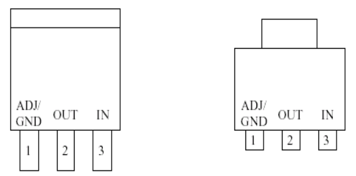
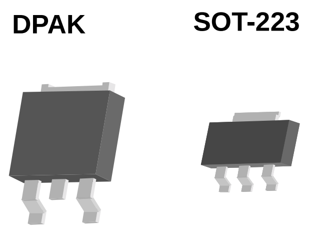
1.0A Adjustable LDO Linear Regulator

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.

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	MIn.	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

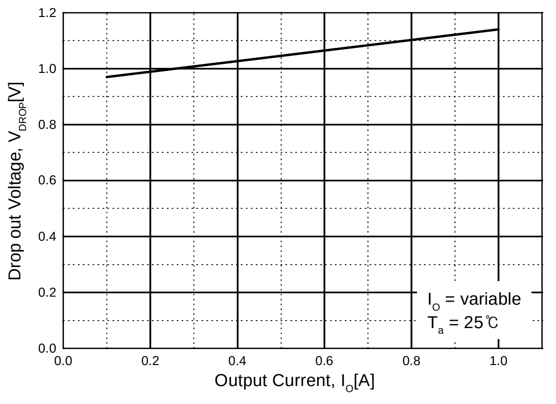


Fig 2. Quiescent current vs. drop out voltage

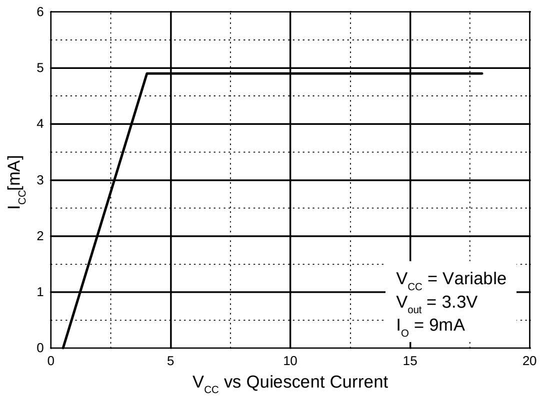


Fig 3. Output current vs. load regulation

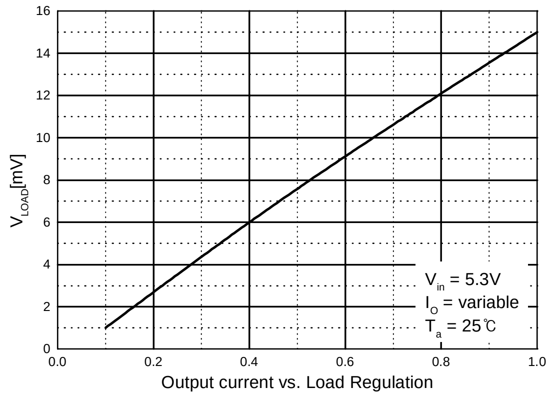


Fig 4. Absolute Maximum safe operating area

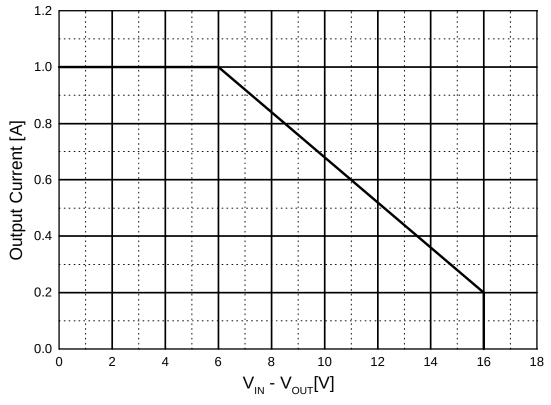


Fig 5. Quiescent current vs. Temperature.

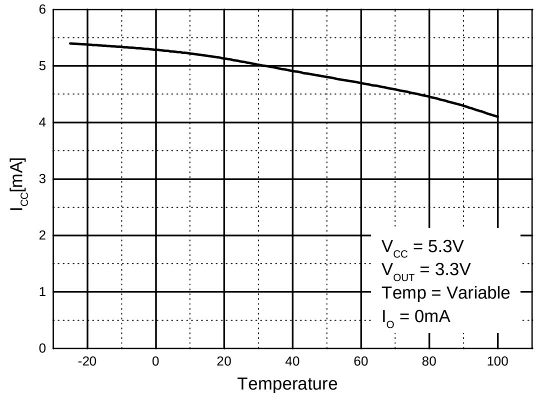
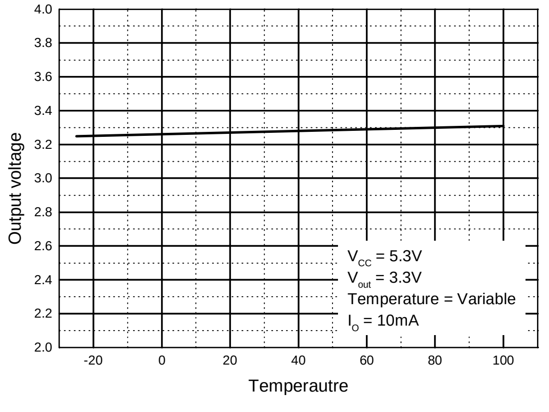
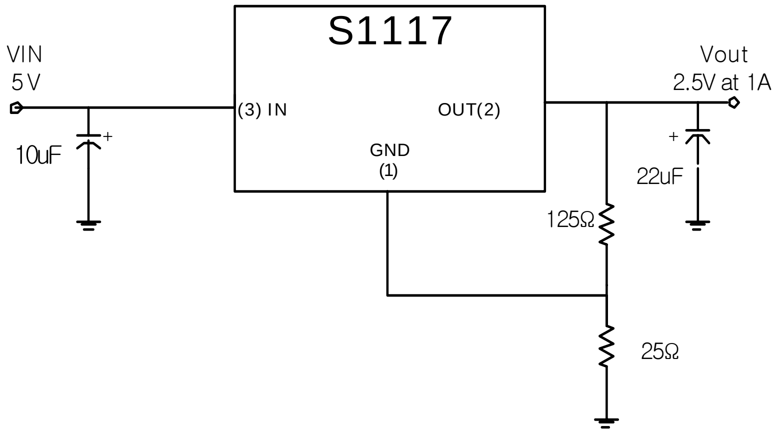


Fig 6. Output voltage vs. Temperature.



Typical Application



V_{out} = (1 + R_2/R_1) X V_{ref}

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

V_{out} = (1 + 25/125) X 1.25 = 1.5V