**PRELIMINARY**

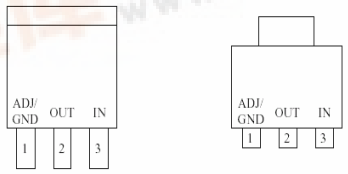
# S1117

## 1.0A Adjustable LDO Linear Regulator

### Features

- adjustable version.
- Space saving SMD types of SOT-223 and D-Pak(TO-252)
- 1.1V Drop-out Voltage
- 1.0A Output Current
- Current Limiting and Thermal protection
- Over Current Protection.
- Ouput trimmed to 2% Tolerance
- Fast Transient Response

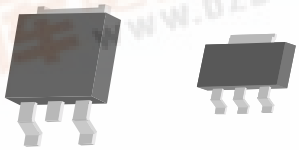
**Symbol**




### General Description

The S1117 is a series of low dropout voltage regulators which can provide up to 1A of output current. On chip precision trimming adjusts the refernce/output voltage to within ± 2%. Current limit is also trimmed to ensure specified output current and controlled short-circuit current.
The S1117 series is available in SOT-223 and DPAK power packages.
A minimum of 10uF tantalum capacitor is required at the output to improve the transient response and stability.

**DPAK** **SOT-223**



### Applications

- Post Regulator for Sitching DC/DC Converter
- High Efficiency Linear Regulator
- Battery Chargers
- PC Add on Card
- Motherboard clock supplies

### Absolute Maximum Ratings

| Parameter | Symbol | Value | Units |
|---|---|---|---|
| Input Voltage | $V_{IN(MAX)}$ | 18 | V |
| Junction Temperature | $T_J$ | -25°C ~ +125°C | °C |
| Storage Temperature | $T_{STG}$ | -55°C ~ +150°C | °C |

### Electrical Characteristics

( Vin = 3.25V, Co = 10uF, Ta = 25°C, unless otherwise specified)

| Parameter | Symbol | Test Condition | Mln. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| Reference Voltage | Vref | $V_{IN}$ = 3.25V, $I_O$ = 10mA | 1.225 | 1.250 | 1.275 | V |
| Line Regulation | $dV_{OUT1}$ | $I_{OUT}$=10mA, 3.25V < $V_{IN}$ < 12.25V | 0 | 1.0 | 2.5 | mV |
| Load Regulation | $dV_{OUT2}$ | $V_{IN}$ = 3.25V, 10mA < $I_{OUT}$ < 1A | 0 | 1.0 | 6.0 | mV |
| Dropout Voltage 1 | $V_{DROP1}$ | $I_{OUT}$ = 100mA | - | 1.00 | 1.15 | V |
| Dropout Voltage 2 | $V_{DROP2}$ | $I_{OUT}$ = 1A | - | 1.10 | 1.25 | V |
| Quiescent Current | Iq | $V_{IN}$ < 12V | - | 5 | 10 | mA |
| Ripple Rejection | RR | *f* = 120Hz, $C_{OUT}$ = 22uF Tantalum, 4.15V < $V_{IN}$ < 4.35, $I_{OUT}$ = 500mA | 55 | 100 | 200 | dB |

## Electrical Characteristics

( Vin = 3.25V, Co = 10uF, Ta = 25°C, unless otherwise specified)

| Parameter | Symbol | Test Condition | MIn. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| Current Limit | $I_{Limit}$ | $V_{IN}$ - $V_{OUT}$ = 2V | 1 | 1.5 | - | A |
| Adjust Pin Current | Iadj | Vin = 3.25V. Io = 10mA | 10 | 35 | 100 | uA |
| Minimum Load Current | $I_{Min}$ | | 10 | - | - | mA |
| Long Term Stability | Stable | $T_A$ = 125°C, 1000hrs | - | 0.03 | 1.0 | % |
| RMS Output Noise | | 10Hz < f < 10kHz | - | 0.003 | - | % |
| Thermal Shutdown | Tsd | Vin = 3.25V Tj = 130 to 210deg | 150 | 170 | 200 | °C |
| Thermal Shutdown Hysteresis | Thys | Vin = 3.25V Tj = 210 to 130deg | 5 | 10 | 35 | °C |
| Over Voltage Protection | $V_{OVP}$ | Vin = 10V to 25V Io = 10mA | 14.4 | 16.4 | 18.4 | V |

