



BCD SEMICONDUCTOR
MANUFACTURING LIMITED

恒压恒流控制 IC -AP4313

Mobile: 13825223357

2008-3-6

AP4313的性能特点

□ 主要特性

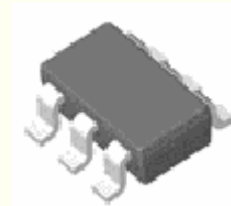
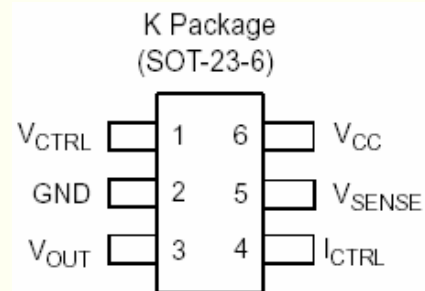
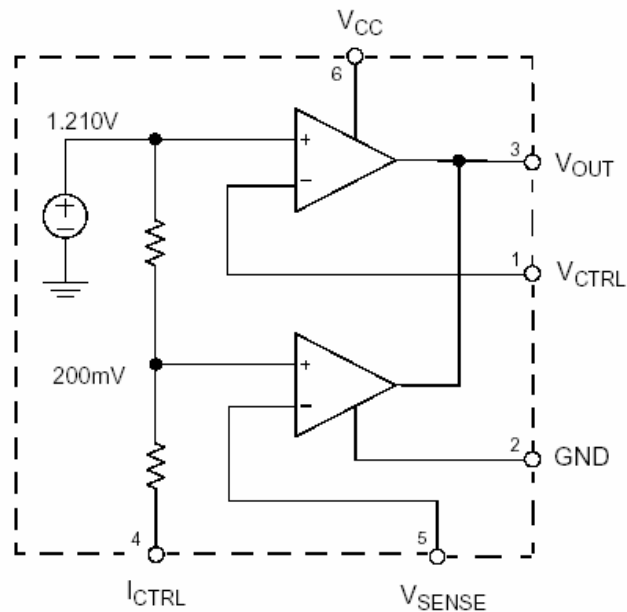
- §. 恒压恒流控制器
- §. 内置高精度电压基准1.21V
(精度: 1%)
- §. 外围元件少
- §. 供电电压: 2.5V~ 18V
- §. 封装 : SOT-23-6

□ 主要应用

- △. 充电器(旅充)
- △. 开关电源

□ 主要竞争对手

- △. ST: TSM1051



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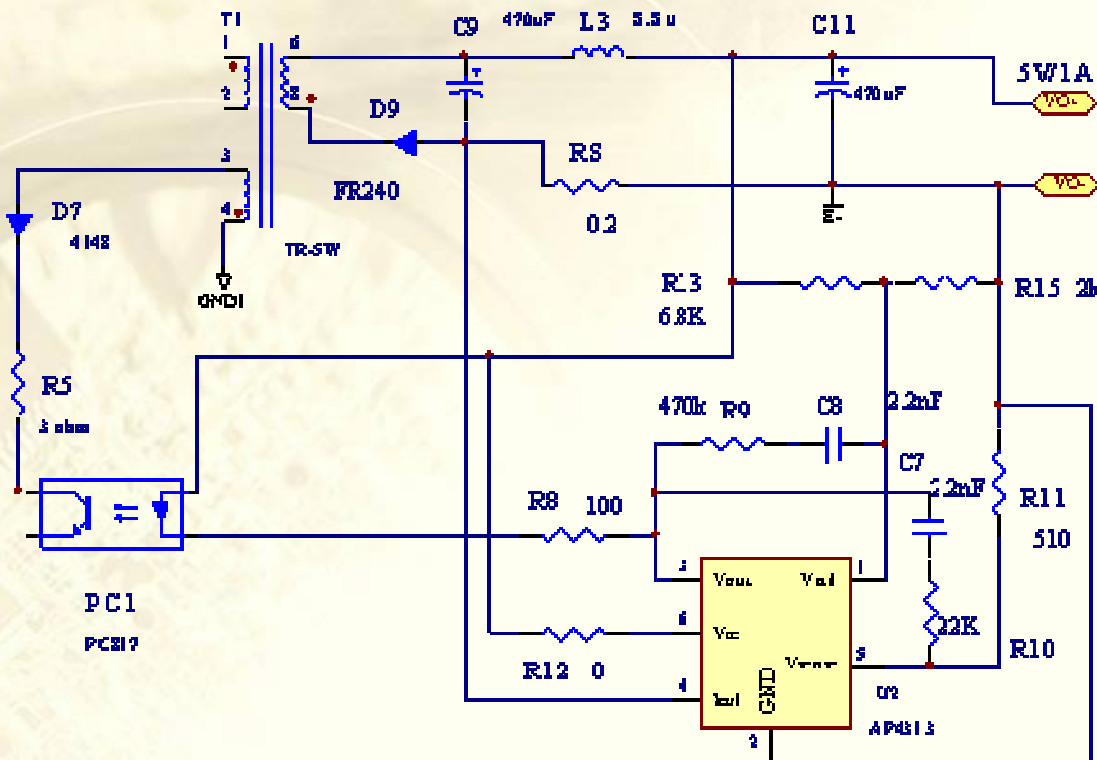
AP4313 vs TSM1051(ST)

