

PRELIMINARY S1117

LDO Linear Regulator

Features

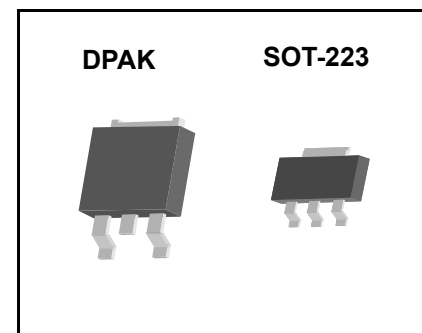
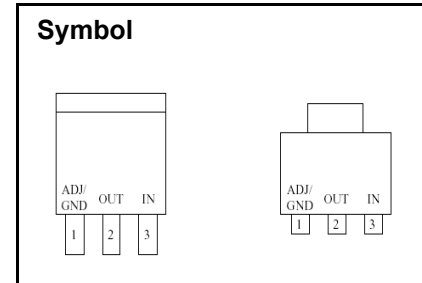
- ◆ Adjustable and Fixed of 1.8V, 2.5V, 2.85V, 3.3V, 5V
- ◆ Space saving SMD types of SOT-223 and D-Pak(TO-252)
- ◆ 1.1V Drop-out Voltage
- ◆ 1.0A Output Current
- ◆ Current Limiting and Thermal protection
- ◆ Over Current Protection.
- ◆ Output trimmed to 2% Tolerance
- ◆ Fast Transient Response

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. Additionally it is also available in adjustable version. On chip precision trimming adjusts the reference/output voltage to within $\pm 2\%$. Current limit is also trimmed to ensure specified output current and controlled short-circuit current. The IP1117 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

- ◆ 2.85V Model for SCSI-2 Active Termination
- ◆ Post Regulator for Switching 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

($V_{in} = 5V$, $C_o = 10\mu F$, $T_a = 25^\circ C$, unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Reference Voltage	V_{ref}	S1117 Only $1.5V < (V_{IN} - V_{OUT}) < 7V$, $I_O = 10mA$	1.225	1.250	1.275	V
Output Voltage	V_{out}	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

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Electrical Characteristics

($V_{IN} = 5V$, $C_O = 10\mu F$, $T_A = 25^\circ C$, unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	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	I_q	$V_{IN} < 12V$	-	5	10	mA
Ripple Rejection	RR	$f = 120Hz, C_{OUT} = 22\mu F$ 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	I_{adj}		-	35	100	μA
Adjust Pin Current Change	I_{chg}	$10mA < I_{OUT} < 1A$ $1.5V < V_{in} - V_{out} < 12V$	-	0.2	5	μA
Minimum Load Current	I_{Min}	Only S1117	10	-	-	mA
Long Term Stability	Stable	$T_A = 125^\circ C, 1000hrs$	-	0.03	1.0	%
RMS Output Noise		$10Hz < f < 10kHz$	-	0.003	-	%
Thermal Shutdown	Tsd	Junction Temperature	-	150	-	$^\circ C$
Thermal Shutdown Hysteresis	Thys		-	10	-	$^\circ C$



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Fig 1. Temperature vs. Quiescent current

