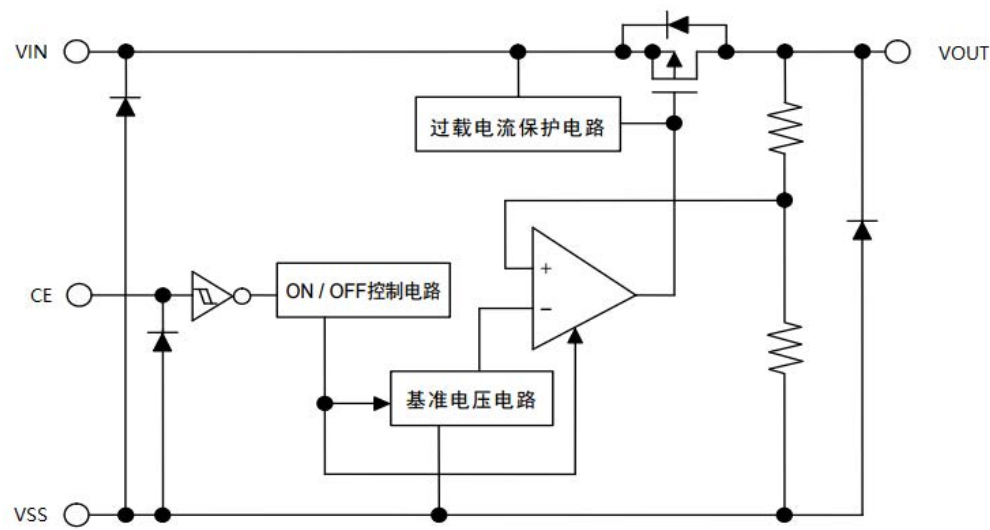
| PIN脚位     | 符号               | 功能说明  |
|-----------|------------------|-------|
| SOT-23-5L |                  |       |
| 1         | V <sub>IN</sub>  | 电源输入端 |
| 2         | V <sub>SS</sub>  | 地     |
| 3         | CE               | 使能端   |
| 4         | NC               | 悬空    |
| 5         | V <sub>OUT</sub> | 电源输出端 |

型号介绍

| 型号名                 | 封装        | 输出电压 | 包装信息   |
|---------------------|-----------|------|--------|
| HSPX3819M5-L-3-0/TR | SOT-23-5L | 3.0V | 3000/盘 |
| HSPX3819M5-L-3-3/TR | SOT-23-5L | 3.3V | 3000/盘 |
| HSPX3819M5-L-5-0/TR | SOT-23-5L | 5.0V | 3000/盘 |



典型应用图



绝对最大额定值

| 参数     | 符号        | 范围                           | 单位 |
|--------|-----------|------------------------------|----|
| 输入电压   | $V_{IN}$  | -0.3 ~ +22                   | V  |
| 输出电流   | $I_{OUT}$ | 500                          | 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   | $P_D$     | 200                          | mW |
| 工作温度范围 | $T_{OPR}$ | -40 ~ +80                    | °C |
| 存储温度范围 | $T_{STG}$ | -40 ~ +150                   | °C |
| 焊接温度   |           | 260°C, 10sec                 |    |



电气参数(无特别说明情况下,  $T_A=25^{\circ}\text{C}$ ,  $C_{IN}=C_{OUT}=1\mu\text{F}$ )