Table 1

参数	AP4313	TSM1051
VCC (V)	2.5V~18V	2.5V~12V
Icc (mA)	0.6mA(Typ)	1.1mA(Typ)
Vref (1.210V)	1.0%	1.0%
Vsense(200mV)	2.0%	2.0%
封装类型	SOT-23-6	SOT-23-6

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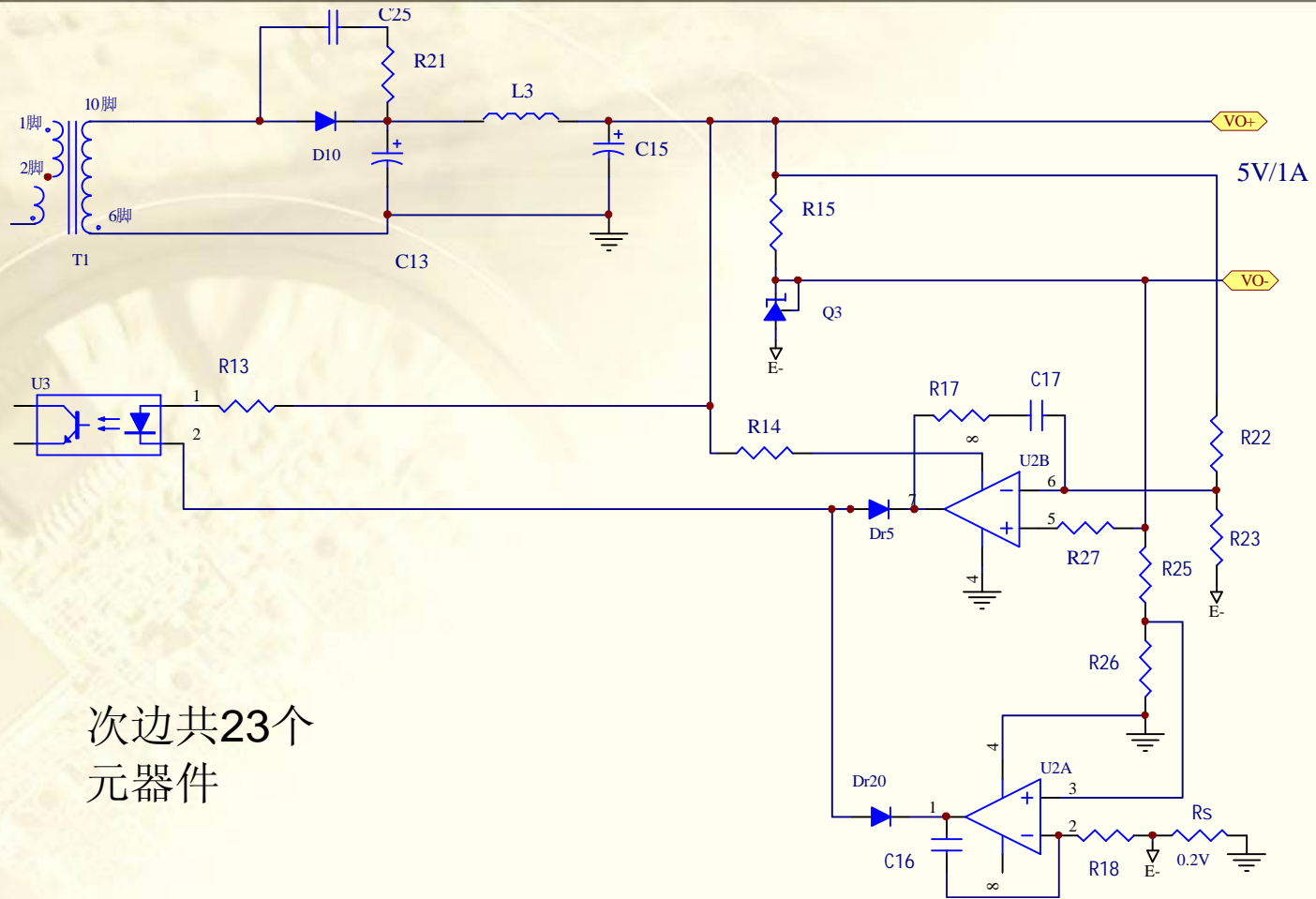
AP4313的充电器方案



