

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 and TO-252 ,SOT89-3 Package

Application

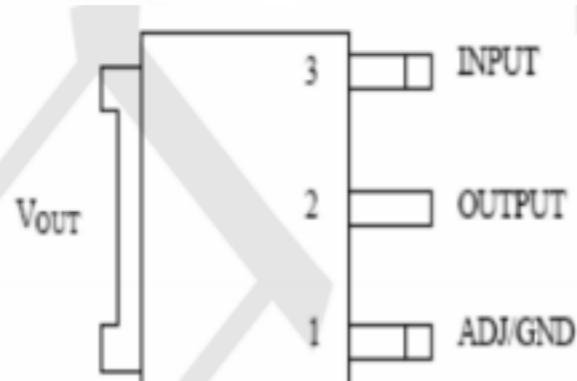
- High Efficiency Linear Regulators
- Post Regulator for Switching DC/DC Converter
- Power Management for M/B and Graphic Card
- 2.85V Model for SCSI-2 Active Termination
- Battery Charger
- LCD Monitor and LCD TV
- DVD Decode Board
- ADSL Modem

Ordering Information

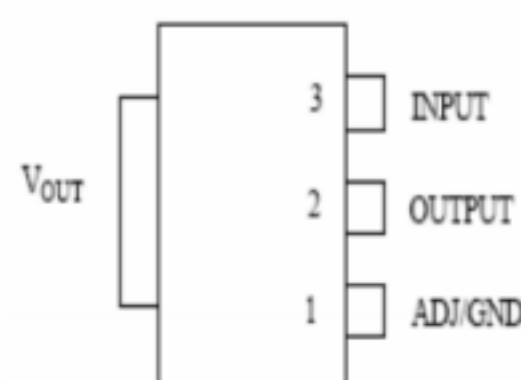
AMS1117-5.0

Output voltage: 1.2=1.2V
1.5=1.5V
1.8=1.8V
2.5=2.5V
3.3=3.3V
5.0=5.0V
ADJ=Adjustable

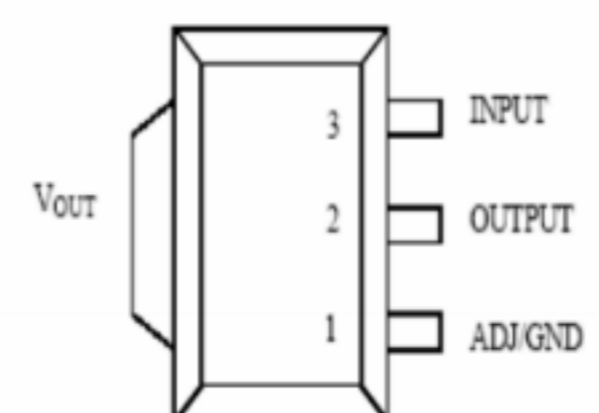
Package and Pin Configuration



TO-252



SOT-223



SOT89-3

Absolute Maximum Ratings

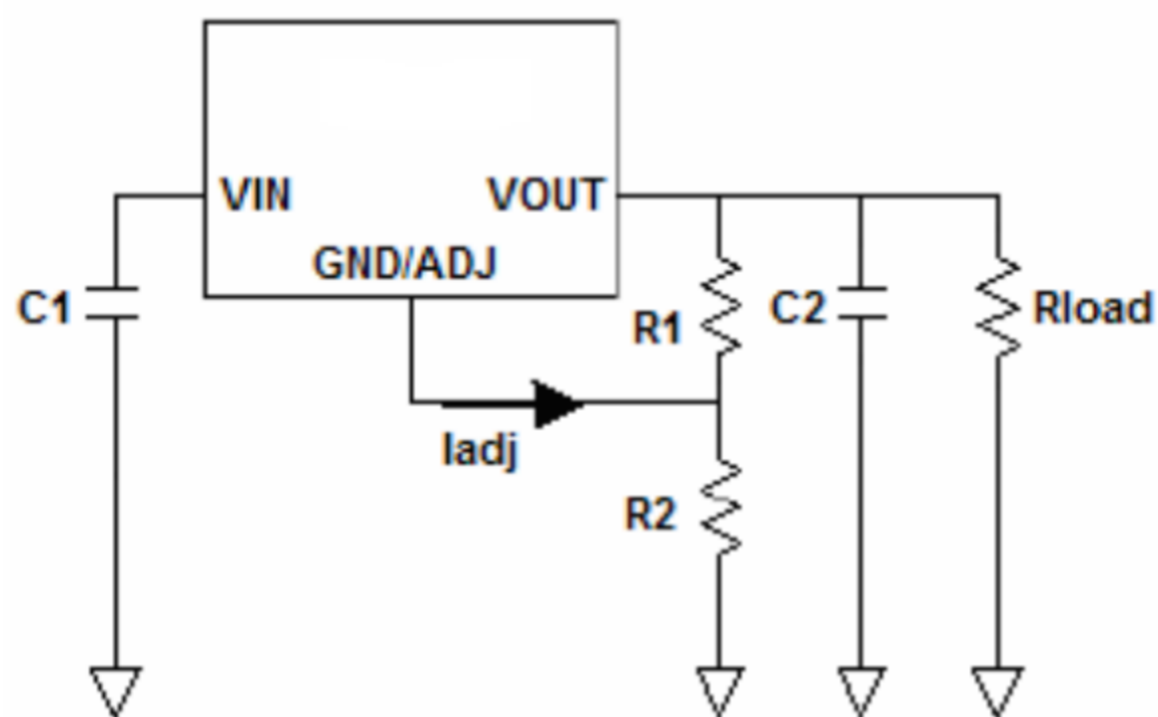
Maximum Input Voltage	18V
Operating Junction Temperature (T_J)	150°C
Environment Temperature (T_A)	140°C
Storage Temperature Range (T_s)	-65°C to 150°C
Lead Temperature (soldering, 10 seconds)	260°C

Electrical Characteristics

$V_{IN} = V_{OUT} + 2V$, $I_O = 10mA$, and $T_J = 25^\circ C$, 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	
		5.0V	$I_{OUT} = 10mA$, $V_{IN} = 7V$, $T_J = 25^\circ C$	4.95	5.00	5.05	
			$0 \leq I_{OUT} \leq 1A$, $6.5V \leq V_{IN} \leq 12V$	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		$^\circ C/W$
		TO-252			10		

