

### Features

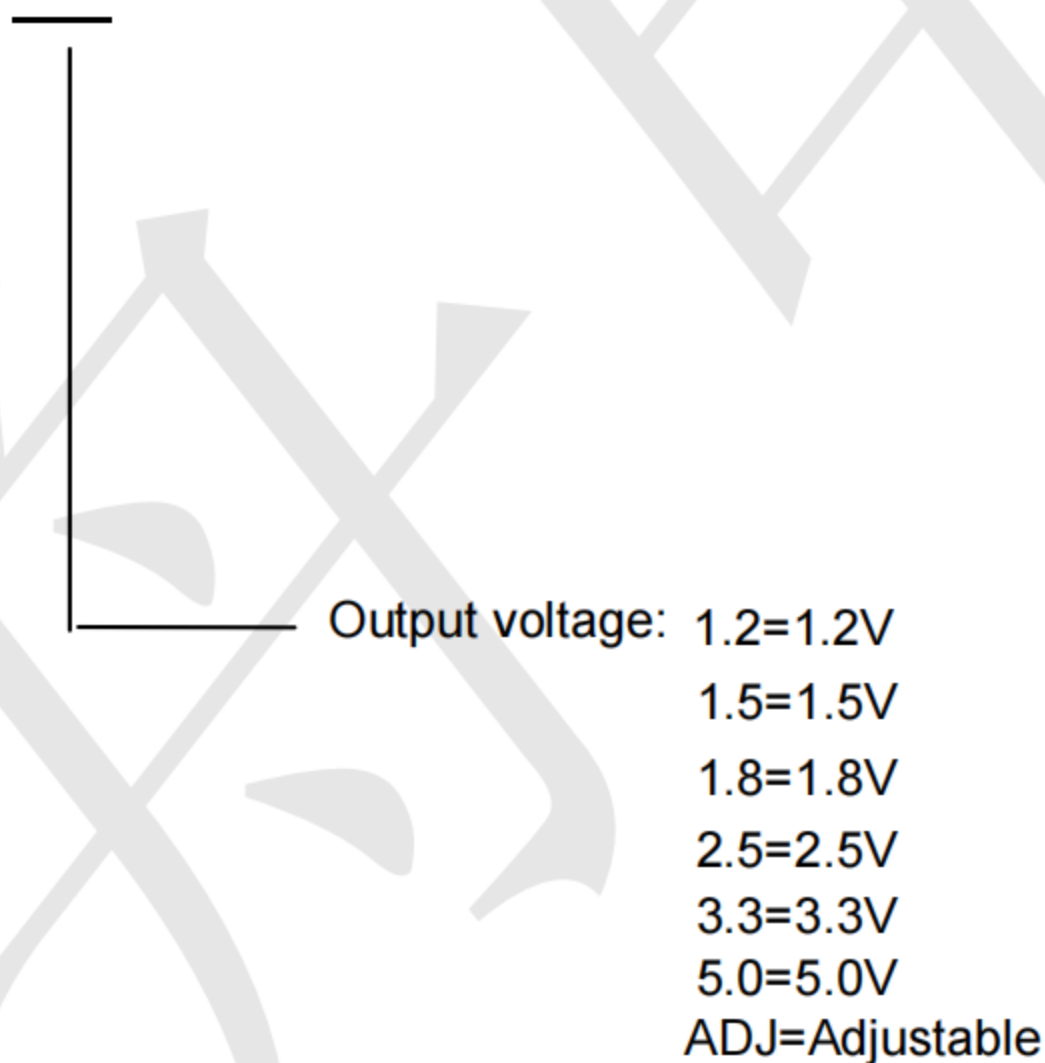
- Output Current of 1A Maximum
- Three-Terminal Adjustable or Fixed Outputs
- Maximum Input Voltage: 18V
- Fast Transient Response
- Current Limit, Safe Operating and Thermal Shutdown Protection
- Line Regulation: 0.2%
- Load Regulation: 0.4%
- Environment Temperature: -50°C~+140°C
- Available in SOT223-3 and TO-252 ,SOT89-3 Package

### Application

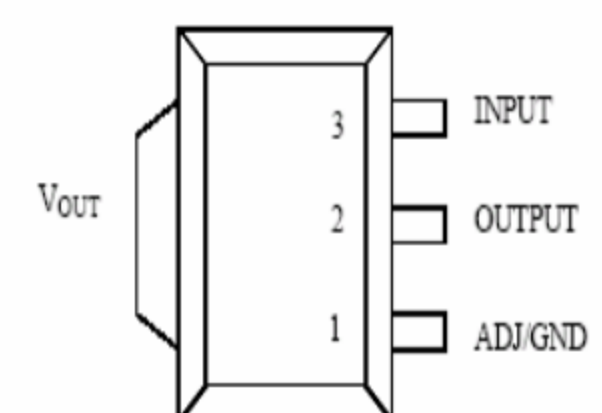
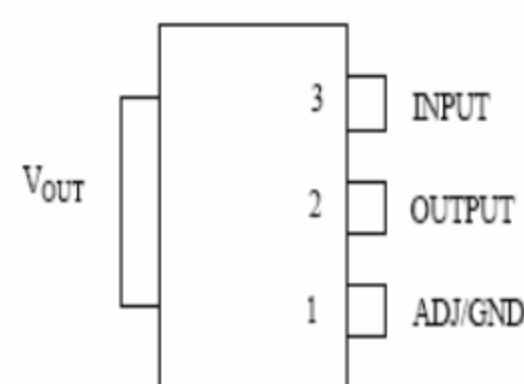
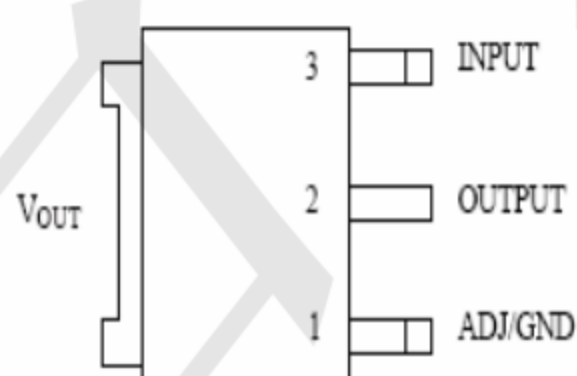
- High Efficiency Linear Regulators
- Post Regulator for Switching DC/DC Converter
- Power Management for M/B and Graphic Card
- 2.85V Model for SCSI-2 Active Termination
- Battery Charger
- LCD Monitor and LCD TV
- DVD Decode Board
- ADSL Modem

### Ordering Information

## AMS1117-1.8



### Package and Pin Configuration



### Absolute Maximum Ratings

Maximum Input Voltage	18V
Operating Junction Temperature (T <sub>J</sub> )	150 °C
Environment Temperature (T <sub>A</sub> )	140 °C
Storage Temperature Range (T <sub>s</sub> )	-65 °C to 150 °C
Lead Temperature (soldering, 10 seconds)	260 °C

