



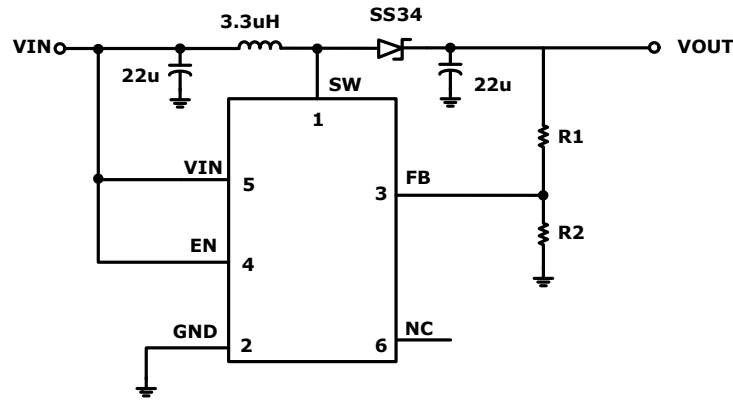
产品概述

HFP6291LR-G1是一款微小、高效率、升压型 DC/DC 调整器。电路由电流模 PWM 控制环路，误差放大器，斜波补偿电路，比较器和功率开关等模块组成。该芯片可在较宽负载范围内高效稳定的工作，内置一个 4A 的功率开关和软启动保护电路。高达 93% 的转换效率能够高效的延长电池寿命。可以通过调整两个外加电阻来设定输出电压。

用途

- 便携式移动设备
- 无线通信设备
- 电池后备电源

典型应用电路



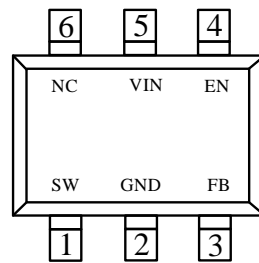
产品特点

- 效率高达 93%
- 输出电压可升到 28V
- 输入电压范围 2-24V
- 1.2MHz 的固定开关频率
- 自动 PWM/PFM 切换模式
- 功率通路支持短路保护

封装

- SOT-23-6L

引脚配置

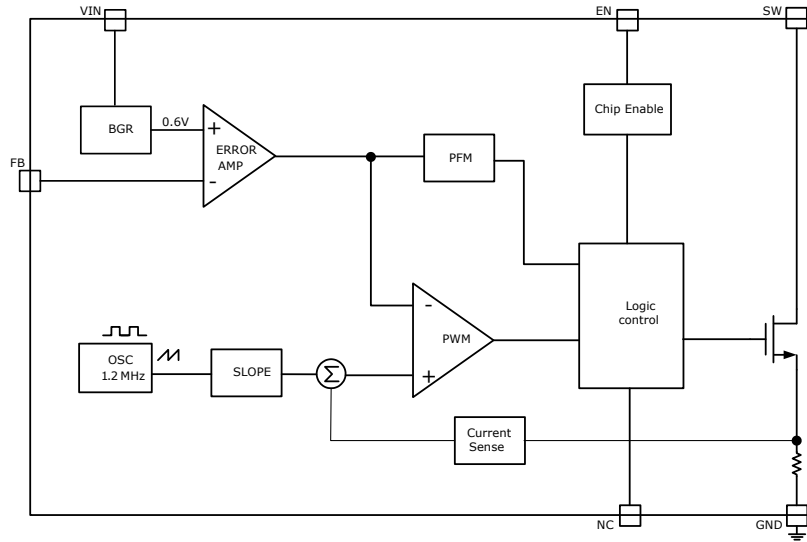


SOT-23-6L

| 脚位顺序 | 引脚名称 | 功能描述 |
|------|------|---------|
| 1 | SW | 开关引脚 |
| 2 | GND | 接地端 |
| 3 | FB | 反馈端 |
| 4 | EN | 使能端，高有效 |
| 5 | VIN | 输入端 |
| 6 | NC | 悬空 |



功能框图



绝对最大额定值

| 项目 | 符号 | 绝对最大额定值 | 单位 |
|---------|------|-----------------------------|----|
| 输入电压 | VIN | $V_{SS}-0.3 \sim V_{SS}+24$ | V |
| 输出电压 | VOUT | $V_{SS}-0.3 \sim V_{SS}+28$ | |
| | VSW | $V_{SS}-0.3 \sim V_{SS}+28$ | |
| SW端开关电流 | ISW | 4 | A |
| 容许功耗 | PD | 250 | mW |
| 工作环境温度 | Topr | -40 ~ +80 | °C |
| 保存温度 | Tstg | -40 ~ +125 | |