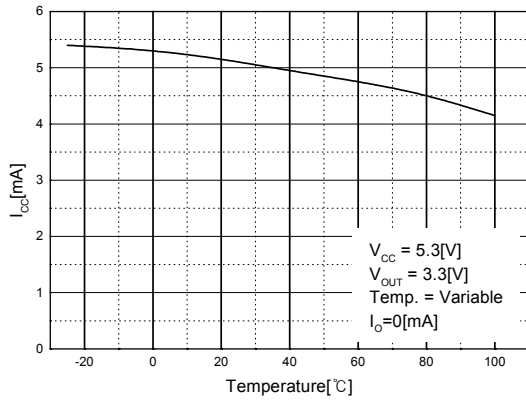


Fig 2. Temperature vs. Output voltage

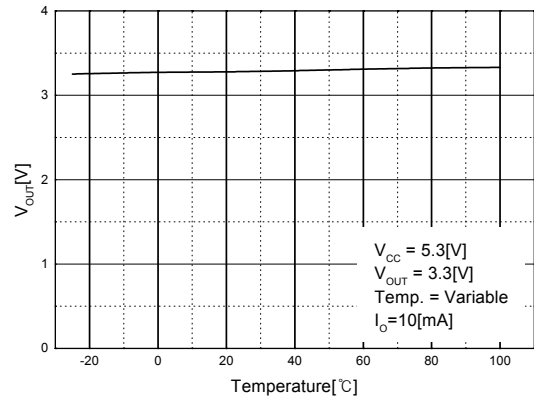


Fig 3. Temperature vs. Load regulation

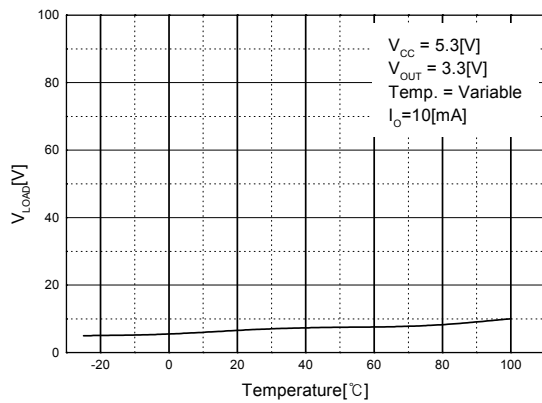


Fig 4. temperature vs. Drop out voltage

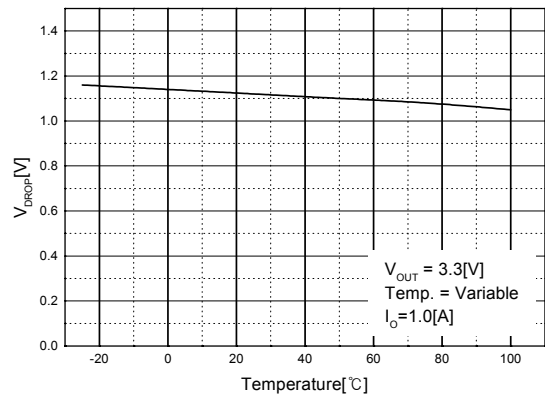
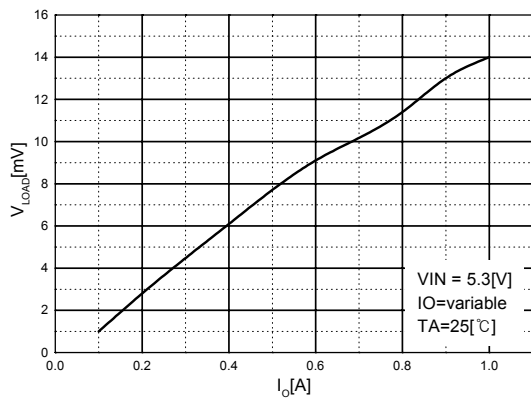


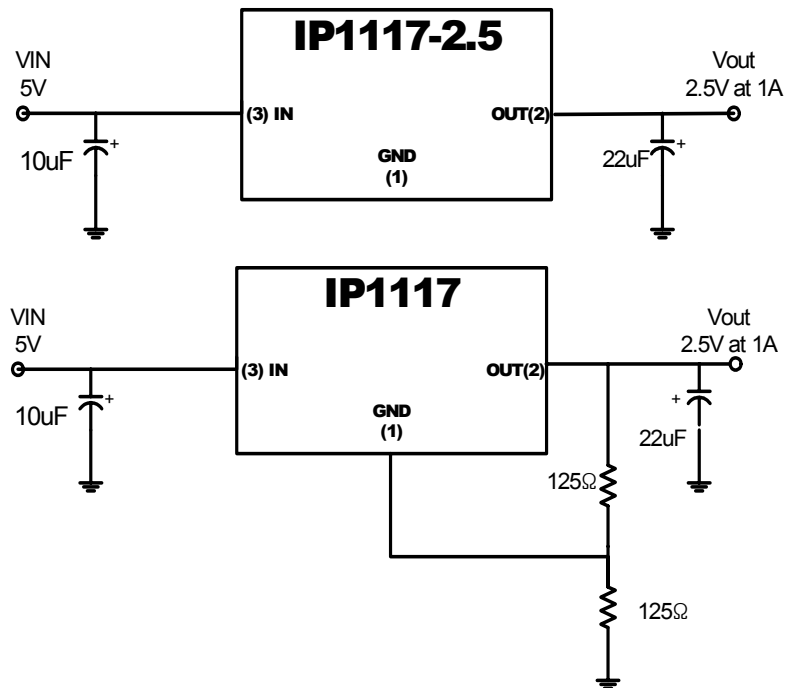
Fig 5. I_o vs. Load regulation



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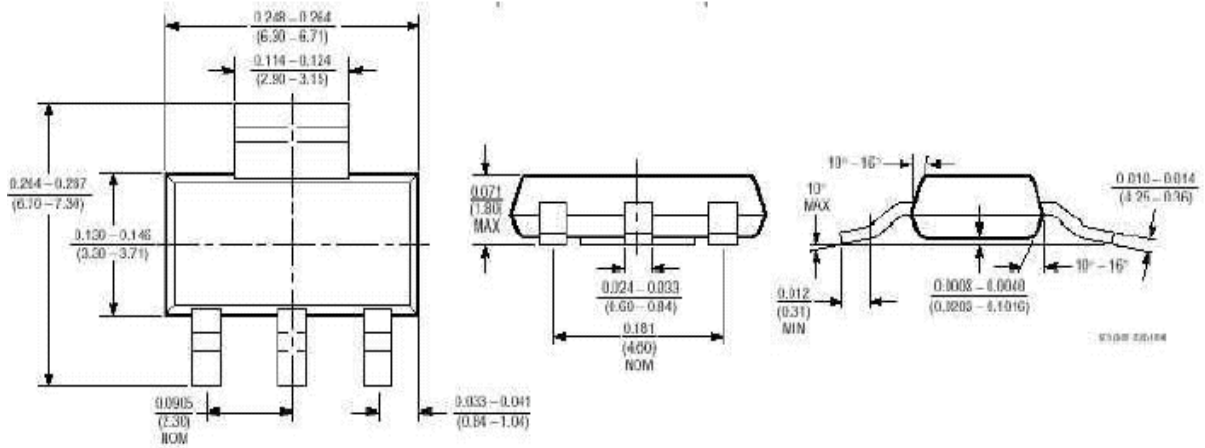
Typical Application



IP1117

Package Dimension

SOT-223



D-PAK

