PRELIMINARY

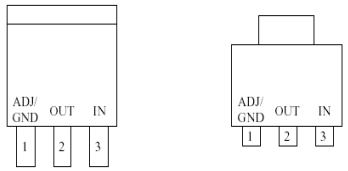
S1117

LDO Linear Regulator

Features

- ◆ Adjustable and Fixed of 1.8V, 2.5V, 2.85V, 3.3V, 5V
- ◆ 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

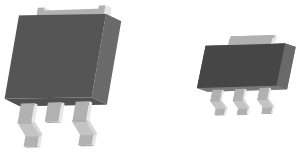
Symbol



General Description

The IP1117 is a series of low dropout voltage regulators which can provide up to 1A of output current. The IP1117 is available in four fixed voltages, 2.5V, 2.85V, 3.3V and 5.0V. Additonally it is also available in adjustable version. 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 IP11117 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

- ◆ 2.85V Model for SCSI-2 Active Termination
- ◆ Post Regulator for Sitching DC/DC Converter
- ◆ High Efficiency Linear Regulator
- ◆ Battery Chargers
- ◆ PC Add on Card

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 = 5V, Co = 10uF, Ta = 25°C, unless otherwise specified)

Parameter	Symbol	Test Condition	Mln.	Typ.	Max.	Units
Reference Voltage	Vref	S1117 Only 1.5V < (V_{IN} -V_{OUT}) < 7V, I_O = 10mA	1.225	1.250	1.275	V
Output Voltage	Vout	S1117-1.8 10mA < I_{OUT} < 1A, 3.8V < V_{IN} < 10V	1.764	1.800	1.836	V
		S1117-2.5 10mA < I_{OUT} < 1A, 4.0V < V_{IN} < 10V	2.450	2.500	2.550	V
		S1117-2.85 10mA < I_{OUT} < 1A, 4.25V < V_{IN} < 10V	2.793	2.850	2.907	V
		S1117-3.3 10mA < I_{OUT} < 1A, 4.75V < V_{IN} < 10V	3.234	3.300	3.366	V
		S1117-5.0 10mA < I_{OUT}< 1A, 6.5V < V_{IN} <12V	4.900	5.000	5.100	V

Electrical Characteristics

(Vin = 5V, Co = 10uF, Ta = 25°C, unless otherwise specified)

Parameter	Symbol	Test Condition	Mln.	Typ.	Max.	Units
Line Regulation	dV_{OUT1}	S1117 I_{OUT}=10mA, 1.5V < (V_{IN} -V_{OUT}) < 12V	-	0.035	0.2	%
		S1117-1.8 I_{OUT} = 10mA, 3.8V < V_{IN} < 12.8V	-	1	3	mV
		S1117-2.5 I_{OUT} = 10mA, 4.0V < V_{IN} < 15V	-	1	6	mV
		S1117-2.85 I_{OUT} = 10mA, 4.25V < V_{IN} < 15V	-	1	6	mV
		S1117-3.3 I_{OUT} = 10mA, 4.75V < V_{IN} < 15V	-	1	6	mV
		S1117-5.0 I_{OUT}= 10mA, 6.50V < V_{IN} < 15V	-	1	6	mV
Load Regulation	dV_{OUT2}	S1117 V_{IN} - V_{OUT} =2V, 10mA < I_{OUT} < 1A	-	0.05	0.5	%
		S1117-1.8 V_{IN} =3.8V, 10mA <I_{OUT}< 1A	-	1	10	mV
		S1117-2.5 V_{IN} =4.0V, 10mA <I_{OUT}< 1A	-	1	10	mV
		S1117-2.85 V_{IN} =4.25V, 10mA < I_{OUT} < 1A	-	1	10	mV
		S1117-3.3 V_{IN} =4.80V, 10mA < I_{OUT} < 1A	-	1	12	mV
		S1117-5.0 V_{IN} =6.5V, 10mA < I_{OUT}< 1A	-	1	15	mV
Dropout Voltage 1	V_{DROP1}	I_{OUT} = 100mA	-	1.10	1.15	V
Dropout Voltage 2	V_{DROP2}	I_{OUT} = 1A	-	1.2	1.25	V
Quiescent Current	Iq	V_{IN} < 12V	-	5	10	mA
Ripple Rejection	RR	*f* = 120Hz, C_{OUT} = 22uF Tantalum, (V_{IN} - V_{OUT}) = 3V, I_{OUT} = 1A	60	72	-	dB
Current Limit	I_{Limit}	V_{IN} - V_{OUT} = 2V	1	1.5	-	A
Adjust Pin Current	Iadj		-	35	100	uA
Adjust Pin Current Change	Ichg	10mA < I_{OUT}< 1A 1.5V < Vin - Vout < 12V	-	0.2	5	uA
Minimum Load Current	I_{Min}	Only S1117	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	Junction Temperature	-	150	-	°C
Thermal Shutdown Hysteresis	Thys		-	10	-	°C