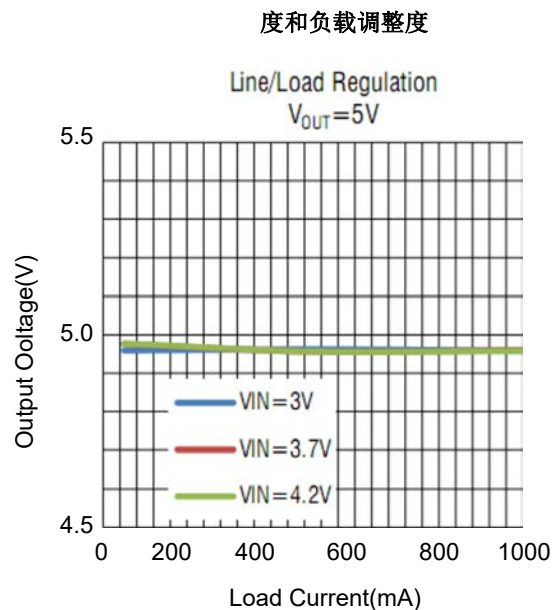
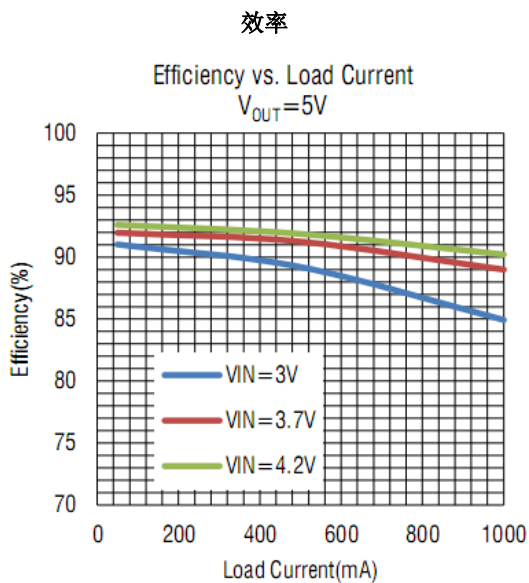


电学特性参数

(VIN=5V, Ta=25°C, 除非另有指定)

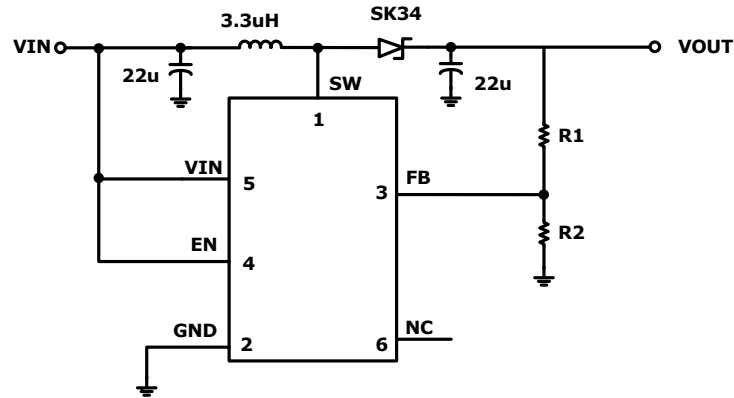
| 项目 | 符号 | 条件 | 最小值 | 典型值 | 最大值 | 单位 |
|---------|----------|----------------------------|-----|------|-----|-----|
| 输出电压 | VOUT | - | 2.5 | | 28 | V |
| 输入电压 | VIN | - | 2 | - | 24 | |
| 输入欠压保护 | UVLO_F | | 1.7 | | 2 | V |
| 欠压保护迟滞 | UVLO_HYS | - | - | 100 | - | mV |
| 关断电流 | IOFF | VEN<VENL | - | 0.01 | 1 | μA |
| 无负载电流 | IC | VIN=3.6V, VOUT=5V | - | 100 | - | μA |
| 反馈基准电压 | VR | VOUT=5V | 588 | 600 | 612 | mV |
| 开关频率 | FS | IOUT=1.2A | - | 1.2 | - | MHz |
| 最大占空比 | DMAX | VFB=0V | 85 | - | - | % |
| 功率管内阻 | RDSON | VIN=3.6V, ISW=2A | - | 80 | 150 | mΩ |
| 开关电流 | ISW | VIN=4.2V | - | 4 | - | A |
| 线性调整度 | ΔVLINE | IOUT=1.2A, VIN=3V 到 4.2V | - | 0.4 | - | % |
| 负载调整度 | ΔVLOAD | VIN=3.6V, IOUT=10mA 到 1.2A | - | 0.45 | - | % |
| EN 高电平 | VENH | VIN=3.6V | 1.2 | - | - | V |
| EN 低电平 | VENL | VIN=3.6V | - | - | 0.4 | V |
| SW 端漏电流 | ISW_L | VSW=20V | | | 1 | uA |
| 过热关断温度 | TSHD | VIN=3.6V, IOUT=10mA | - | 160 | - | °C |