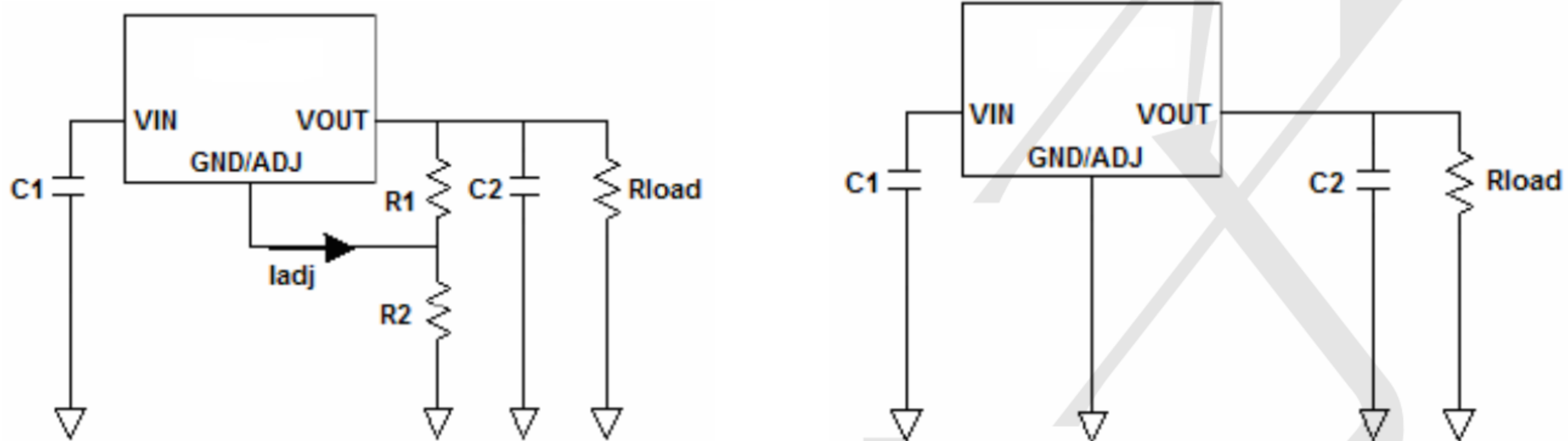
### Electrical Characteristics

V<sub>IN</sub> = V<sub>OUT</sub> + 2V, I<sub>O</sub> = 10mA, and T<sub>J</sub> = 25 °C, unless otherwise specified.

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit	
V <sub>REF</sub>	Reference Voltage	I <sub>OUT</sub> = 10mA, V <sub>IN</sub> - V <sub>OUT</sub> = 2V	1.238	1.250	1.262	V	
		10mA ≤ I <sub>OUT</sub> ≤ 1A, 1.5V ≤ V <sub>IN</sub> - V <sub>OUT</sub> ≤ 12V	1.225	1.250	1.275		
V <sub>OUT</sub>	Output Voltage	1.8V	I <sub>OUT</sub> = 10mA, V <sub>IN</sub> = 3.8V, T <sub>J</sub> = 25°C	1.782	1.80	1.818	V
			0 ≤ I <sub>OUT</sub> ≤ 1A, 3.2V ≤ V <sub>IN</sub> ≤ 12V	1.764	1.80	1.836	
		2.5V	I <sub>OUT</sub> = 10mA, V <sub>IN</sub> = 4.5V, T <sub>J</sub> = 25°C	2.475	2.50	2.525	
			0 ≤ I <sub>OUT</sub> ≤ 1A, 3.9V ≤ V <sub>IN</sub> ≤ 12V	2.450	2.50	2.550	
		3.3V	I <sub>OUT</sub> = 10mA, V <sub>IN</sub> = 5V, T <sub>J</sub> = 25°C	3.267	3.30	3.333	
			0 ≤ I <sub>OUT</sub> ≤ 1A, 4.75V ≤ V <sub>IN</sub> ≤ 12V	3.234	3.30	3.366	
5.0V	I <sub>OUT</sub> = 10mA, V <sub>IN</sub> = 7V, T <sub>J</sub> = 25°C	4.95	5.00	5.05			
	0 ≤ I <sub>OUT</sub> ≤ 1A, 6.5V ≤ V <sub>IN</sub> ≤ 12V	4.90	5.00	5.10			
ΔV <sub>OUT</sub>	Line Regulation	ADJ	I <sub>OUT</sub> = 10mA, 1.5V ≤ V <sub>IN</sub> - V <sub>OUT</sub> ≤ 13.775V		0.035	0.2	%
		Fixed	I <sub>OUT</sub> = 10mA, V <sub>OUT</sub> + 1.5V ≤ V <sub>IN</sub> ≤ 15V		9	12	mV
ΔV <sub>OUT</sub>	Load Regulation	ADJ	V <sub>IN</sub> - V <sub>OUT</sub> = 3V, 10mA ≤ I <sub>OUT</sub> ≤ 1A		0.2	0.4	%
		Fixed	V <sub>IN</sub> = V <sub>OUT</sub> + 1.5V, 10mA ≤ I <sub>OUT</sub> ≤ 1A		3	10	mV
V <sub>IN</sub> - V <sub>OUT</sub>	Dropout Voltage		ΔV <sub>OUT</sub> , ΔV <sub>REF</sub> = 1%, I <sub>OUT</sub> = 100mA		1.11	1.20	V
			ΔV <sub>OUT</sub> , ΔV <sub>REF</sub> = 1%, I <sub>OUT</sub> = 500mA		1.18	1.25	V
			ΔV <sub>OUT</sub> , ΔV <sub>REF</sub> = 1%, I <sub>OUT</sub> = 1A		1.26	1.30	V
I <sub>CL</sub>	Current Limit		V <sub>IN</sub> - V <sub>OUT</sub> = 2V, T <sub>J</sub> = 25°C	1.25	1.4	1.6	A
	Minimum Load Current (Note 1)	Adjustable Version			5	10	mA
I <sub>q</sub>	Quiescent Current	Fixed	V <sub>IN</sub> - V <sub>OUT</sub> = 1.25V		4	8	mA
I <sub>ADJ</sub>	ADJ Pin Current				55	120	uA
	Temperature Stability					0.5	%
θ <sub>JC</sub>	Thermal Resistor	SOT-223			20		°C/W
		TO-252			10		W