次边共15个
元器件

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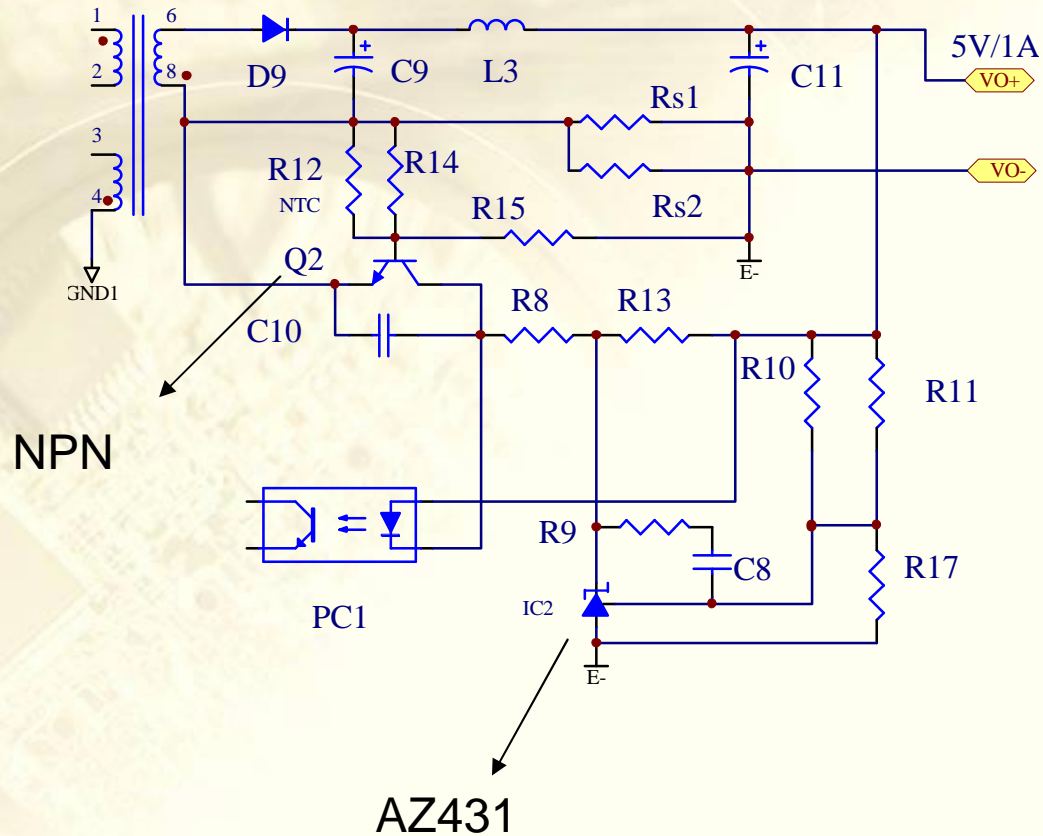
AZ358+AZ431的充电器方案