**Fig 1. Output current vs. drop out voltage**

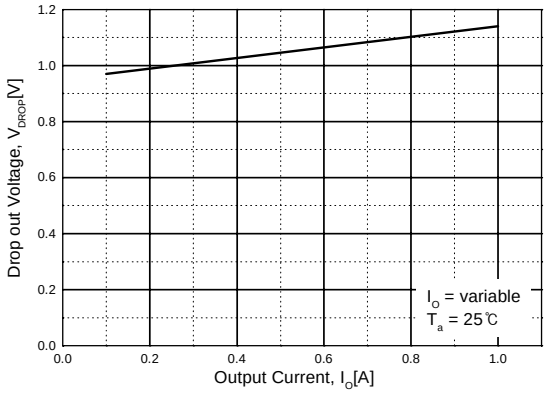



**Fig 2. Quiescent current vs. drop out voltage**

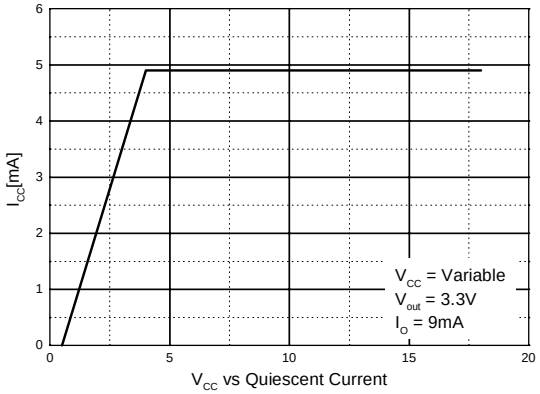



**Fig 3. Output current vs. load regulation**

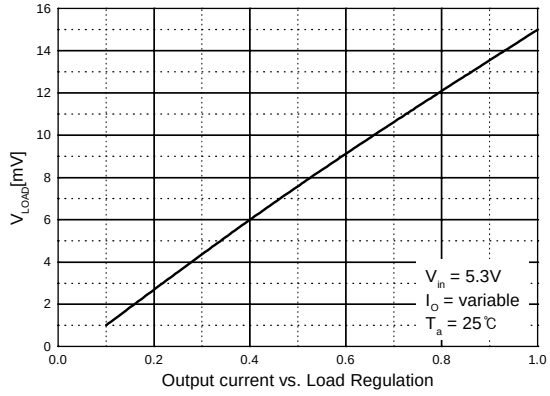



**Fig 4. Absolute Maximum safe operating area**

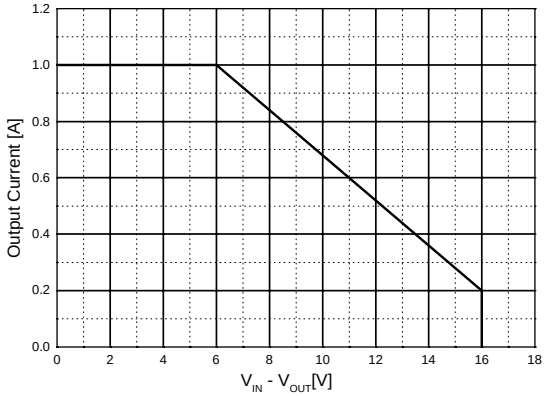



**Fig 5. Quiescent current vs. Temperature.**

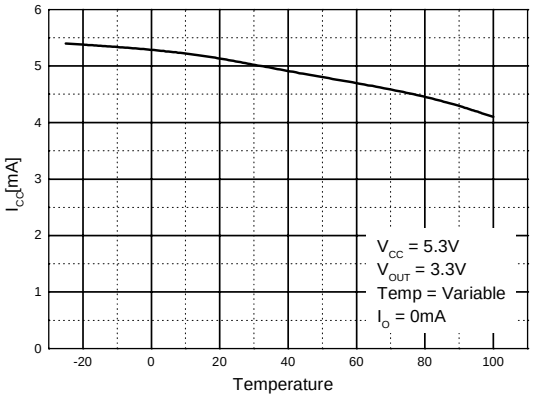
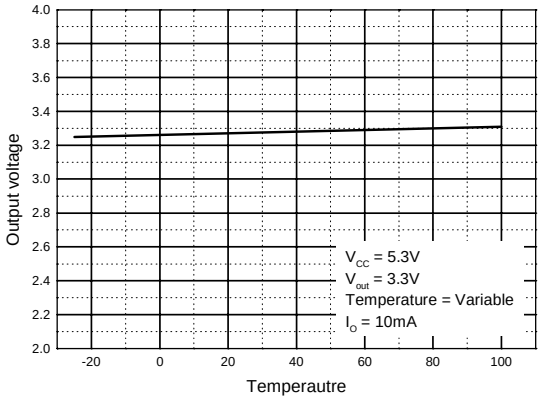
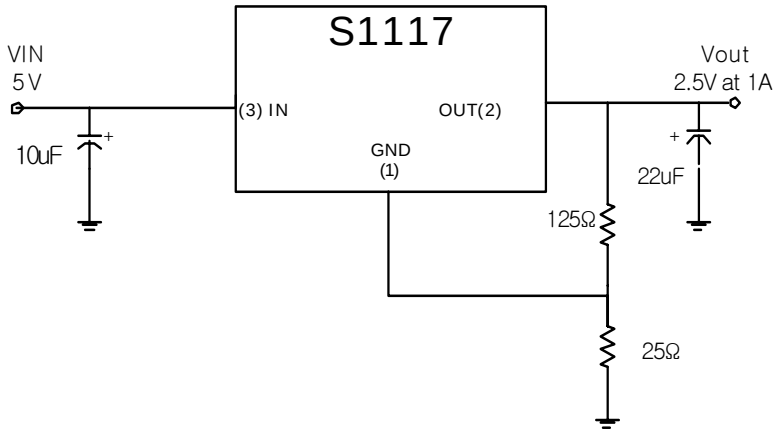



**Fig 6. Output voltage vs. Temperature.**



## Typical Application




$V_{out} = (1 + R_2/R_1) \times V_{ref}$

Example) If R1 = 125ohm, Rd=25ohm,

$V_{out} = (1 + 25/125) \times 1.25 = 1.5V$