### Typical Application



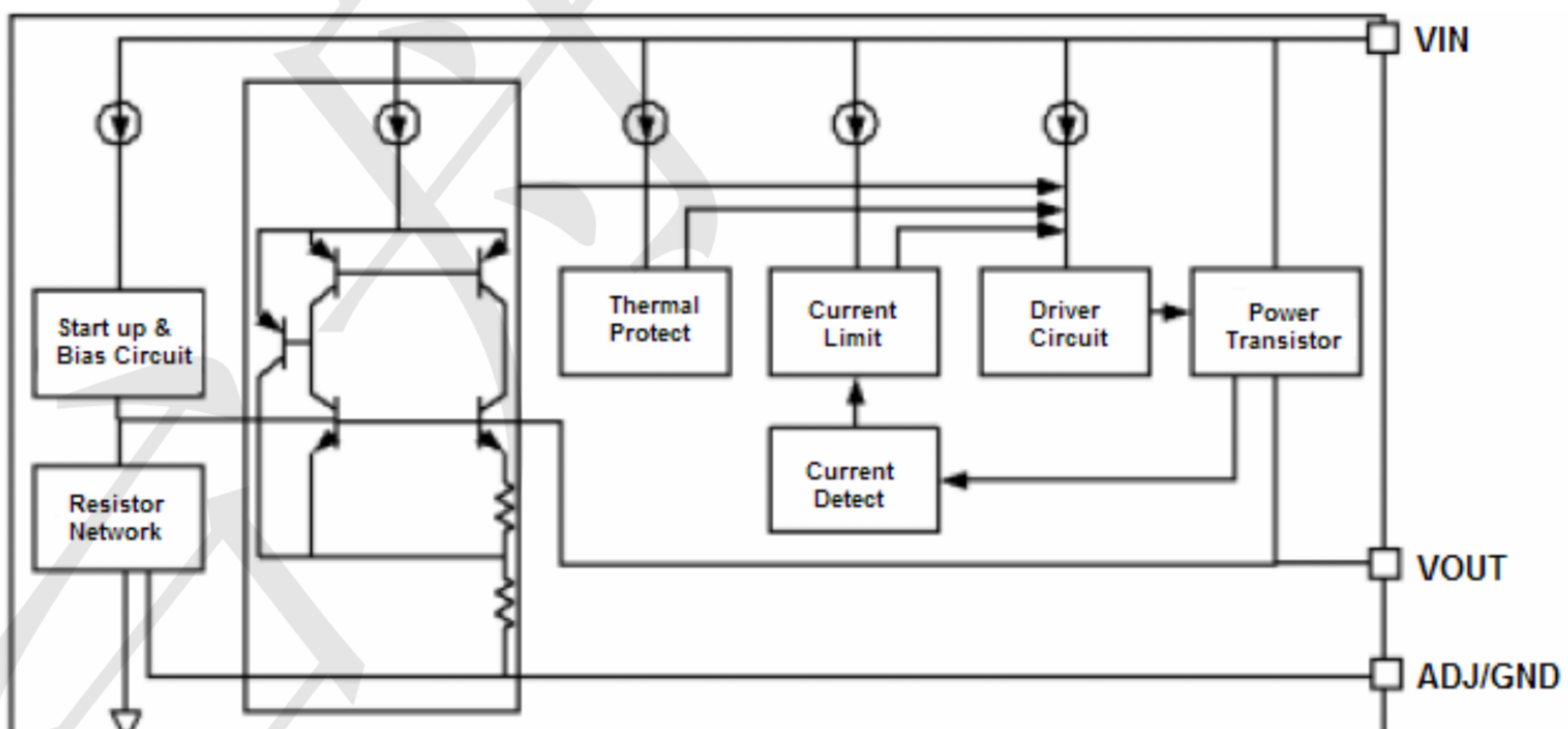
AMS1117 adjustable output voltage

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

AMS1117 fixed output

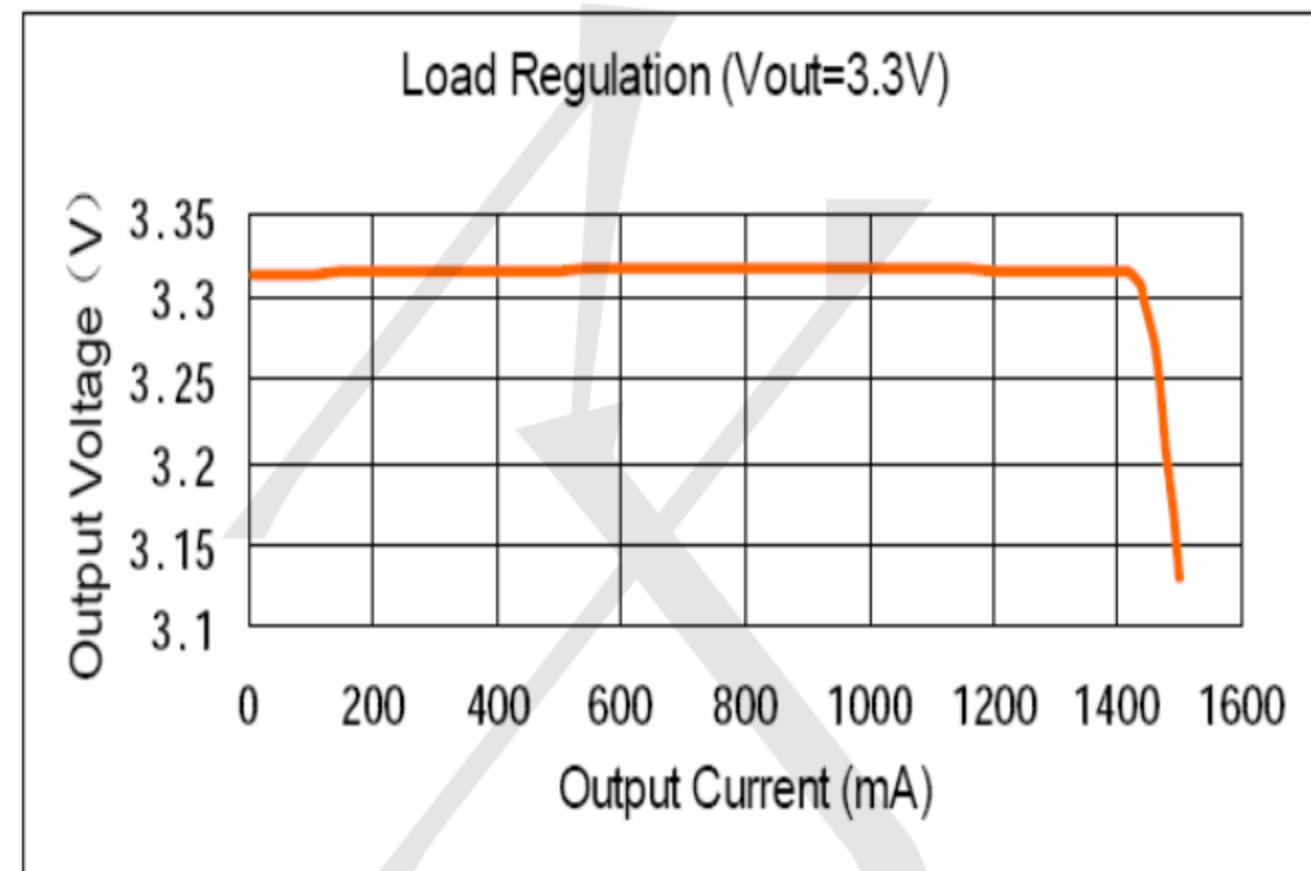