Fig 1. Tempearture vs. Quiescent current

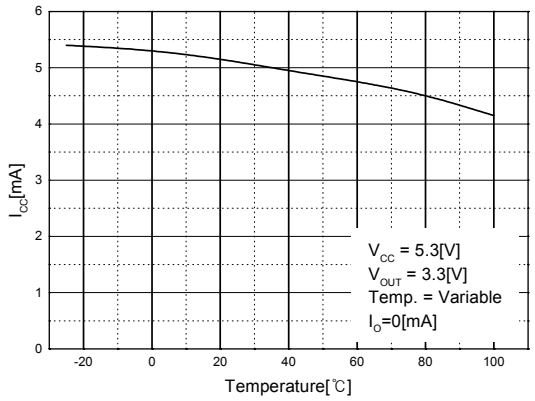


Fig 2. Temperature vs. Ouput voltage

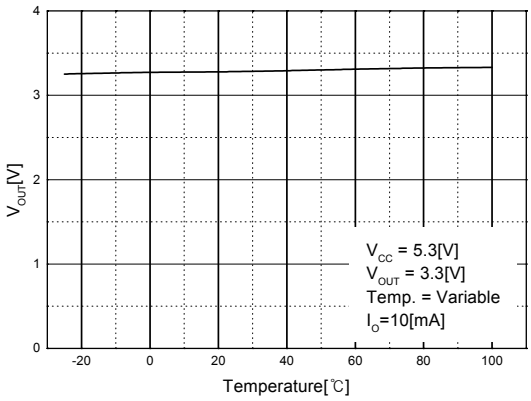


Fig 3. Temperature vs. Load regulation

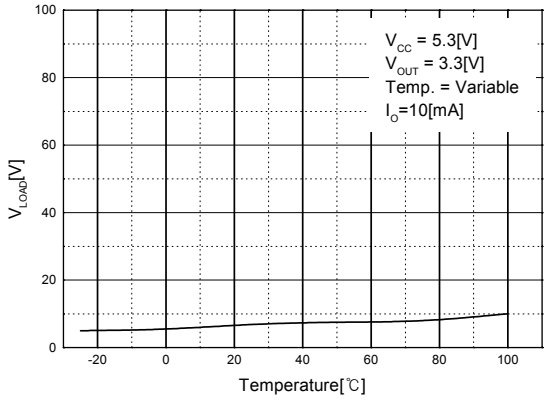


Fig 4. temperature vs. Drop out voltage