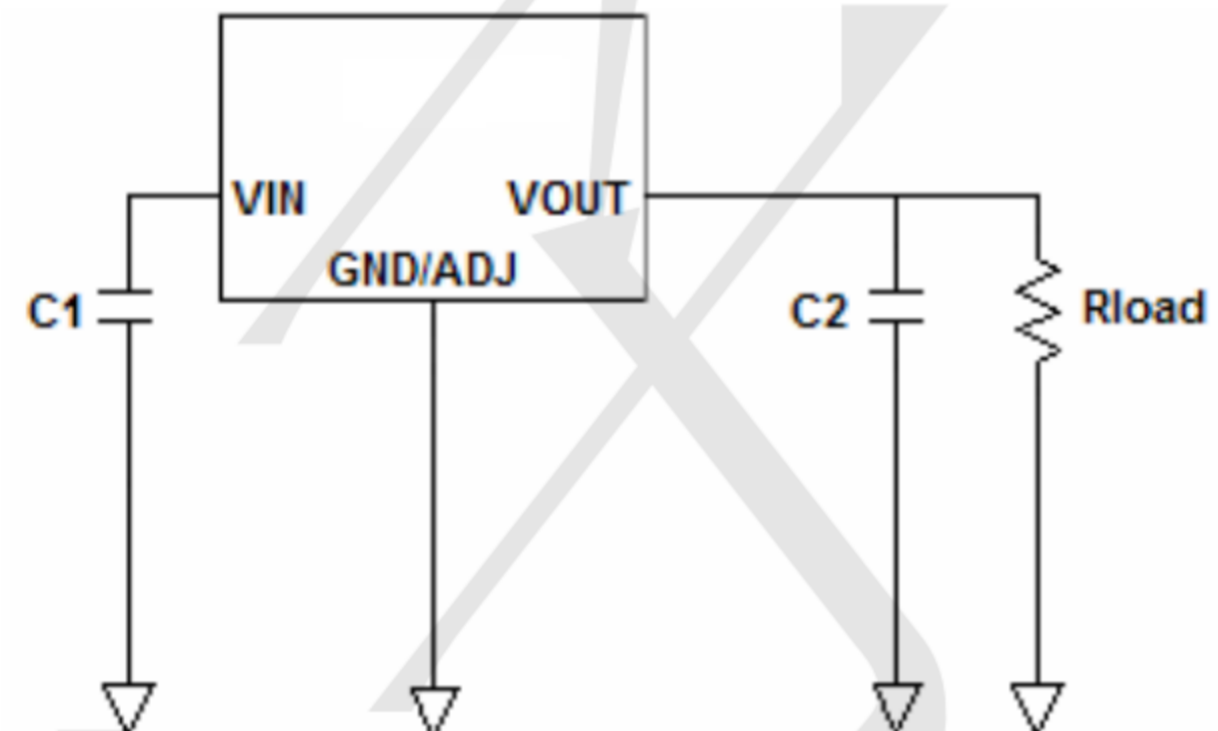
Typical Application



AMS1117 adjustable output voltage

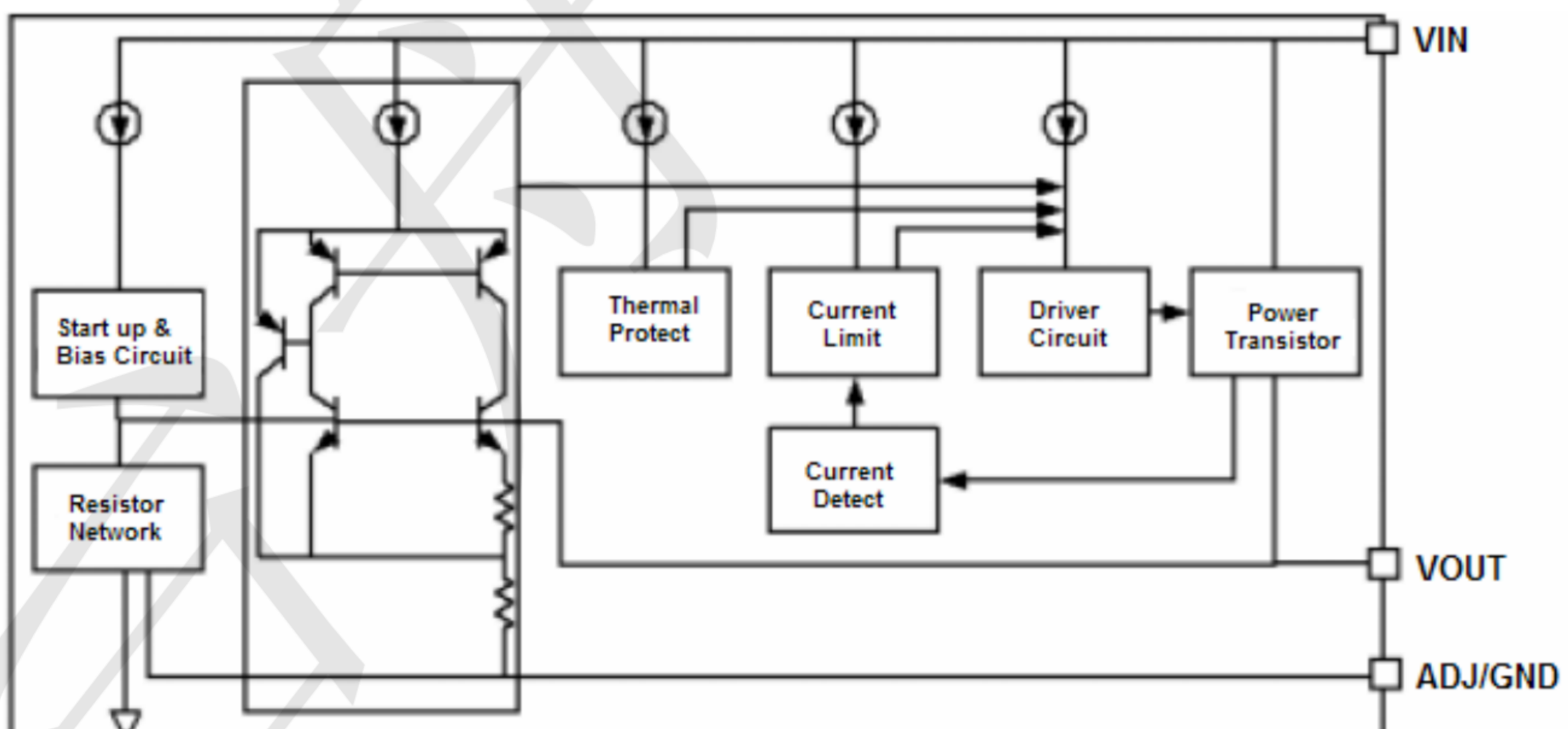
$$V_{OUT} = 1.25V(1 + R2/R1)$$

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.