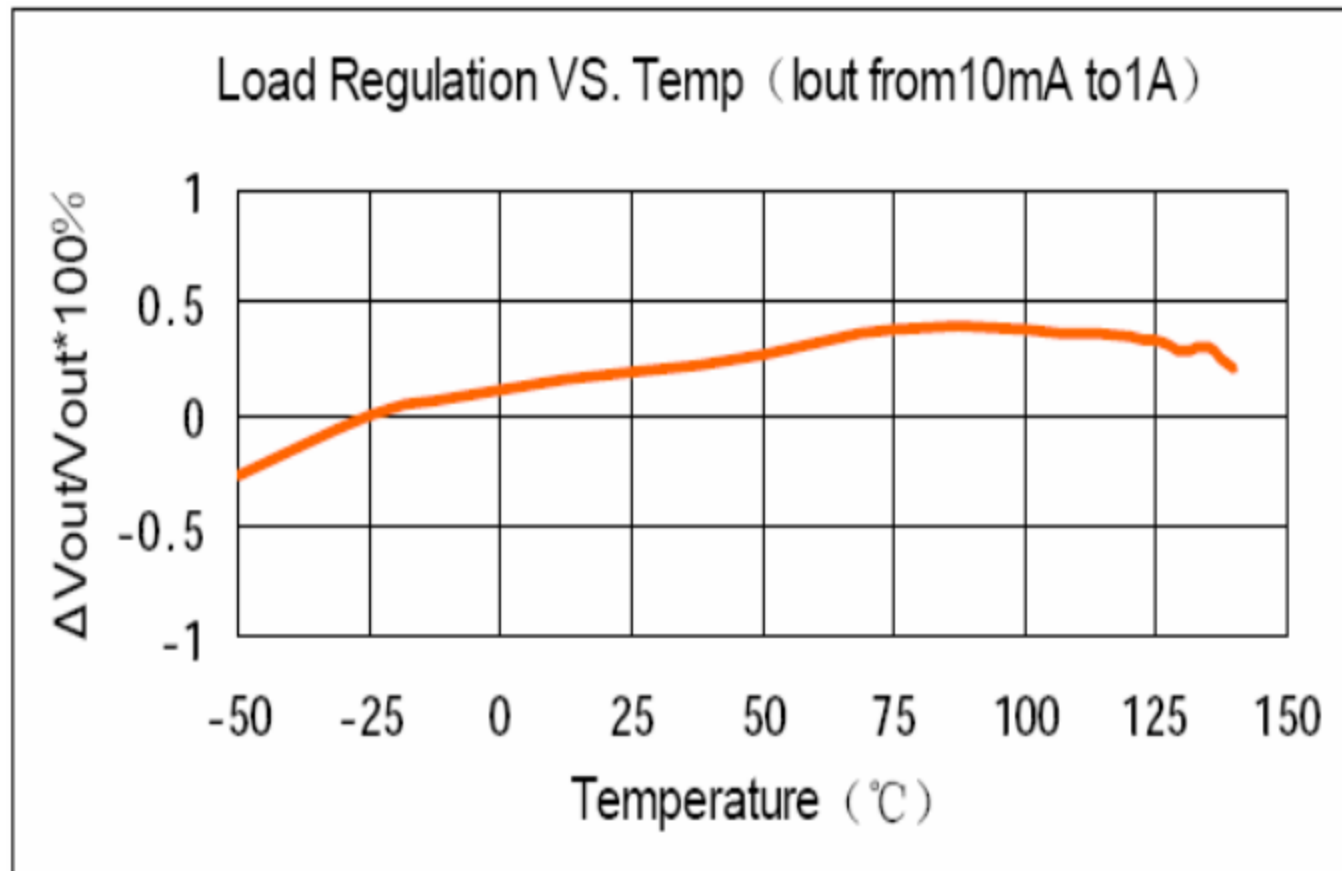
The TP1117 adjustable regulator provide 1.25V reference voltage. Any output voltage between 1.25V~13.8V can be available by choosing two external resistors.