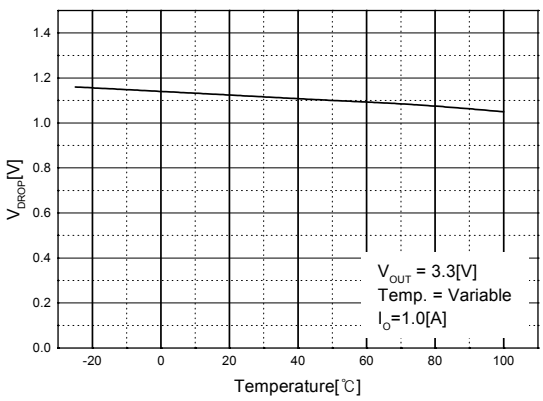
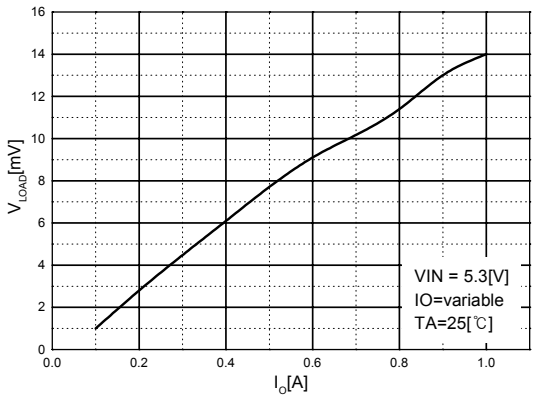
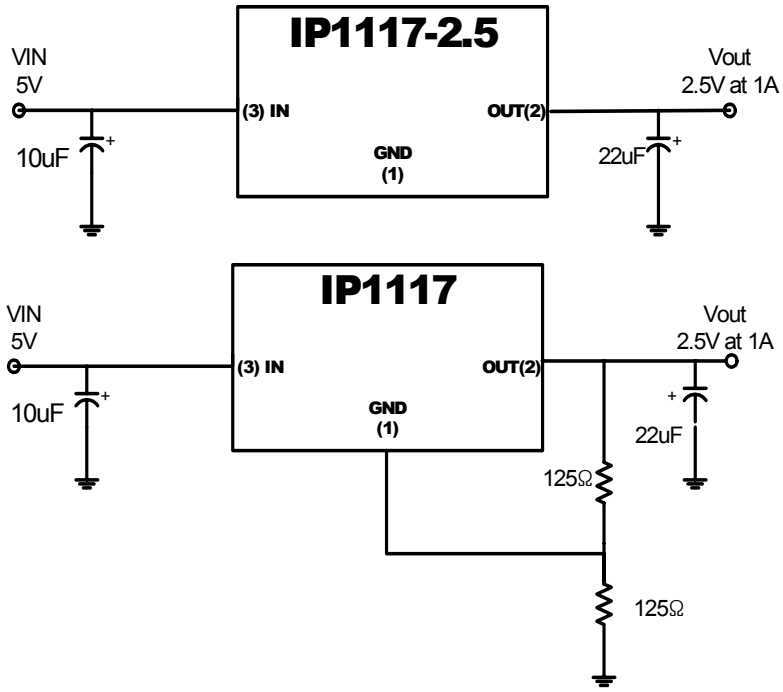


Fig 5. I_O vs. Load regulation

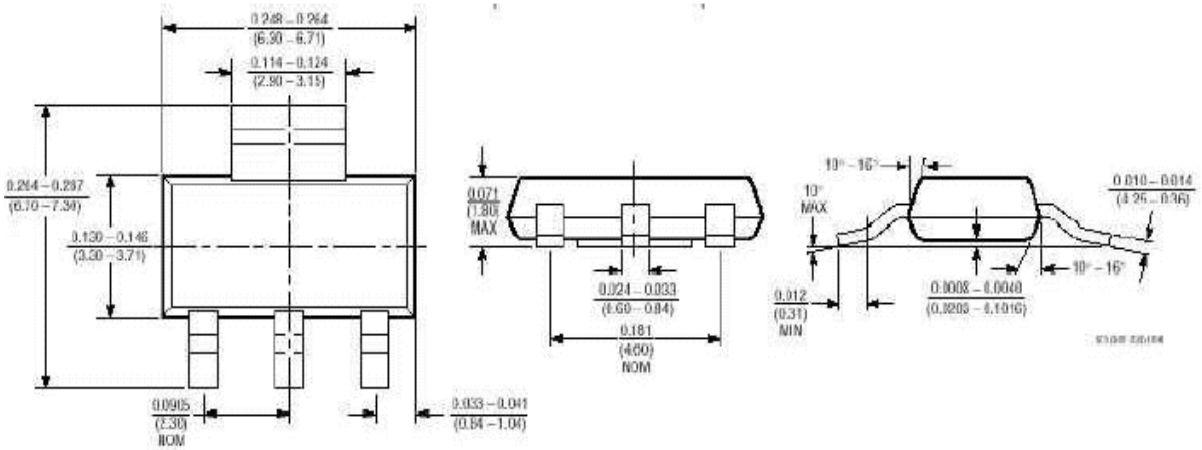


Typical Application



Package Dimension

SOT-223



D-PAK