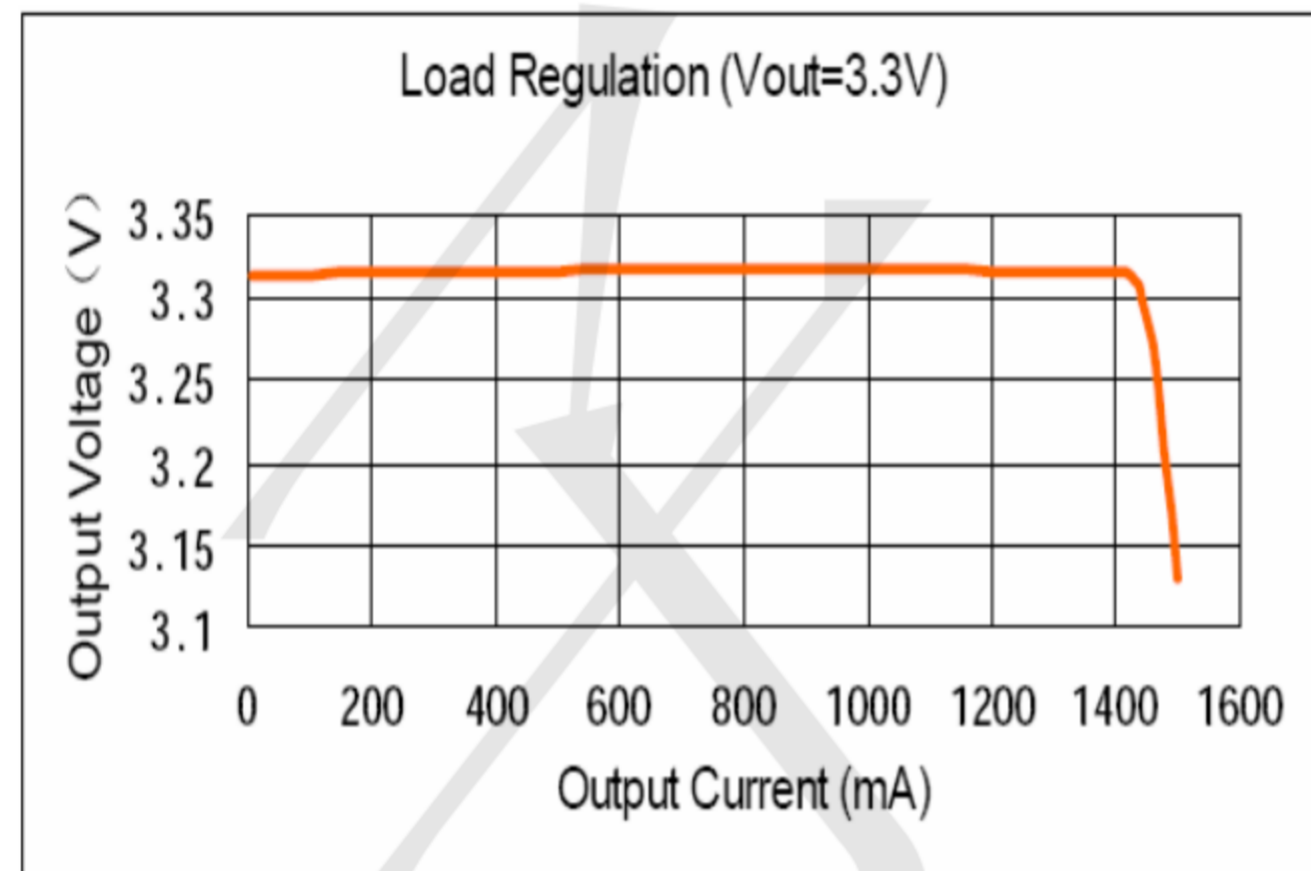
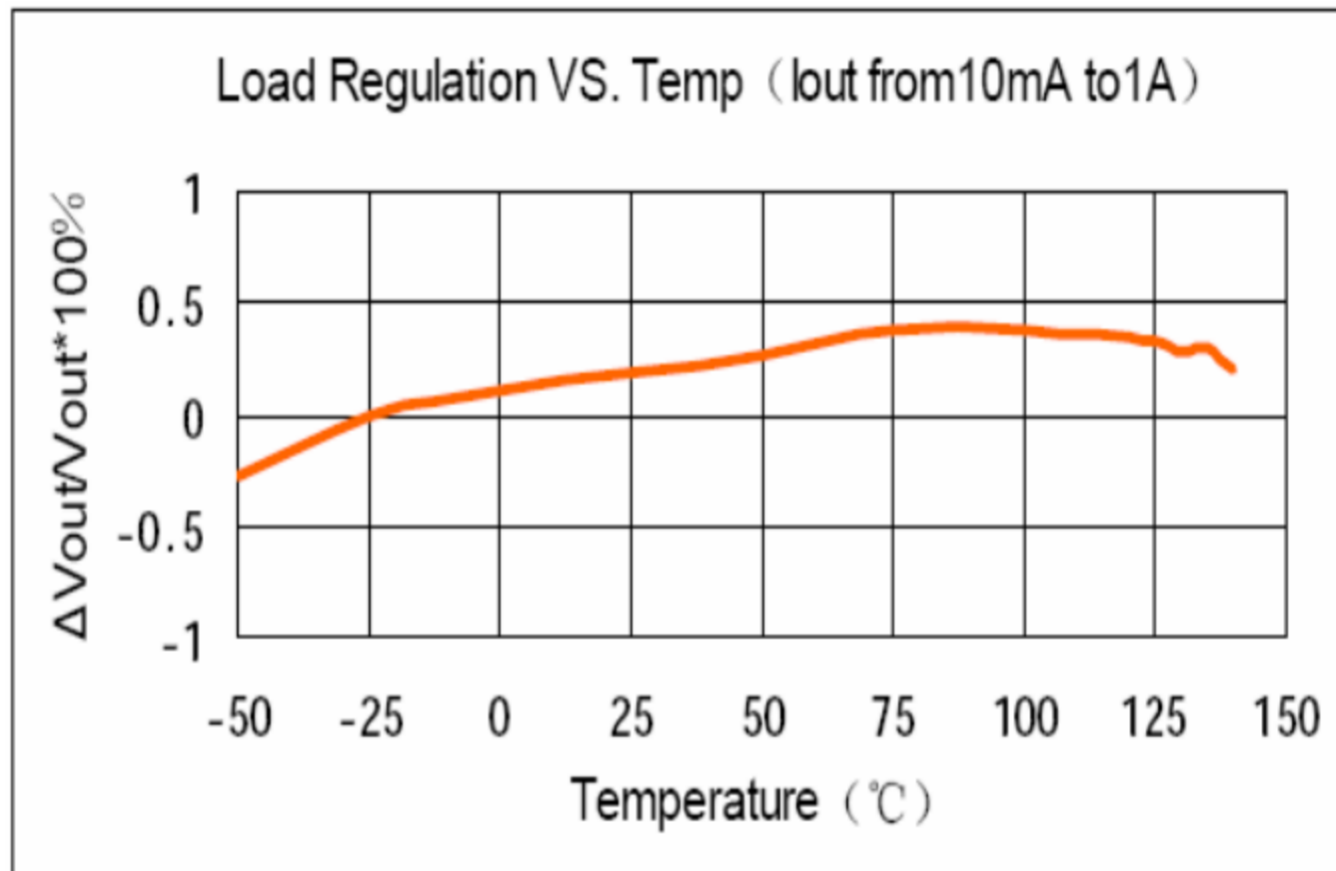
AMS1117 fixed output