### Block Diagram

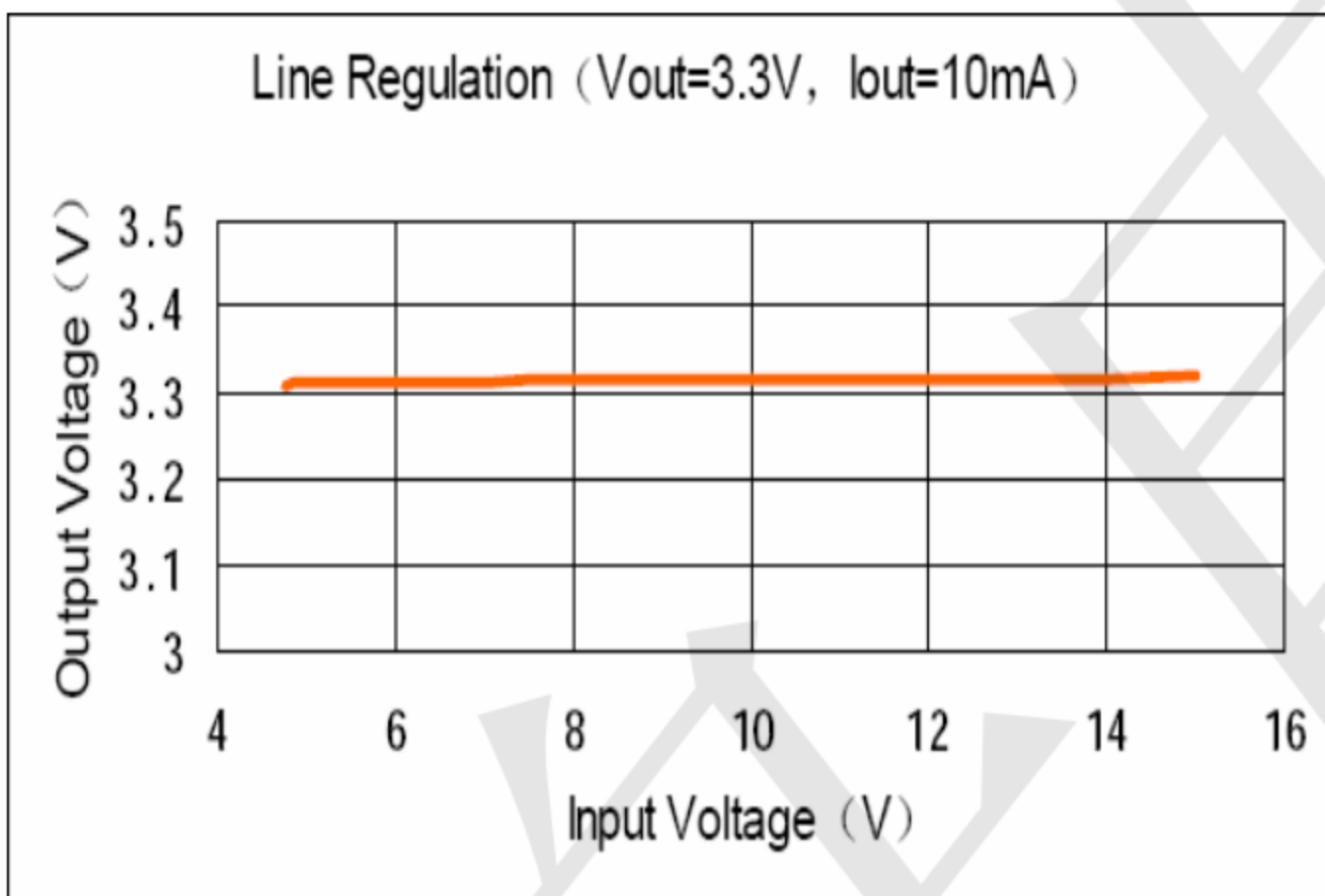


## Typical Characteristics

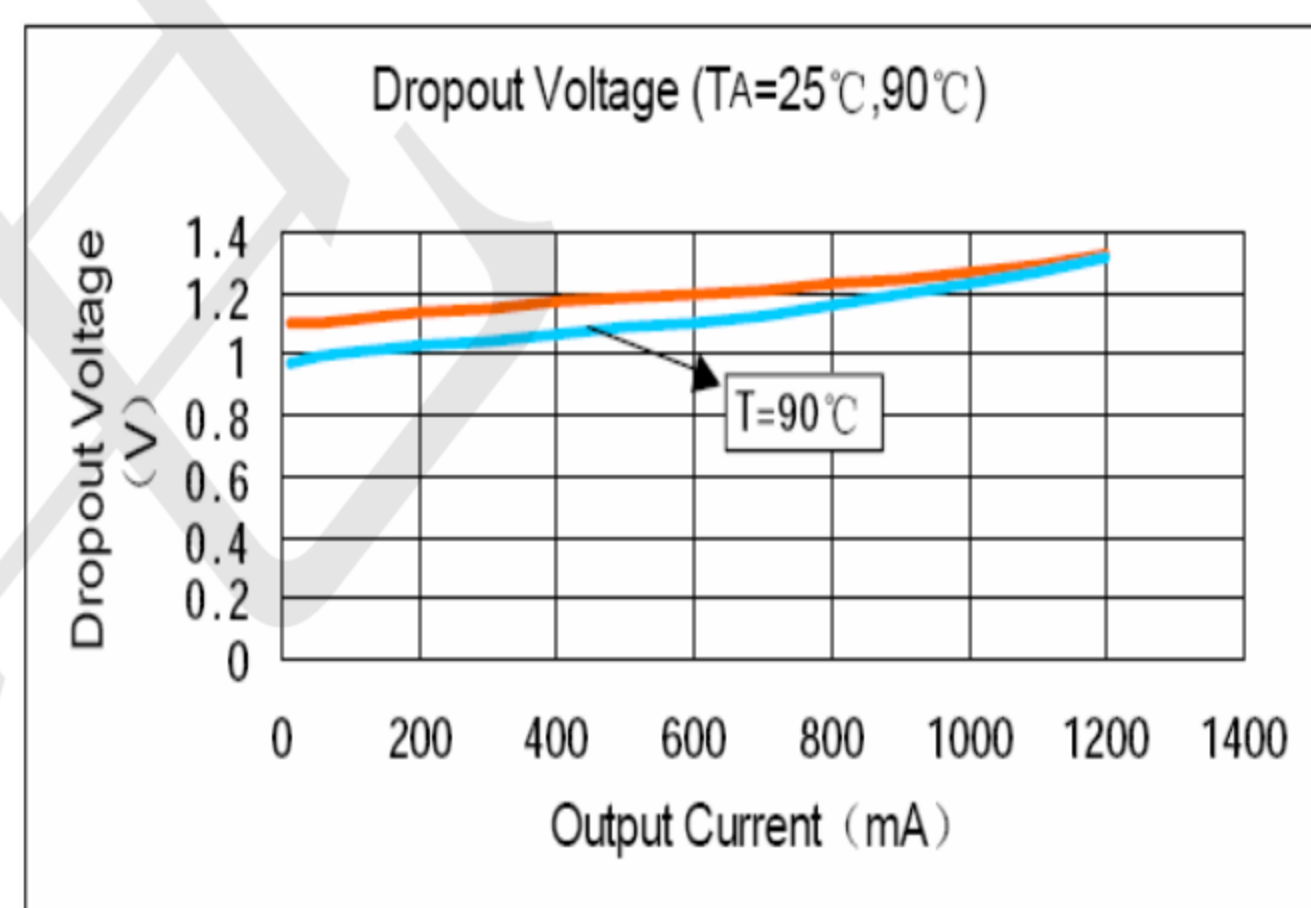
