TECH PUBLIC
台舟电子

AMS1117-5.0

1ALOWDROPOUTLINEARREGULATOR

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

OrderingInformation

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

PackageandPinConfiguration

TO-252

SOT-223

SOT89-3

Absolute Maximum Ratings

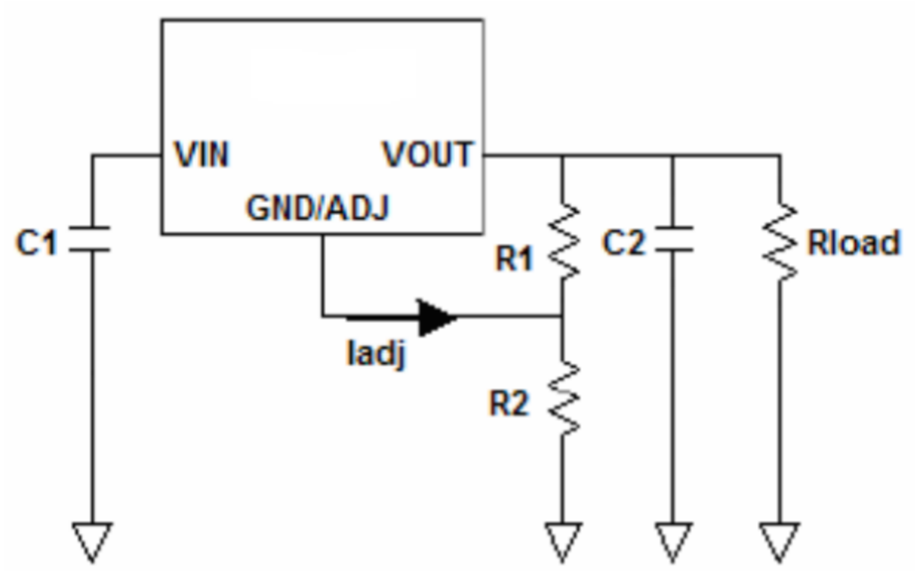
Maximum Input Voltage	18V
Operating Junction Temperature (T_J)	150 °C
Environment Temperature (T_A)	140 °C
Storage Temperature Range (Ts)	-65 °C to 150 °C
Lead Temperature (soldiering, 10 seconds)	260 °C

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≦I_{OUT}≦1A, 1.5V≦V_{IN}–V_{OUT}≦12V	1.225	1.250	1.275	
V_{OUT}	Output Voltage	1.8V	I_{OUT} = 10mA, V_{IN} = 3.8V, T_J = 25°C	1.782	1.80	1.818	V
			0≦I_{OUT}≦1A, 3.2V≦V_{IN}≦12V	1.764	1.80	1.836	
		2.5V	I_{OUT} = 10mA, V_{IN} = 4.5V, T_J = 25°C	2.475	2.50	2.525	
			0≦I_{OUT}≦1A, 3.9V≦V_{IN}≦12V	2.450	2.50	2.550	
		3.3V	I_{OUT} = 10mA, V_{IN} = 5V, T_J = 25°C	3.267	3.30	3.333	
			0≦I_{OUT}≦1A, 4.75V≦V_{IN}≦12V	3.234	3.30	3.366	
		5.0V	I_{OUT} = 10mA, V_{IN} = 7V, T_J = 25°C	4.95	5.00	5.05	
			0≦I_{OUT}≦1A, 6.5V≦V_{IN}≦12V	4.90	5.00	5.10	
ΔV_{OUT}	Line Regulation	ADJ	I_{OUT}=10mA, 1.5V≦V_{IN}–V_{OUT}≦13.775V		0.035	0.2	%
		Fixed	I_{OUT}=10mA, V_{OUT} +1.5V≦V_{IN}≦15V		9	12	mV
ΔV_{OUT}	Load Regulation	ADJ	$V_{IN} - V_{OUT}$ = 3V, 10mA≦I_{OUT}≦1A		0.2	0.4	%
		Fixed	V_{IN} = V_{OUT} +1.5V,10mA≦I_{OUT}≦1A		3	10	mV
V_{IN}–V_{OUT}	Dropout Voltage	ΔV_{OUT}, ΔV_{REF} = 1%, I_{OUT} = 100mA			1.11	1.20	V
		ΔV_{OUT}, ΔV_{REF} = 1%, I_{OUT} = 500mA			1.18	1.25	V
		ΔV_{OUT}, ΔV_{REF} = 1%, I_{OUT} = 1A			1.26	1.30	V
I_{CL}	Current Limit	$V_{IN} - V_{OUT}$ = 2V, T_J = 25°C		1.25	1.4	1.6	A
Minimum Load Current (Note 1)		Adjustable Version			5	10	mA
Iq	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/W
		TO-252			10		