Block Diagram

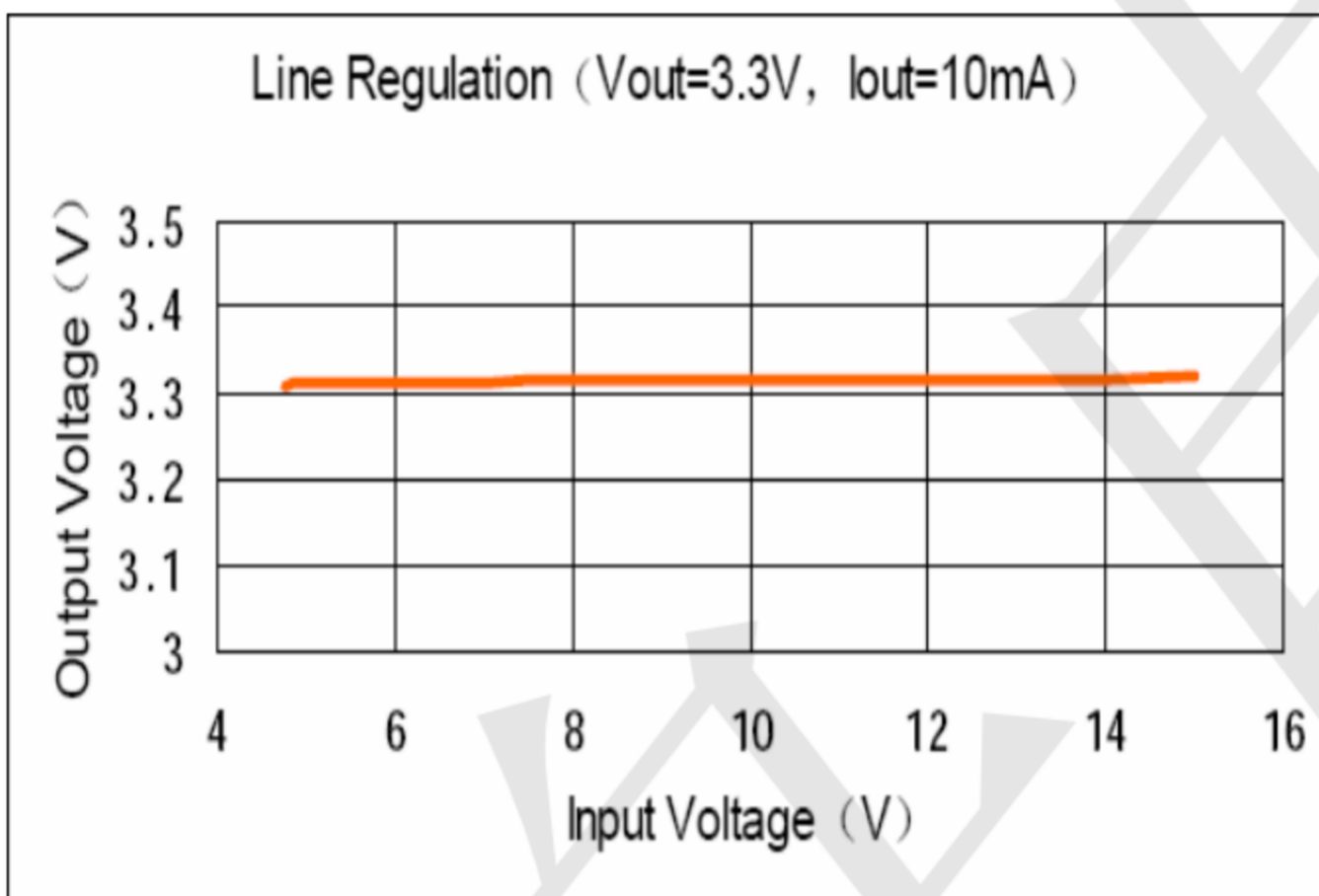


Typical Characteristics

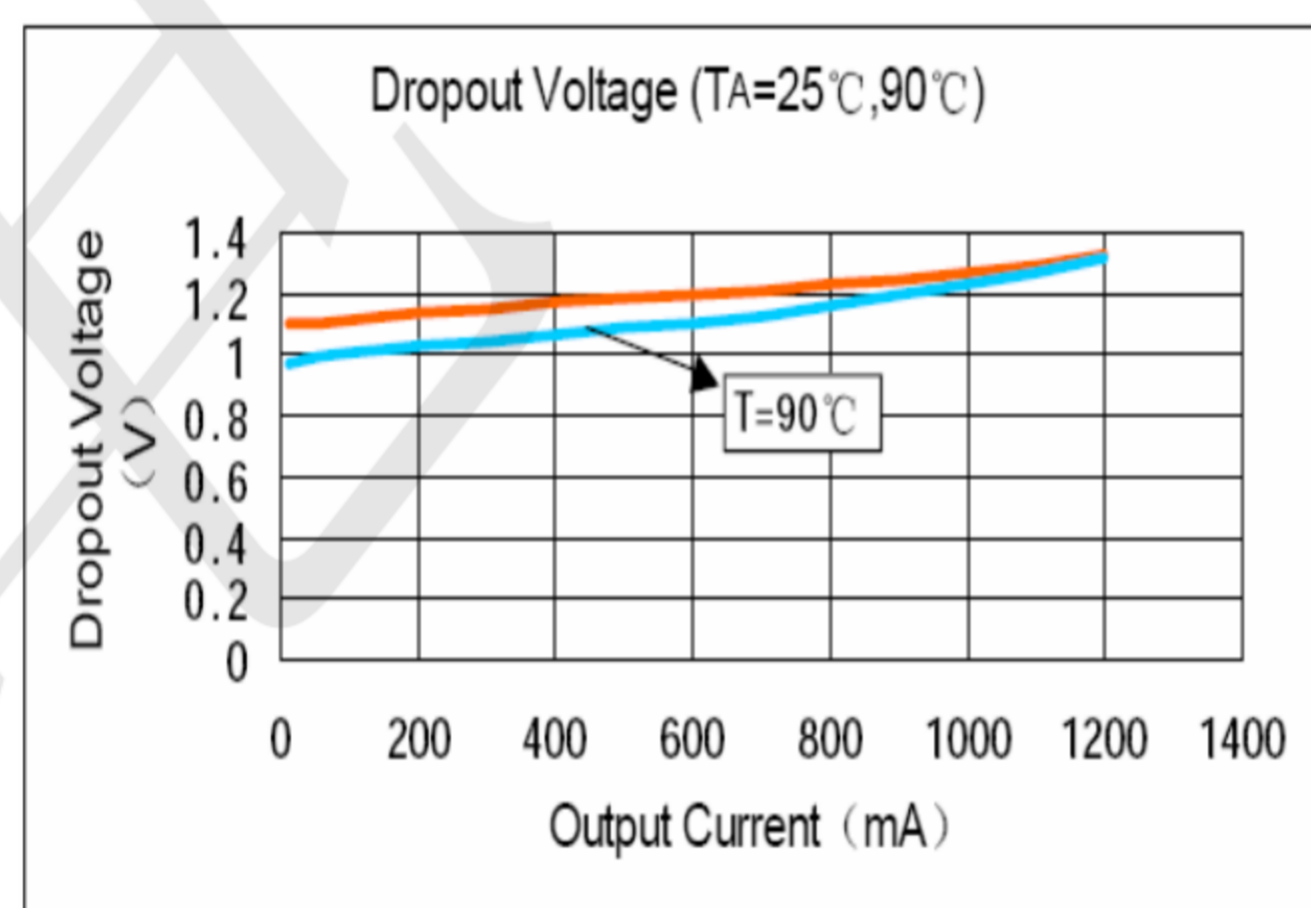