### 1. Load Regulation



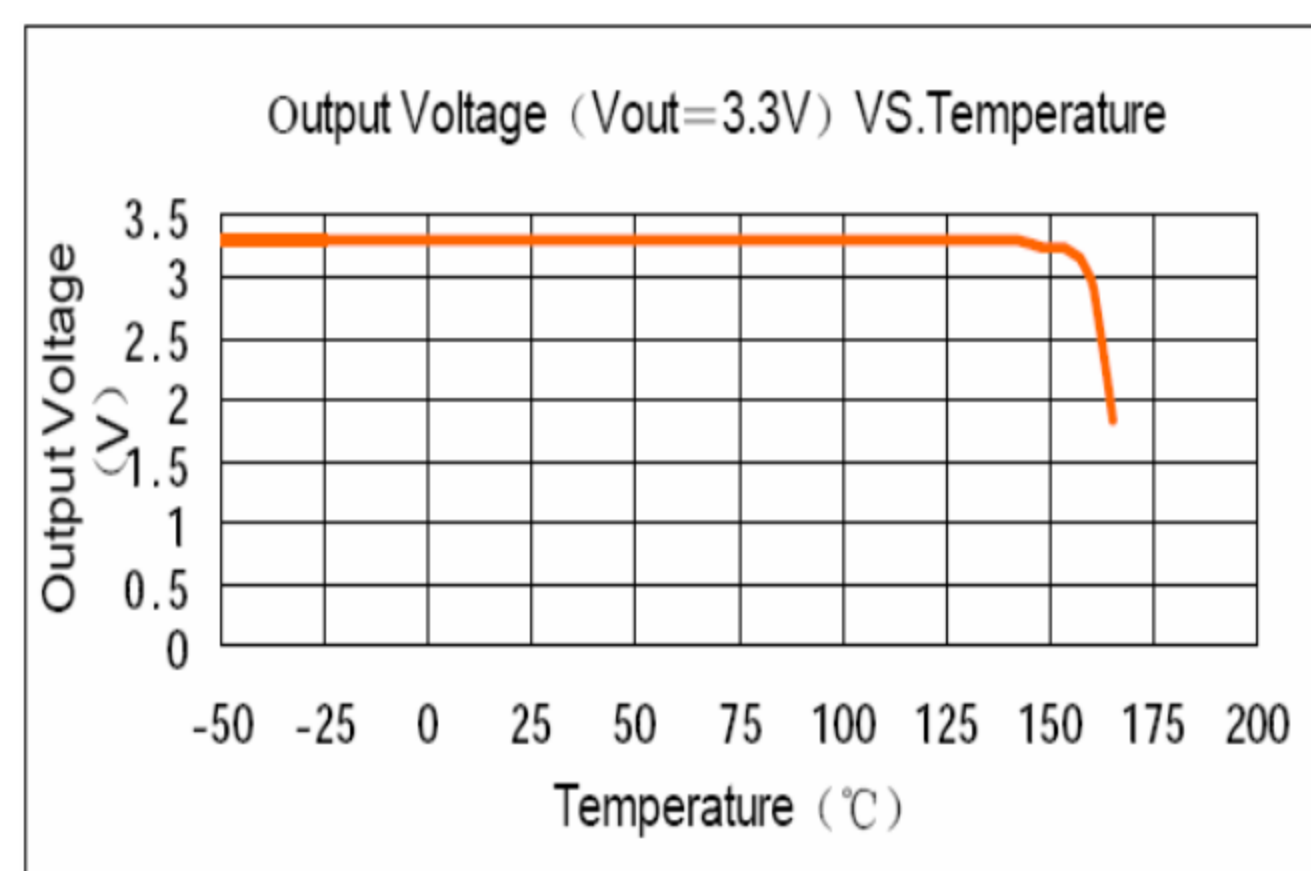
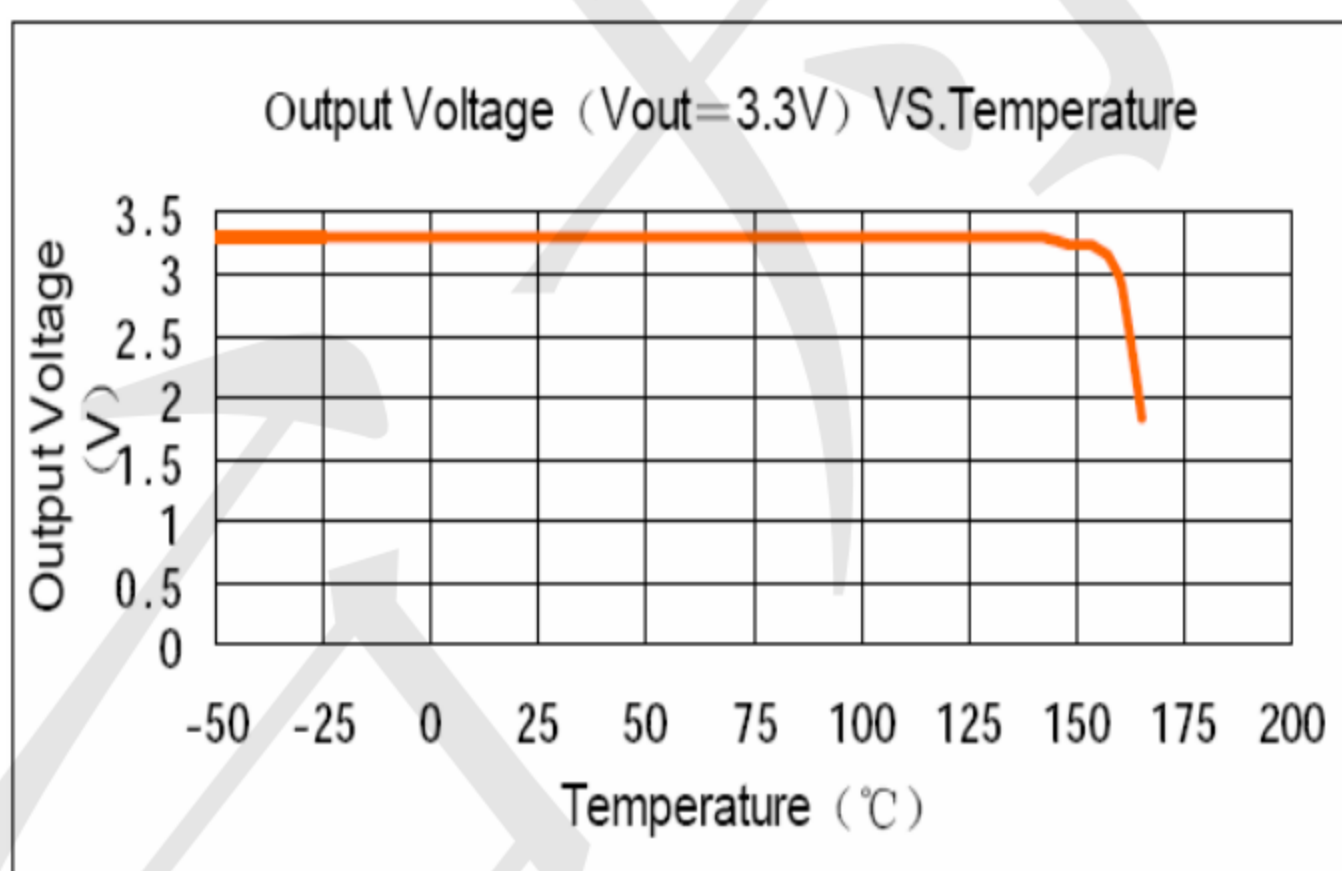
### 2. Line Regulation



