

LM1117 Series

1A LOW DROPOUT LINEAR REGULATOR

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Features

- Output Current of 1A Maximum
- Three-Terminal Adjustable or Fixed Outputs
- Maximum Input Voltage: 18V
- Fast Transient Response
- Current Limit, Safe Operating and Thermal Shutdown Protection
- Line Regulation: 0.2%
- Load Regulation: 0.4%
- Environment Temperature: -50°C~+140°C
- Available in SOT223-3

Application

- High Efficiency Linear Regulators
- Post Regulator for Switching DC/DC Converter
- Power Management for M/B and Graphic Card
- 2.85V Model for SCSI-2 Active Termination
- Battery Charger
- LCD Monitor and LCD TV
- DVD Decode Board
- ADSL Modem

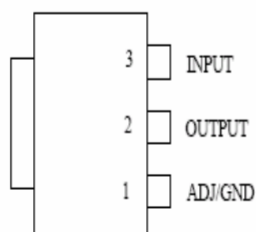
Ordering Information

LM1117MPX-5.0-TP

SOT223-3 Package

Output voltage: 1.8=1.8V
2.5=2.5V
3.3=3.3V
5.0=5.0V
ADJ=fixed output

Package and Pin Configuration



Absolute Maximum Ratings

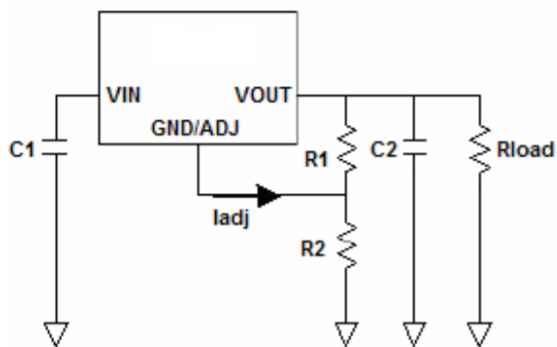
Maximum Input Voltage	18V
Operating Junction Temperature (T_J)	150 °C
Environment Temperature (T_A)	140 °C
Storage Temperature Range (T_s)	-65 °C to 150 °C
Lead Temperature (soldering, 10 seconds)	260 °C

Electrical Characteristics

$V_{IN} = V_{OUT} + 2V$, $I_O = 10mA$, and $T_J = 25$ C, unless otherwise specified.

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{REF}	Reference Voltage	$I_{OUT} = 10mA$, $V_{IN} - V_{OUT} = 2V$	1.238	1.250	1.262	V
		$10mA \leq I_{OUT} \leq 1A$, $1.5V \leq V_{IN} - V_{OUT} \leq 12V$	1.225	1.250	1.275	
V_{OUT}	Output Voltage	1.8V $I_{OUT} = 10mA$, $V_{IN} = 3.8V$, $T_J = 25^\circ C$	1.782	1.80	1.818	V
		$0 \leq I_{OUT} \leq 1A$, $3.2V \leq V_{IN} \leq 12V$	1.764	1.80	1.836	
		2.5V $I_{OUT} = 10mA$, $V_{IN} = 4.5V$, $T_J = 25^\circ C$	2.475	2.50	2.525	
		$0 \leq I_{OUT} \leq 1A$, $3.9V \leq V_{IN} \leq 12V$	2.450	2.50	2.550	
		3.3V $I_{OUT} = 10mA$, $V_{IN} = 5V$, $T_J = 25^\circ C$	3.267	3.30	3.333	
		$0 \leq I_{OUT} \leq 1A$, $4.75V \leq V_{IN} \leq 12V$	3.234	3.30	3.366	
ΔV_{OUT}	Line Regulation	5.0V $I_{OUT} = 10mA$, $V_{IN} = 7V$, $T_J = 25^\circ C$	4.95	5.00	5.05	V
		$0 \leq I_{OUT} \leq 1A$, $6.5V \leq V_{IN} \leq 12V$	4.90	5.00	5.10	
ΔV_{OUT}	Line Regulation	ADJ $I_{OUT} = 10mA$, $1.5V \leq V_{IN} - V_{OUT} \leq 13.775V$		0.035	0.2	%
		Fixed $I_{OUT} = 10mA$, $V_{OUT} + 1.5V \leq V_{IN} \leq 15V$		9	12	mV
ΔV_{OUT}	Load Regulation	ADJ $V_{IN} - V_{OUT} = 3V$, $10mA \leq I_{OUT} \leq 1A$		0.2	0.4	%
		Fixed $V_{IN} = V_{OUT} + 1.5V$, $10mA \leq I_{OUT} \leq 1A$		3	10	mV
$V_{IN} - V_{OUT}$	Dropout Voltage	ΔV_{OUT} , $\Delta V_{REF} = 1\%$, $I_{OUT} = 100mA$		1.11	1.20	V
		ΔV_{OUT} , $\Delta V_{REF} = 1\%$, $I_{OUT} = 500mA$		1.18	1.25	V
		ΔV_{OUT} , $\Delta V_{REF} = 1\%$, $I_{OUT} = 1A$		1.26	1.30	V
I_{CL}	Current Limit	$V_{IN} - V_{OUT} = 2V$, $T_J = 25^\circ C$	1.25	1.4	1.6	A
Minimum Load Current (Note 1)		Adjustable Version		5	10	mA
I_q	Quiescent Current	Fixed $V_{IN} - V_{OUT} = 1.25V$		4	8	mA
I_{ADJ}	ADJ Pin Current			55	120	uA
Temperature Stability					0.5	%
θ_{JC}	Thermal Resistor	SOT-223		20		°C/