1. Load Regulation



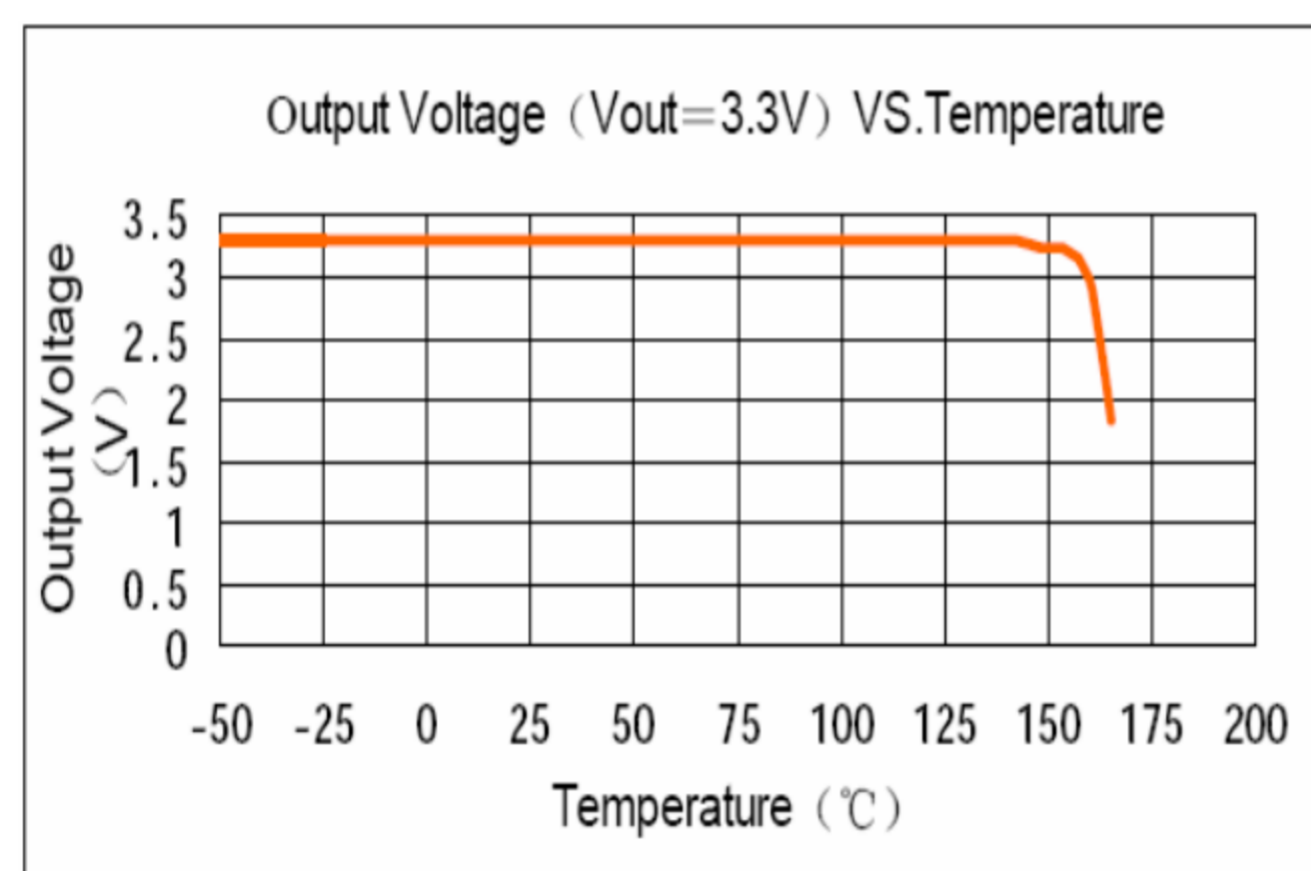
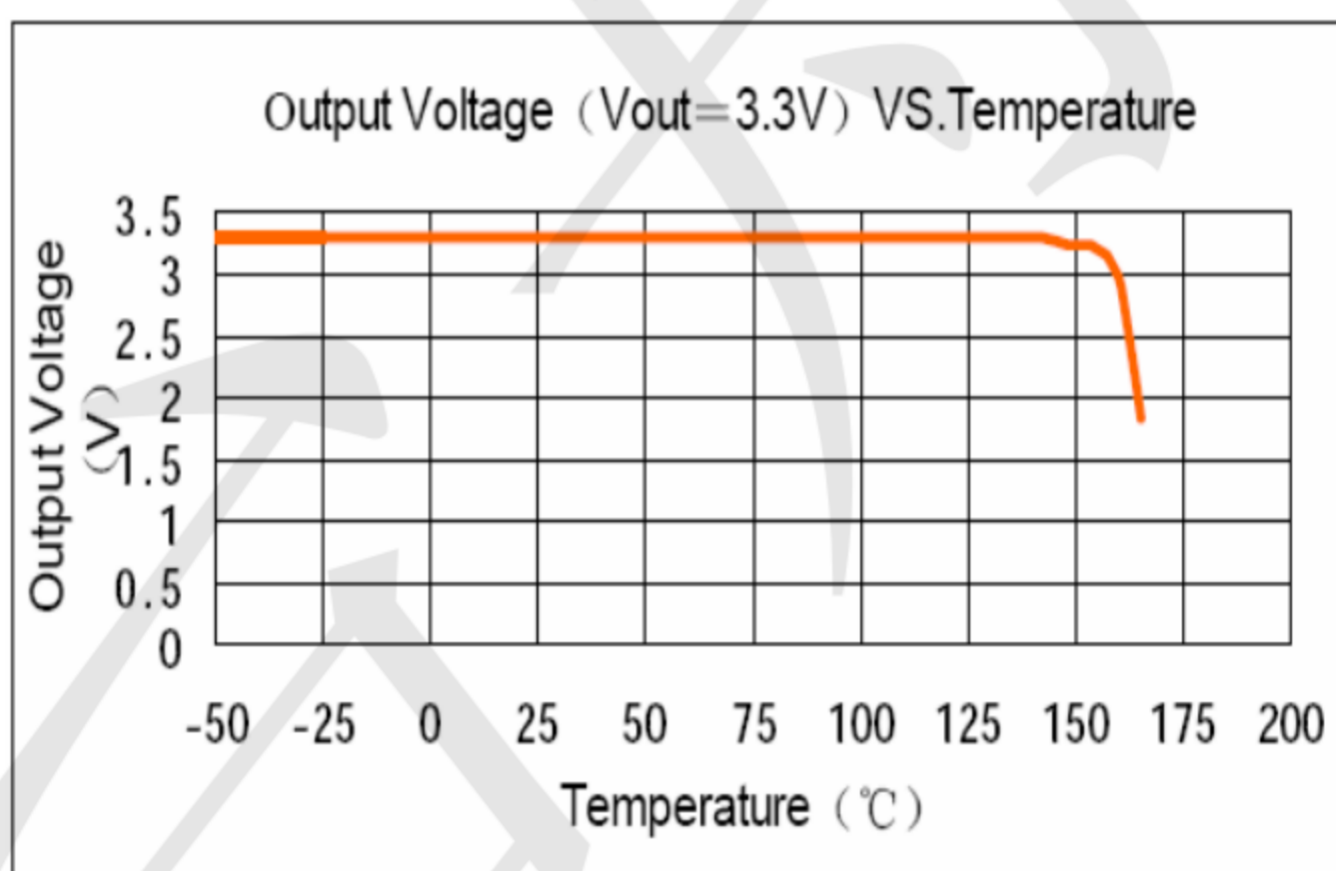
2. Line Regulation