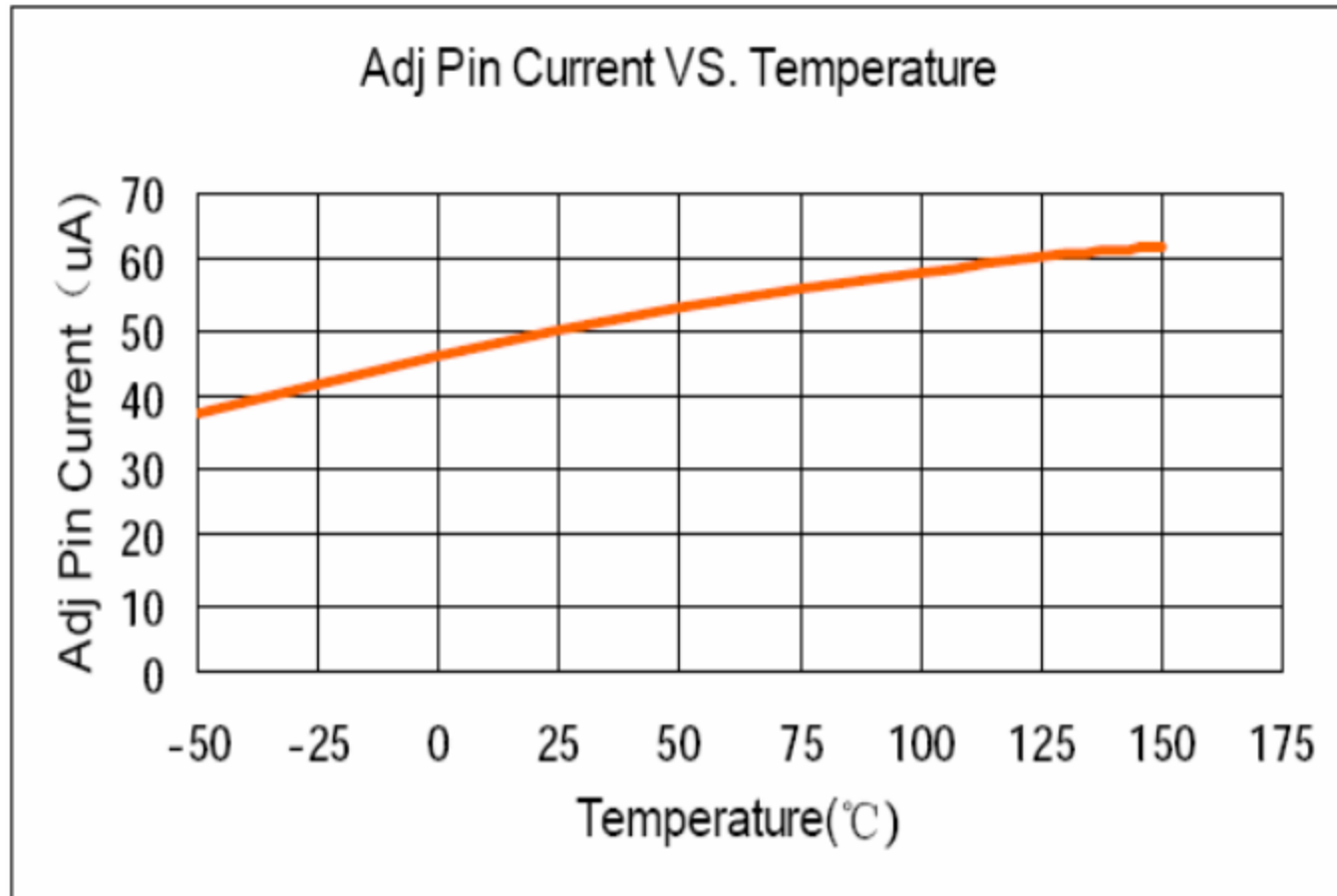
### 3. Dropout Voltage



### 4. Temperature Stability

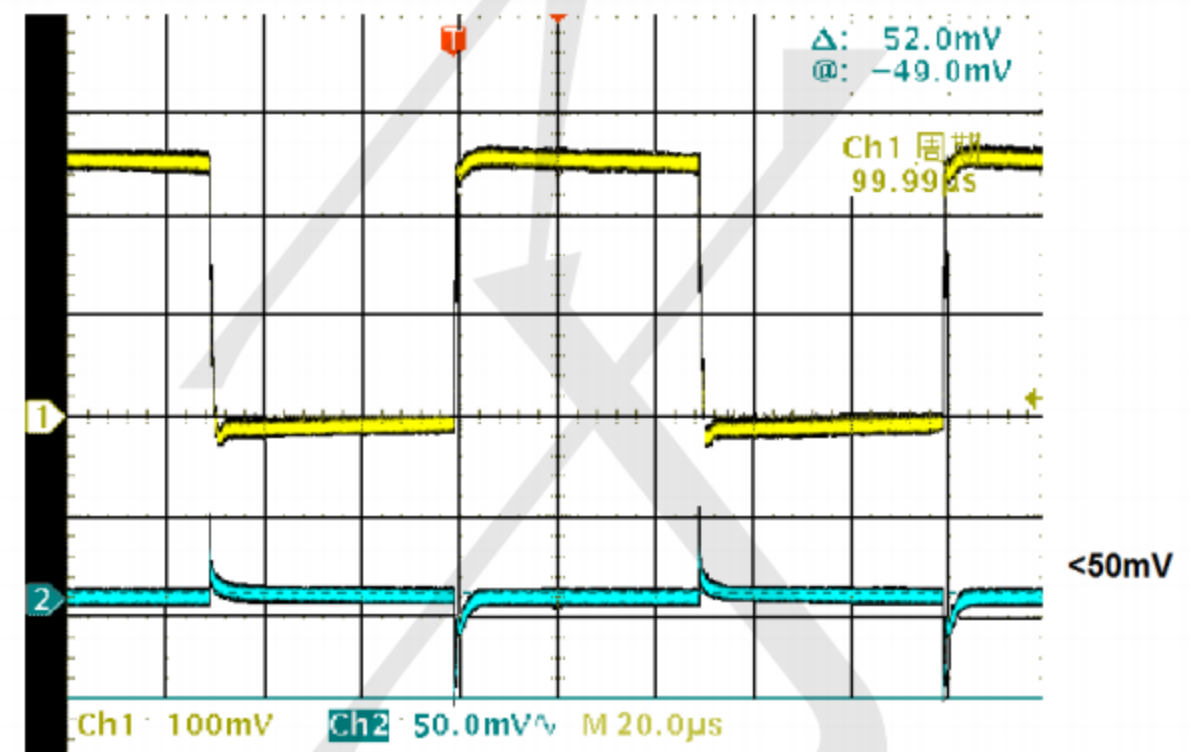


5. ADJ Pin Current vs. Temperature



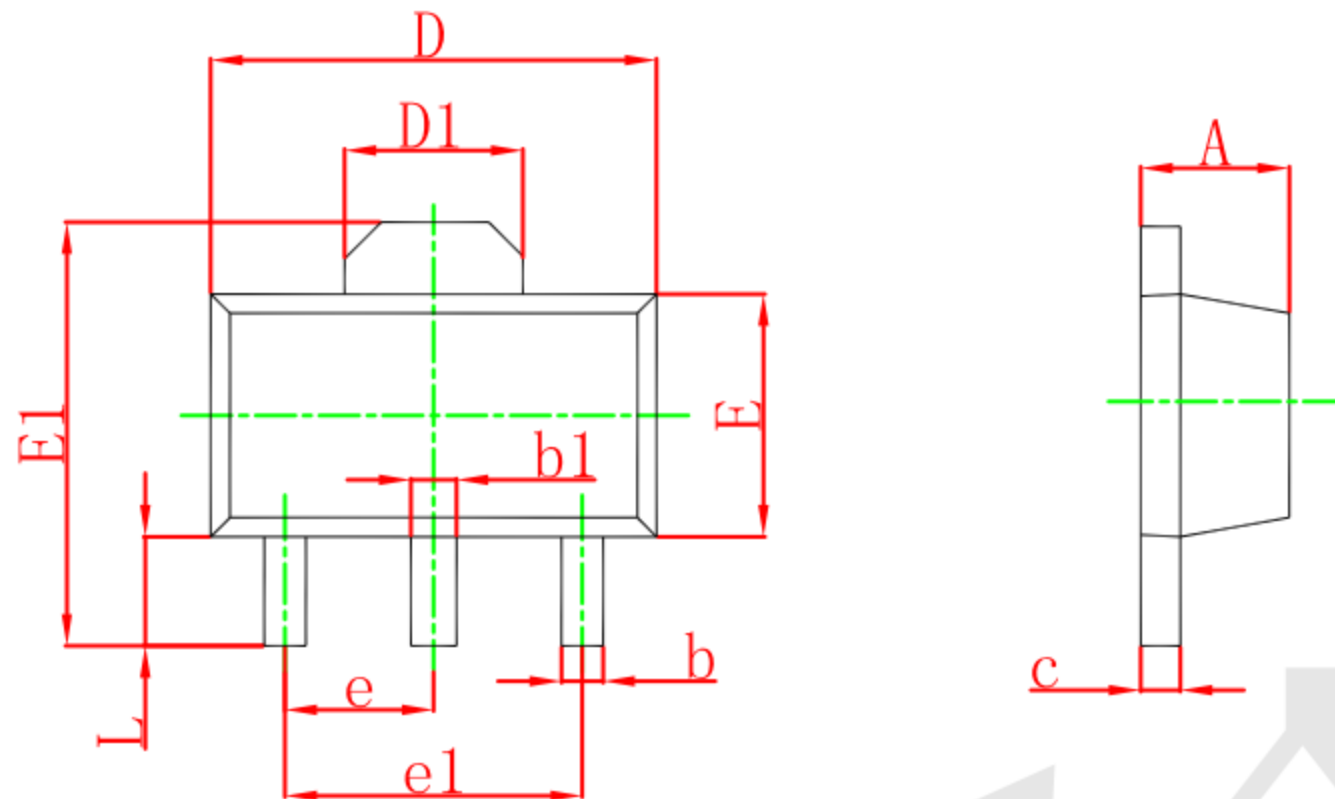
6. Load Transient Response

Load Current Change from 2mA to 500mA