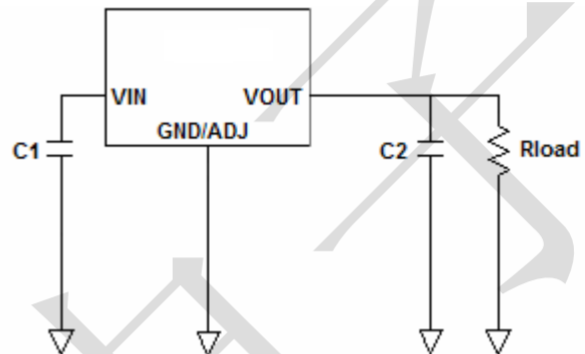
Typical Application



TP1117 adjustable output voltage

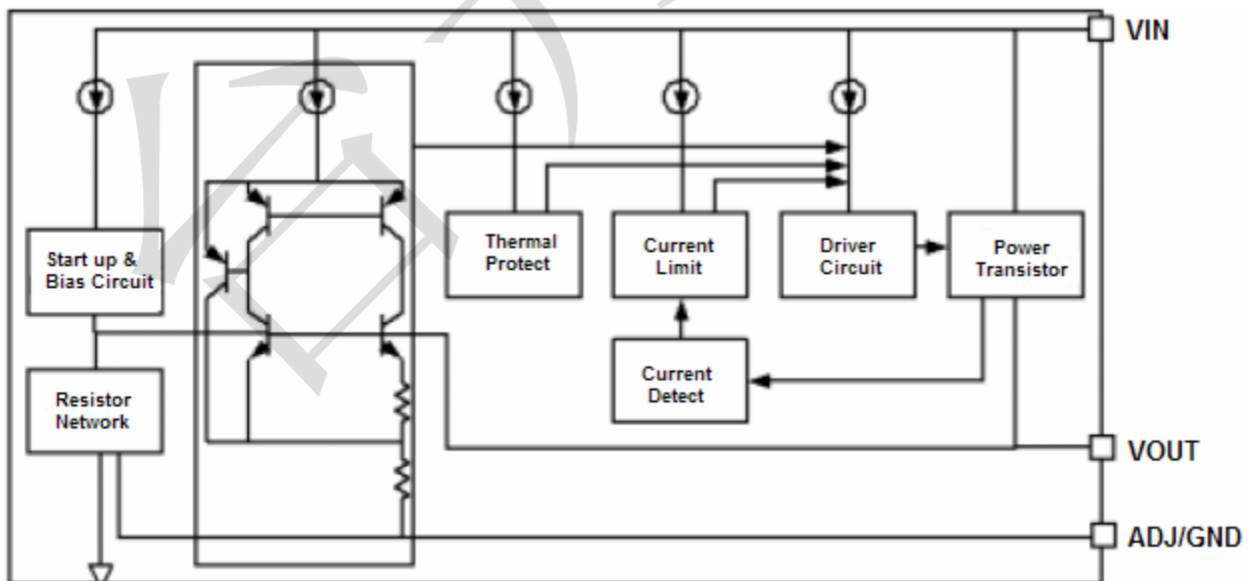
$$V_{OUT} = 1.25V(1 + R2/R1)$$

The TP1117 adjustable regulator provide 1.25V reference voltage. Any output voltage between 1.25V~13.8V can be available by choosing two external resistors.