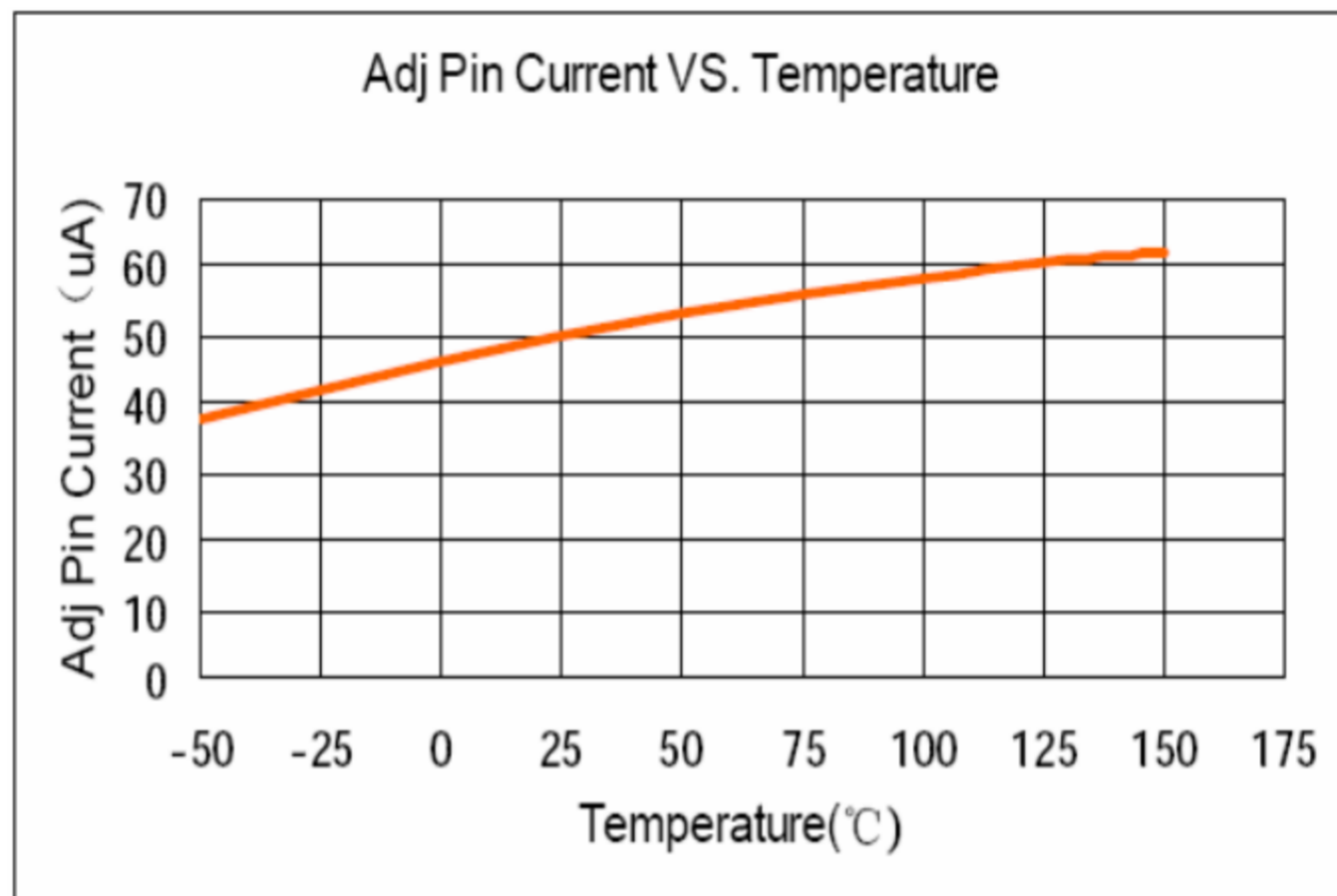
3. Dropout Voltage



4. Temperature Stability

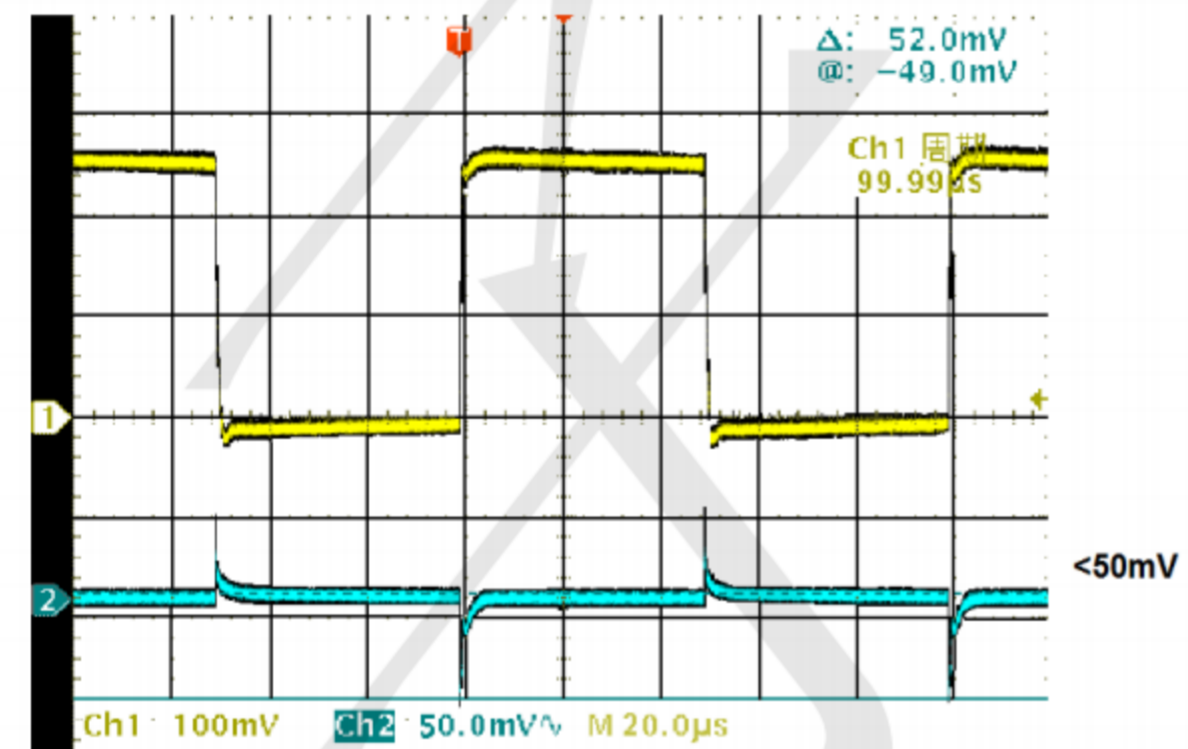


5. ADJ Pin Current vs. Temperature

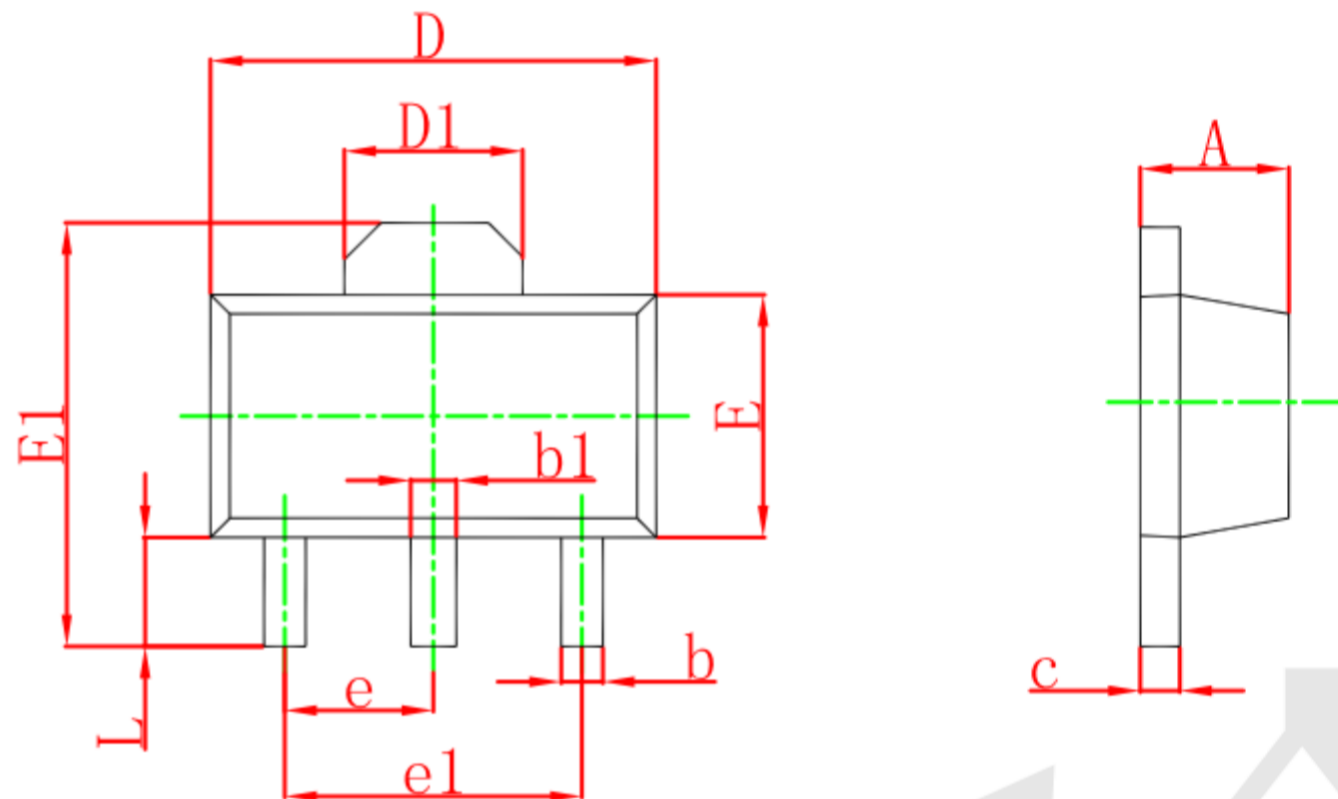


6. Load Transient Response

Load Current Change from 2mA to 500mA