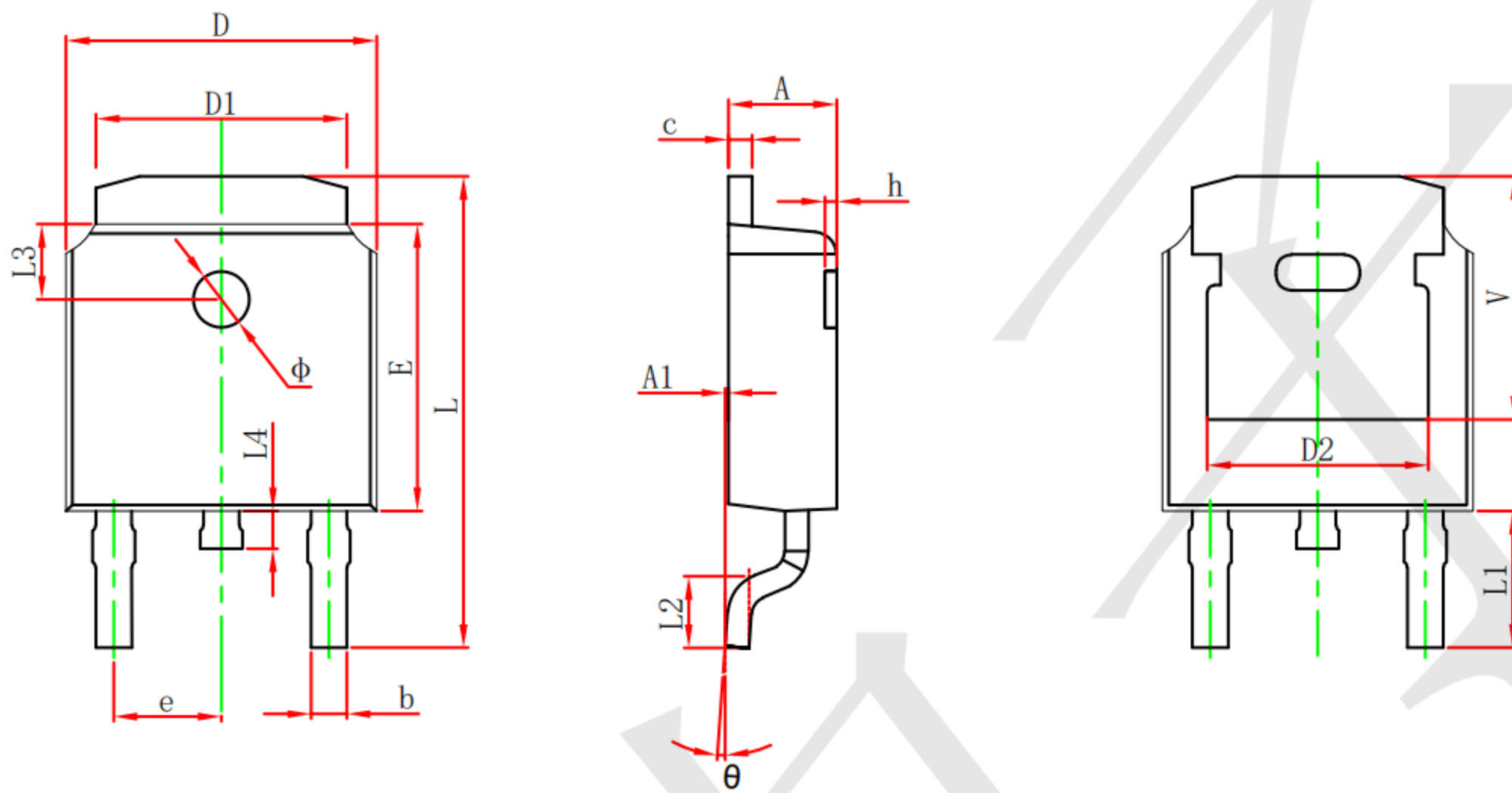


**SOT89-3 Package Information**



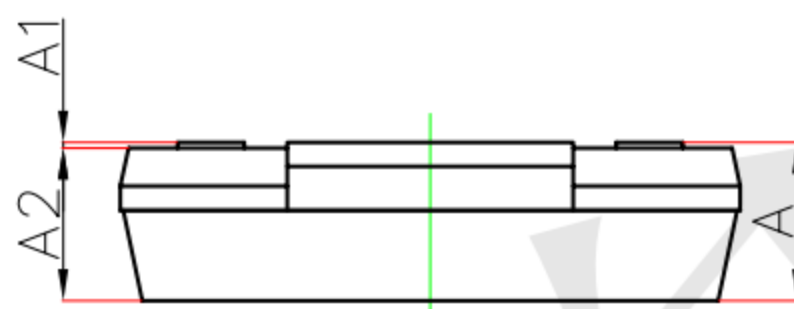
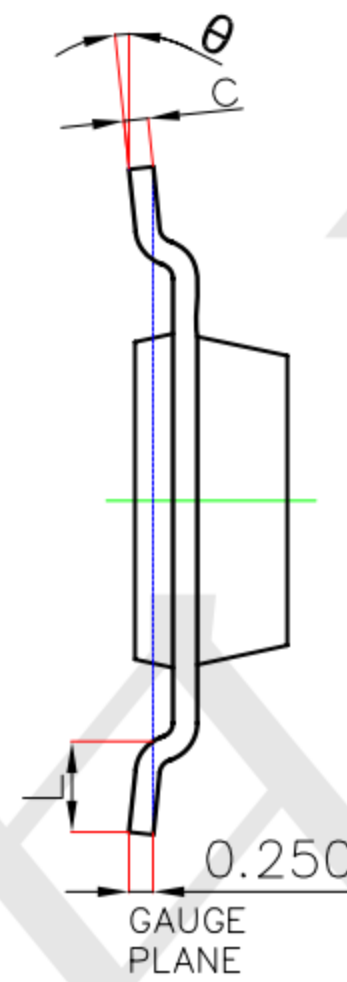
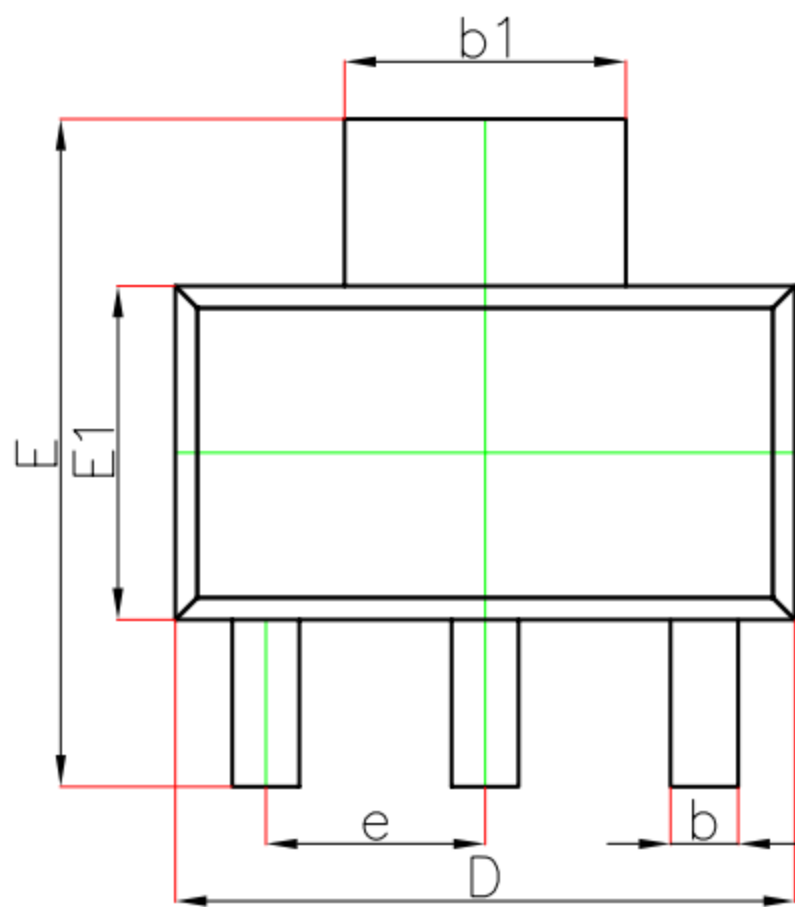
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060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