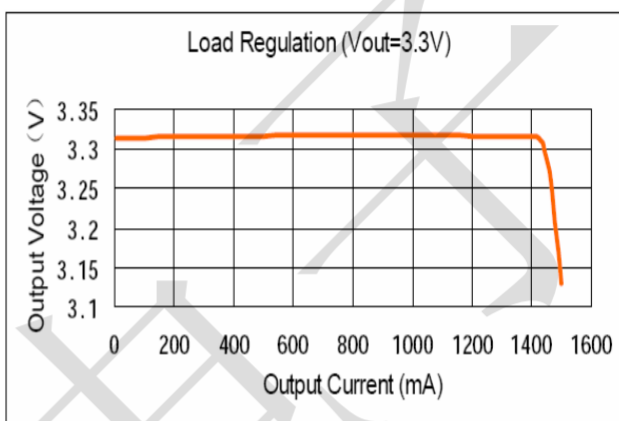
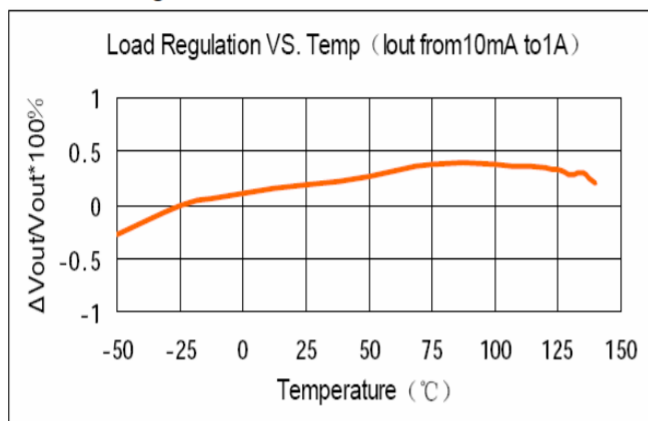
TP1117 fixed output