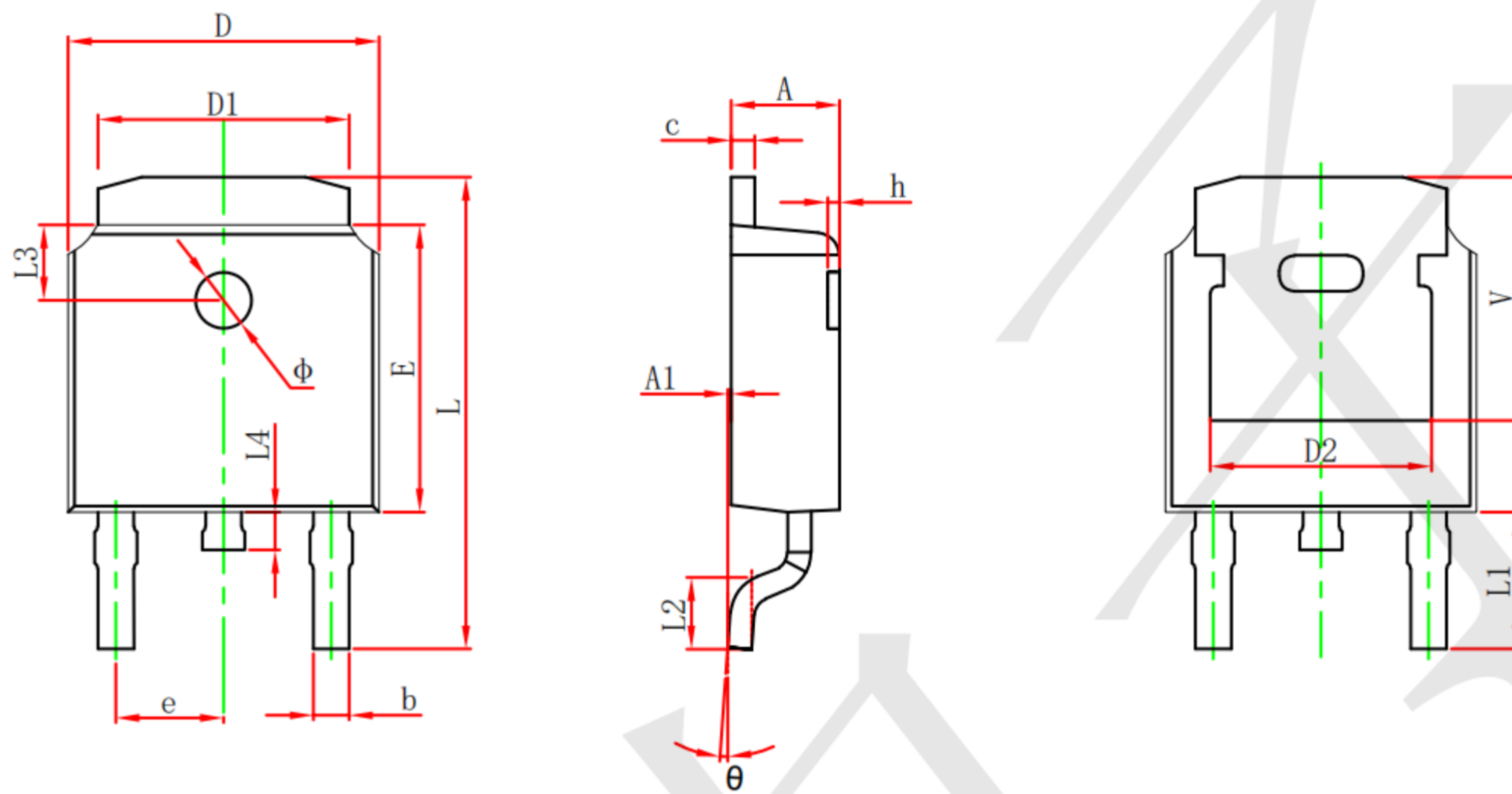


SOT89-3 Package Information



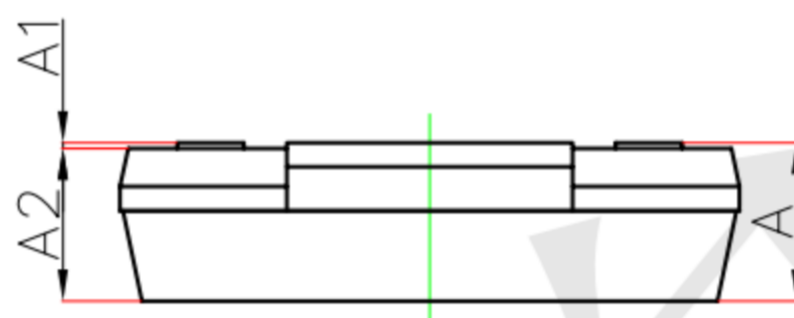
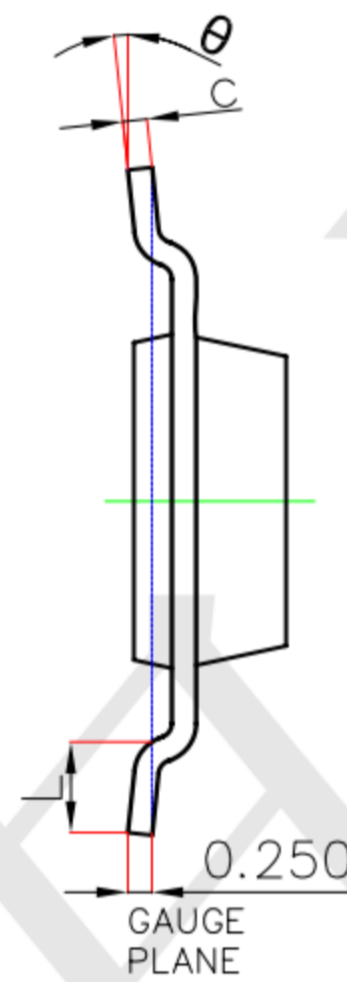
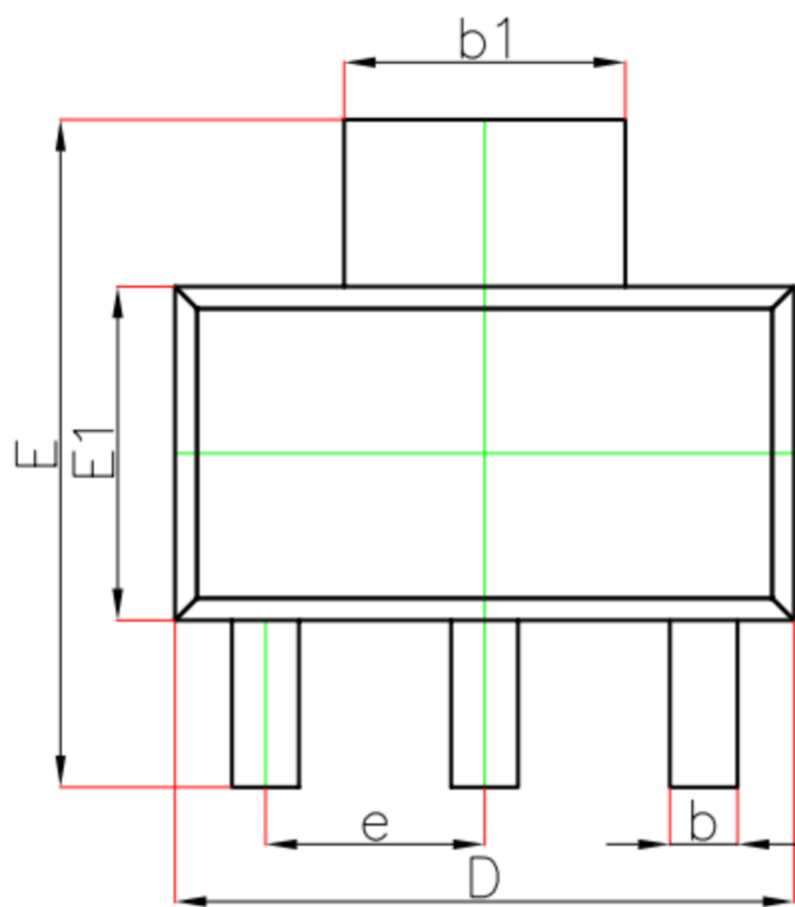
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047

TO252-2 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.635	0.770	0.025	0.030
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.382	0.406
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.250 REF.		0.207 REF.	

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°