| 参数说明     | 符号   | 测试条件   | 最小值 | 典型值       | 最大值 | 单位                      |
|----------|--|--|-----|-----------|-----|-------------------------|
| 输入电压     | $V_{IN}$   |  | 3.0 |           | 20  | V                       |
| 输出电压     | $V_{OUT}$  |  | 3.0 |           | 5.0 | V                       |
| 输出电压精度   |  | $I_{OUT}=1\text{mA}$   | -2  |           | +2  | %                       |
| 输出电流     | $I_{OUT}$  | $V_{IN}=V_{OUT}+2.0\text{V}$   |     | 350       |     | mA                      |
| 负载调整率    | $\Delta V_{OUT}$                                 | $V_{IN}=V_{OUT}+2.0\text{V}$<br>$1\text{mA}\leq I_{OUT}\leq 150\text{mA}$                                      |     | 15        |     | mV                      |
| 线性调整率    | $\frac{\Delta V_{OUT}}{V_{OUT}}/\Delta V_{IN}$   | $V_{OUT}+1.0\text{V}\leq V_{IN}\leq 20\text{V}$<br>$I_{OUT}=10\text{mA}$                                       |     | 0.015     | 0.2 | %/V                     |
| 低压差      | $V_{DIF}^{①}$                                    | $I_{OUT}=100\text{mA}, V_{OUT}=3.3\text{V}$  |     | 200       |     | mV                      |
| 静态电流     | $I_{SS}$   | $V_{CE}=V_{IN}$  |     | 1.8       | 4   | $\mu\text{A}$           |
| 休眠电流     | $I_{STANDBY}$                                    | $V_{CE}=V_{SS}$  |     |           | 0.2 | $\mu\text{A}$           |
| 使能高电平    | $V_{CEH}$  | $V_{IN}=V_{OUT}+2.0\text{V}$   | 1.7 |           | 24  | V                       |
| 使能低电平    | $V_{CEL}$  | $V_{IN}=V_{OUT}+2.0\text{V}$   | 0   |           | 0.3 | V                       |
| 短路电流     | $I_{SHORT}$                                      | $V_{IN}=V_{OUT}+2.0\text{V}$   |     | 400       |     | mA                      |
| 温度系数     | $\frac{\Delta V_{OUT}}{\Delta T_A}\cdot V_{OUT}$ | $V_{IN}=V_{OUT}+2.0\text{V}$<br>$I_{OUT}=10\text{mA}$<br>$-40^{\circ}\text{C}\leq T_A\leq 125^{\circ}\text{C}$ |     | $\pm 100$ |     | ppm/ $^{\circ}\text{C}$ |
| 输出有源放电电阻 | $R_{DIS}^{②}$                                    | $V_{CE}<0.5\text{V}$   |     | 300       |     |                         |

注:

①当  $V_{IN}=V_{OUT}+2.0\text{V}$ , 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  $V_{DIF}$ 。

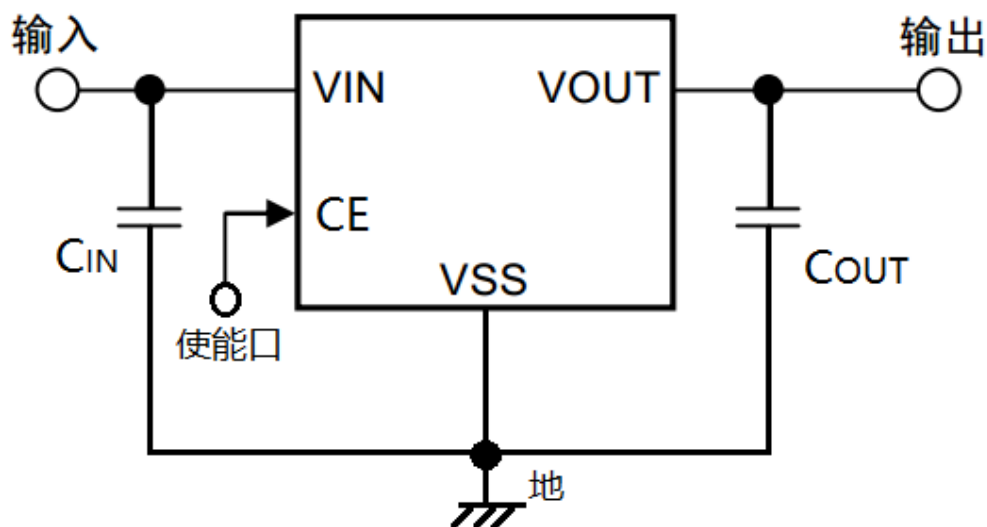
②输出有源放电电阻  $R_{DIS}$ , 随着  $V_{IN}$  电压增大而降低。