Block Diagram

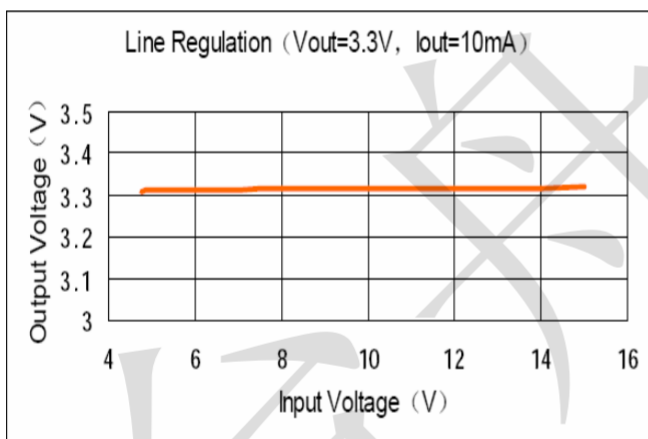


Typical Characteristics

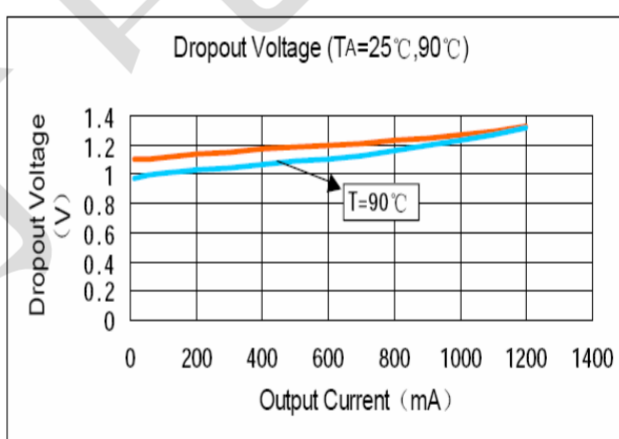
1. Load Regulation



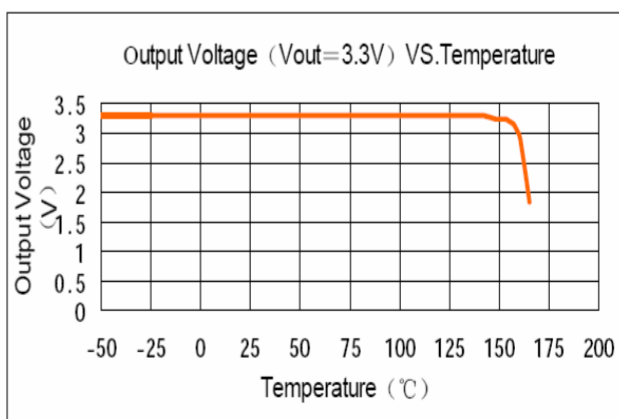
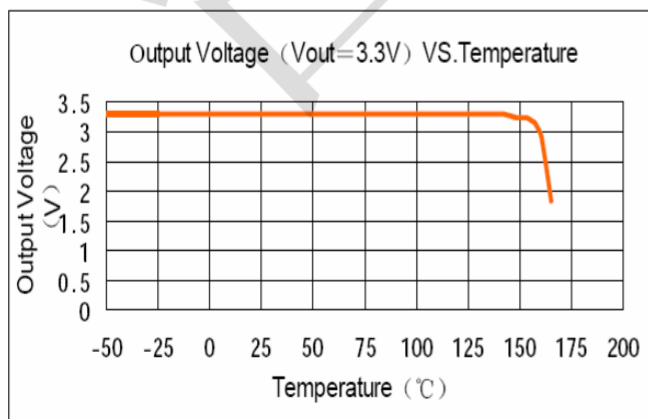
2. Line Regulation



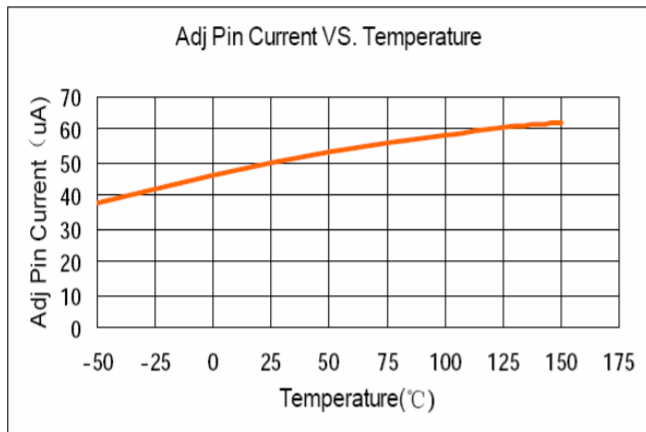
3. Dropout Voltage



4. Temperature Stability

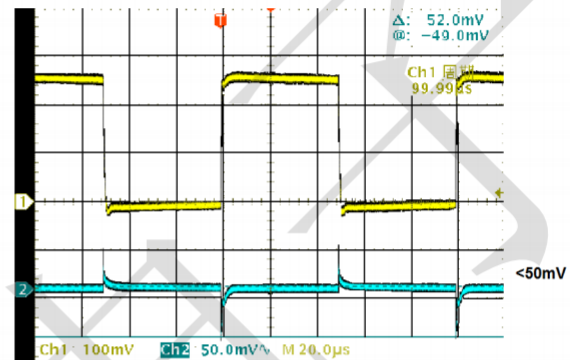


5. ADJ Pin Current vs. Temperature

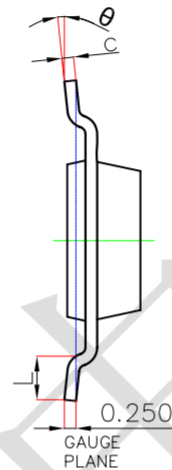
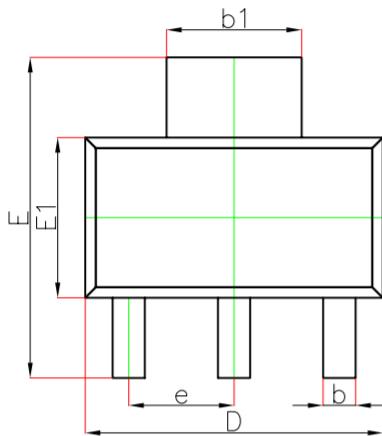


6. Load Transient Response

Load Current Change from 2mA to 500mA



SOT223 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	—	1.800	—	0.071
A1	0.020	0.100	0.001	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.840	0.026	0.033
b1	2.900	3.100	0.114	0.122
c	0.230	0.350	0.009	0.014
D	6.300	6.700	0.248	0.264
E	6.700	7.300	0.264	0.287
E1	3.300	3.700	0.130	0.146
e	2.300(BSC)		0.091(BSC)	
L	0.750	—	0.030	—
θ	0°	10°	0°	10°