次边共23个
元器件

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AZ431+NTC+TRANSISTOR的充电器方案

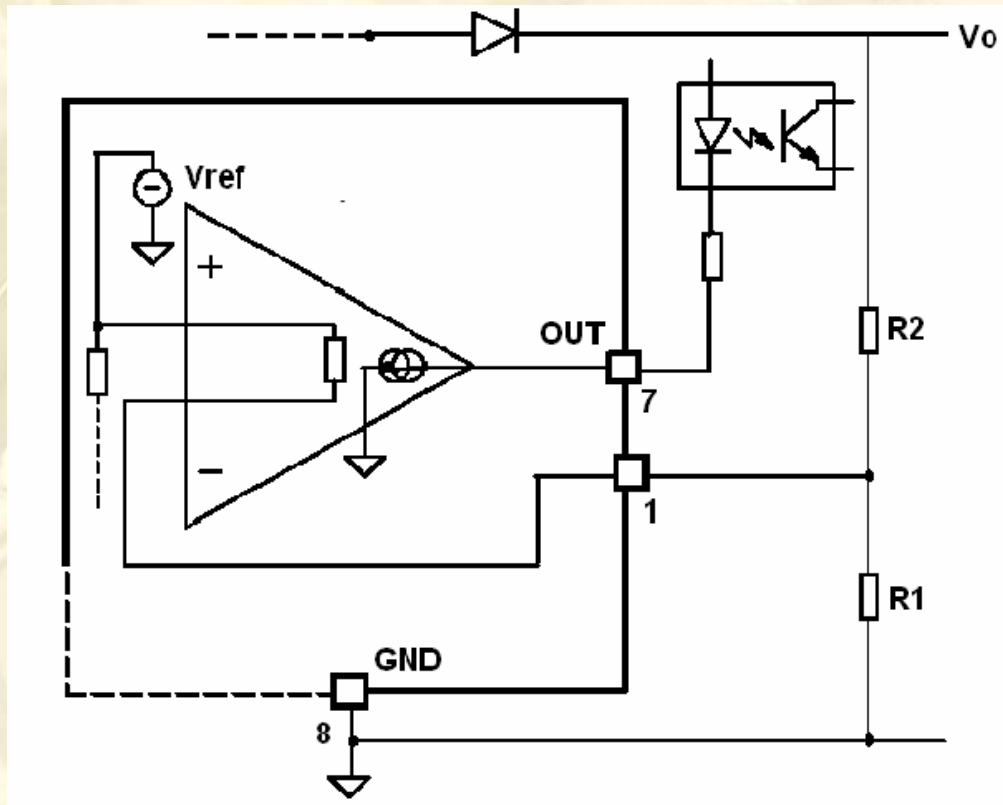


次边共18个元件，分立器件可靠性差，电流精度差

R12: NTC

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AP4313的恒压控制模式



有关计算:

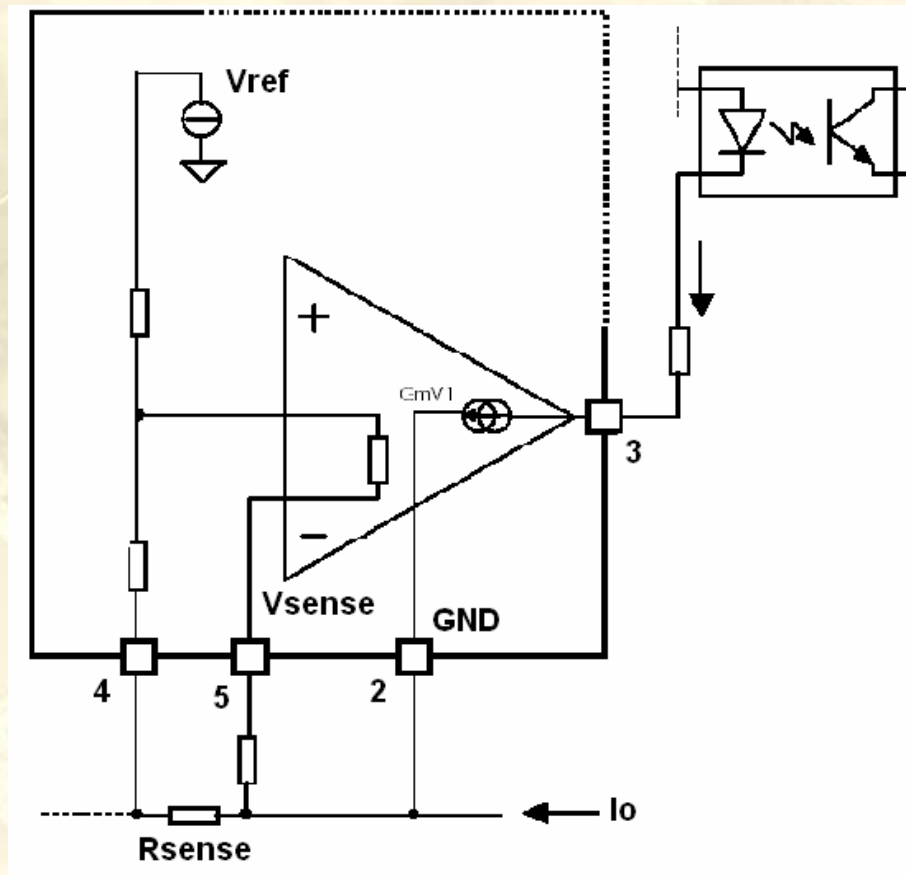
(1) 输出电压(恒压):

$$V_o = V_{ref}(R_1 + R_2) / R_1$$

其中: $V_{ref} = 1.210V$

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AP4313的恒流控制模式



有关计算:

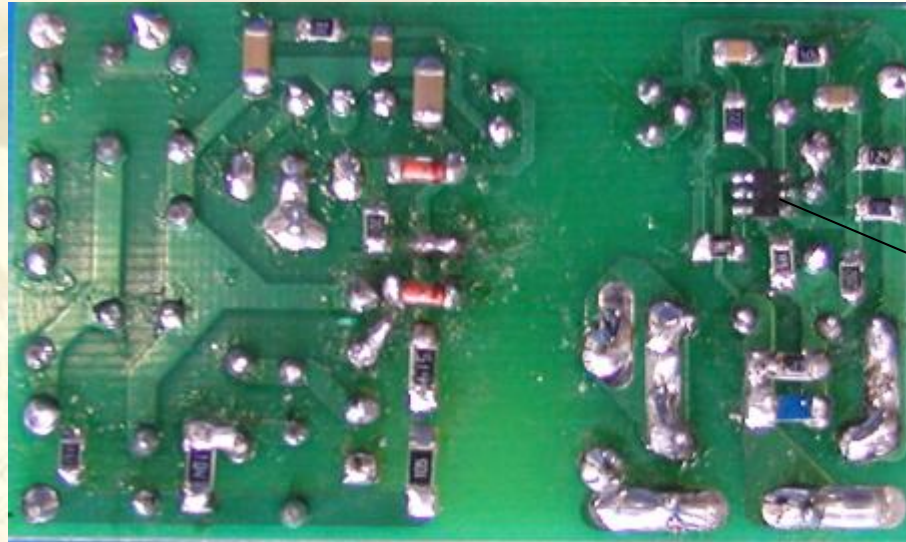
(1) 输出电流(恒流):

$$I_o = V_{\text{sense}} / R_{\text{sense}}$$

其中: $V_{\text{sense}} = 200\text{mV}$

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Demo Board: Bottom Layer of 5V/1A Charger with AP4313