典型特性曲线





应用信息



输出电压的设置

通过 FB 的外部电阻分压，输出电压值可根据以下公式计算：

$$V_{OUT} = V_{FB} \times \left(1 + \frac{R1}{R2} \right), \text{ R1 取百 K 级电阻}$$

电感选择

推荐电感值范围选择 3.3uH 到 22uH。电感选择主要考虑较小的 DCR 电阻以确保较高的效率。

输入输出电容

输入电容和输出电容的容值建议使用 22uF 以上，为了得到更小的输出纹波，建议输出使用陶瓷电容。

二极管

续流二极管请使用快速响应的肖特基二极管，正向压降越低则负载效率越高。针对不同的输出电压，注意续流二极管的反向耐压选择要足够高 (>VOUT+5V) 以防止反向漏电或者击穿。

PCB 布局

为了得到更好的使用效果，PCB 布局主要注意事项如下：

输入电容和输出电容尽可能靠近芯片引脚；

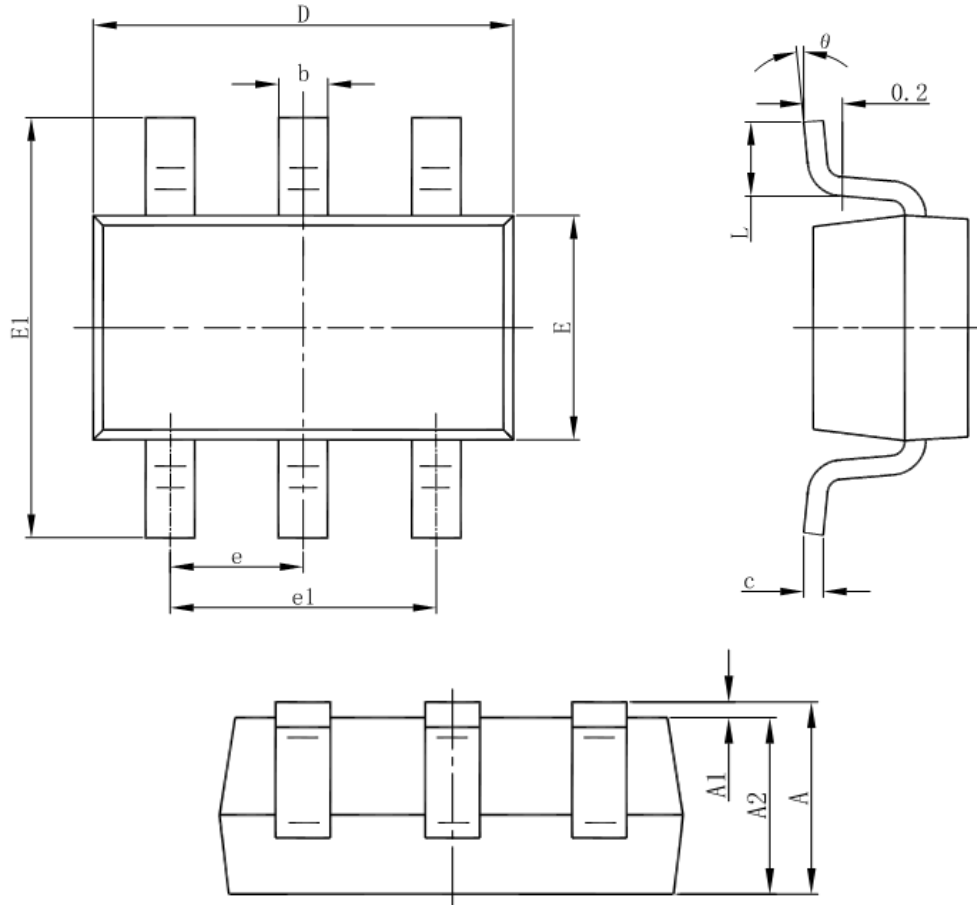
从 VIN 到电感 L 再到 VOUT 的功率通路，走线尽可能短而粗；

SW 引脚有高频开关信号，注意和板上其他元件的隔离。



封装信息

SOT-23-6L



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 1.050 | 1.250 | 0.041 | 0.049 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 1.050 | 1.150 | 0.041 | 0.045 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 2.820 | 3.020 | 0.111 | 0.119 |
| E | 1.500 | 1.700 | 0.059 | 0.067 |
| E1 | 2.650 | 2.950 | 0.104 | 0.116 |
| e | 0.950(BSC) | | 0.037(BSC) | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.300 | 0.600 | 0.012 | 0.024 |
| θ | 0° | 8° | 0° | 8° |



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