## 应用说明

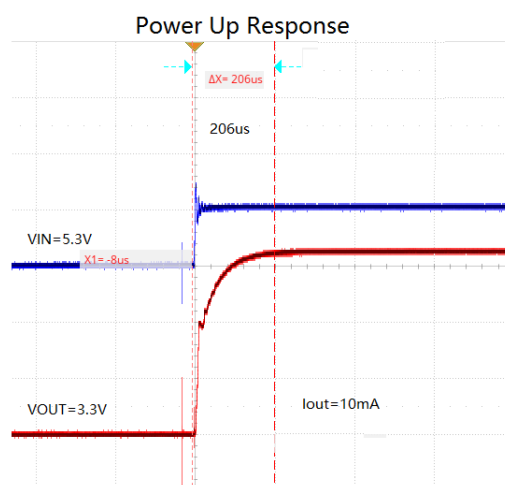
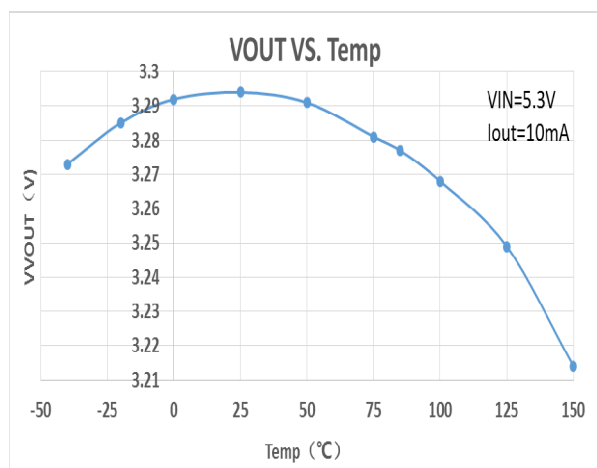
- 1、应用时尽量将电容接到 VIN 和 VOUT 脚位附近。
- 2、电路内部使用了相位补偿电路和利用输出电容的 ESR 来补偿。所以输出到地一定要接大于或者等于  $1\mu\text{F}$  的电容器。
- 3、注意输入输出电压、负载电流的使用条件，避免 IC 内部的功耗超出封装允许的最大功耗值。

## 应用电路



1.  $C_{IN}$  用于稳定输入电容
2.  $C_{OUT}$  可以使用的大于或等于  $1\mu\text{F}$  的陶瓷电容

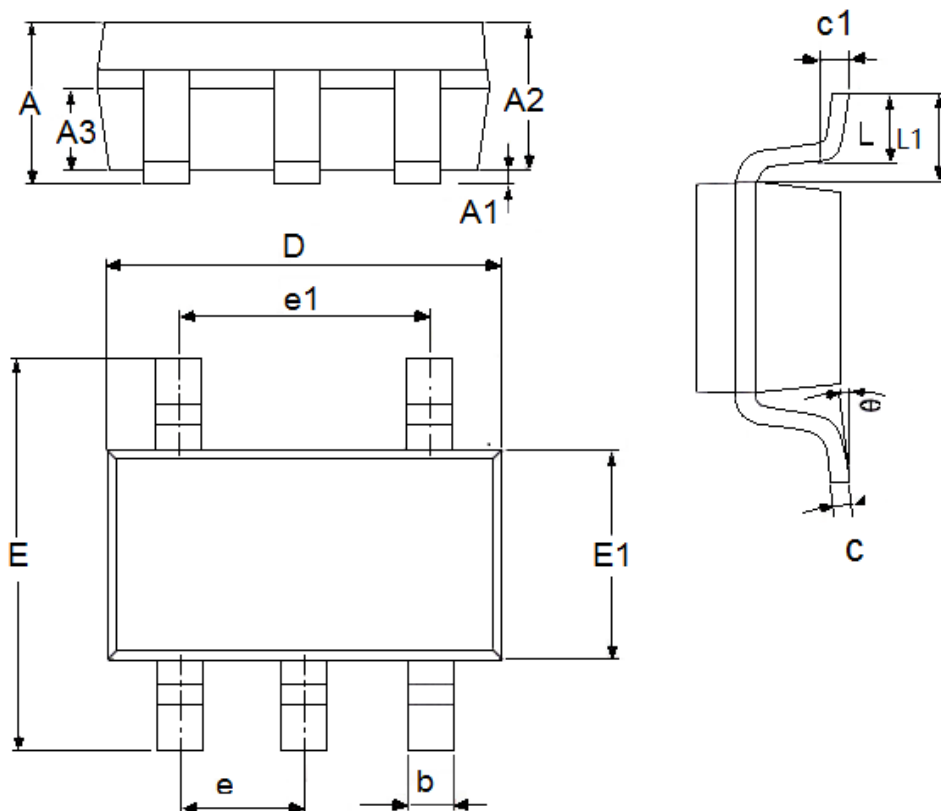
## 特性曲线





## 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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