AP4313

更少的次边元件数，更小的PCB面积，提高了可靠性，降低了总采购和生产成本。

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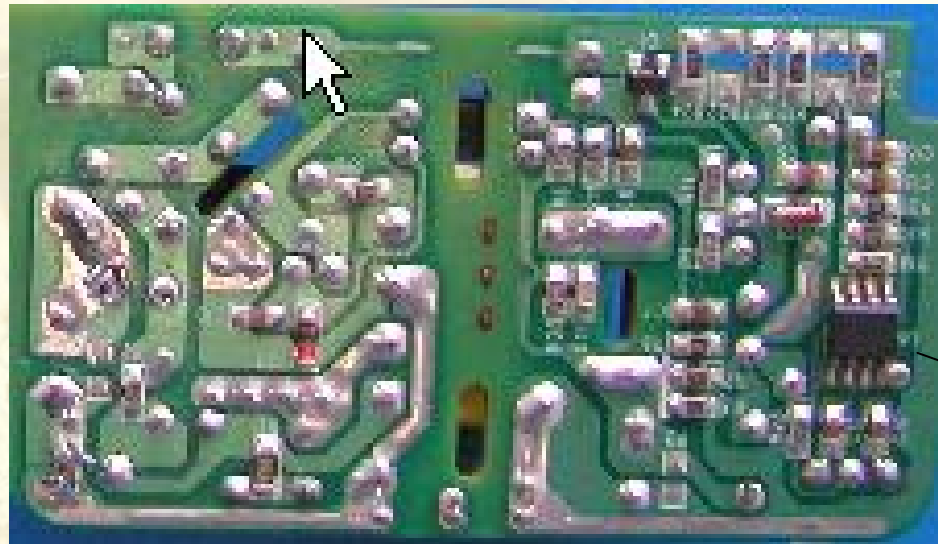
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Application Board: Bottom Layer of 5V/1A Charger with AZ358+431



AZ358

较多的次边元件数，更大的PCB面积，增加了总采购和生产成本。

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Test Result at 5V/1A CC/CV Demo Board with AP4313

Input Specifications

1. Input Voltage: 85V-264VAC; Frequency: 47 Hz - 63 Hz
2. Input Power Under Standby Mode: < 0.2 Watt

Output Specifications

1. Output Voltage: $5.1V \pm 0.1V$
2. Output Current: $1A \pm 0.05A$
3. Output Ripple: 60mV
4. Load Regulation: < 0.5%
5. Conversion Efficiency: >67% under full load, >64 under 25% load current

Protection Requirements

1. Short Circuit at Output: Yes
2. Over Temperature: Always below 100 °C
3. Over Current Protection: Yes

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Test Result at SAMSUNG 5V/0.75A Charger with AP4313

Total 10 units of AP4313 are used in the application board, the constant current and output voltage under no load are listed in table 2

Parameters	Test Results	Design Spec
Constant Current (A)	0.745~0.747	0.7~0.8
Output Voltage under no load (V)	5.115~5.147	5.0~5.3

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AP4313 应用归纳

- ◇ 电路设计简单
- ◇ 周边元件少
- ◇ 输出精度高
- ◇ **PCB板更小（体积小）**
- ◇ 高可靠性
- ◇ 高性价比
- ◇ 适合低、中、高端旅充客户
- ◇ 性价比超过**358+431**，更超过**431+NTC+TRANSISTOR**



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