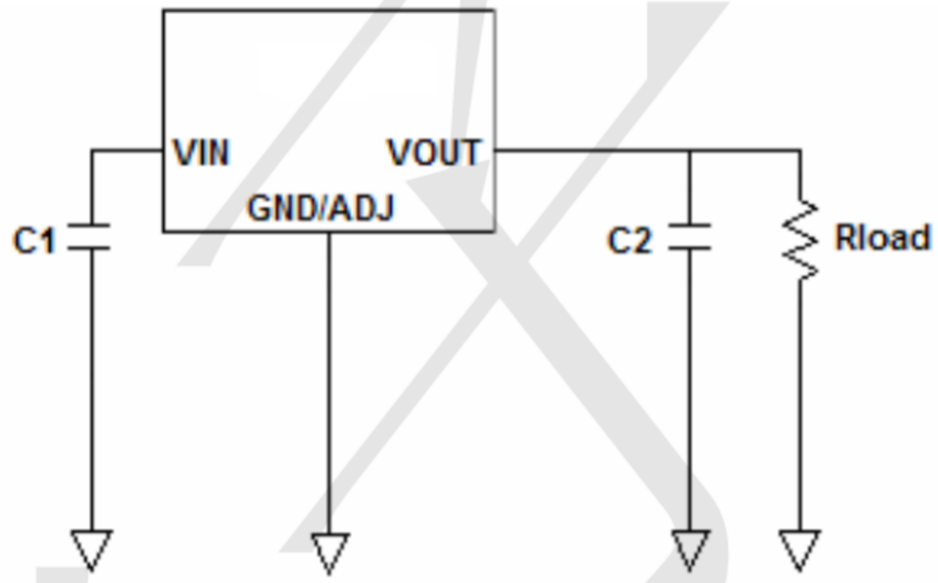
Typical Application



AMS1117 adjustable output voltage

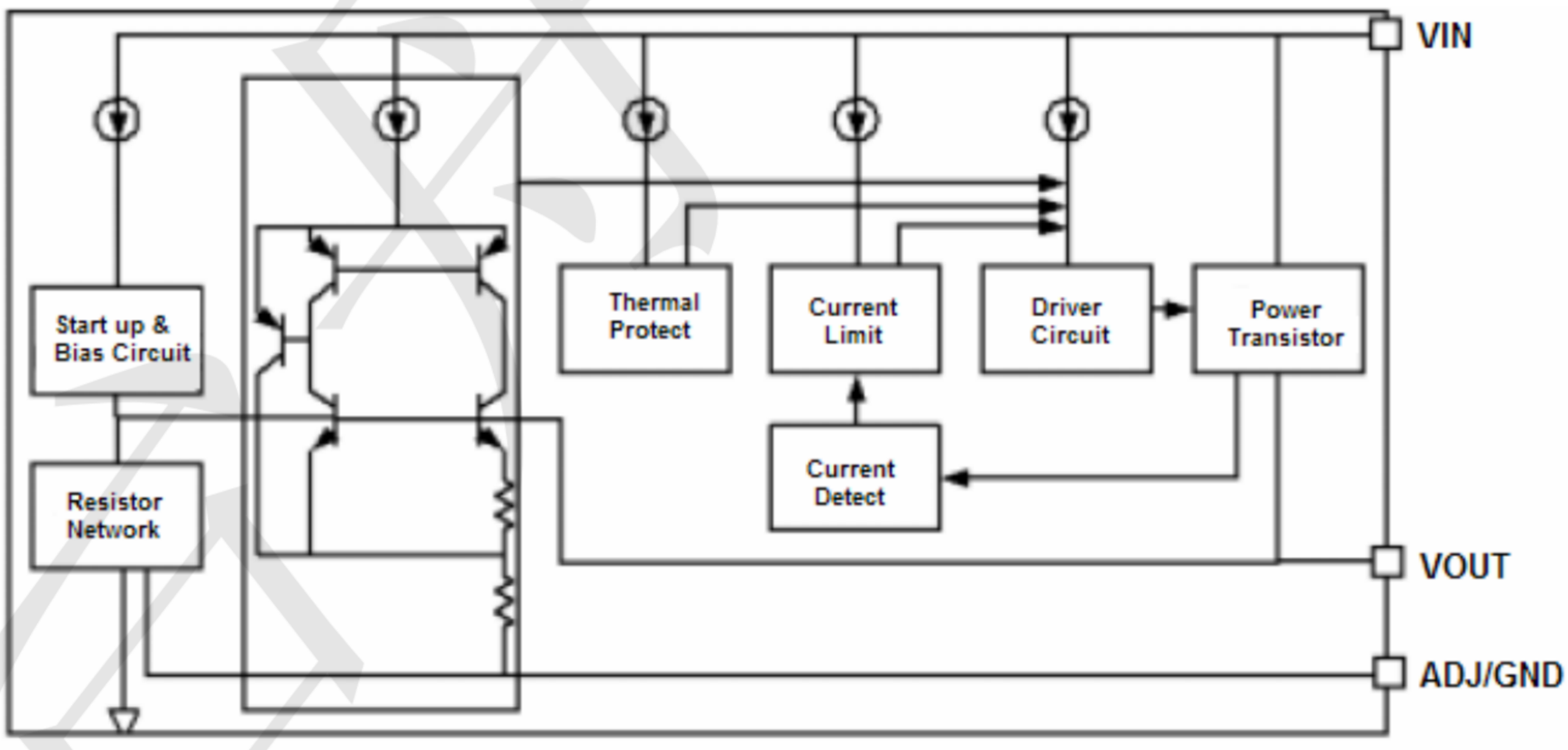
V_{OUT}=1.25V(1+R2/R1)

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.



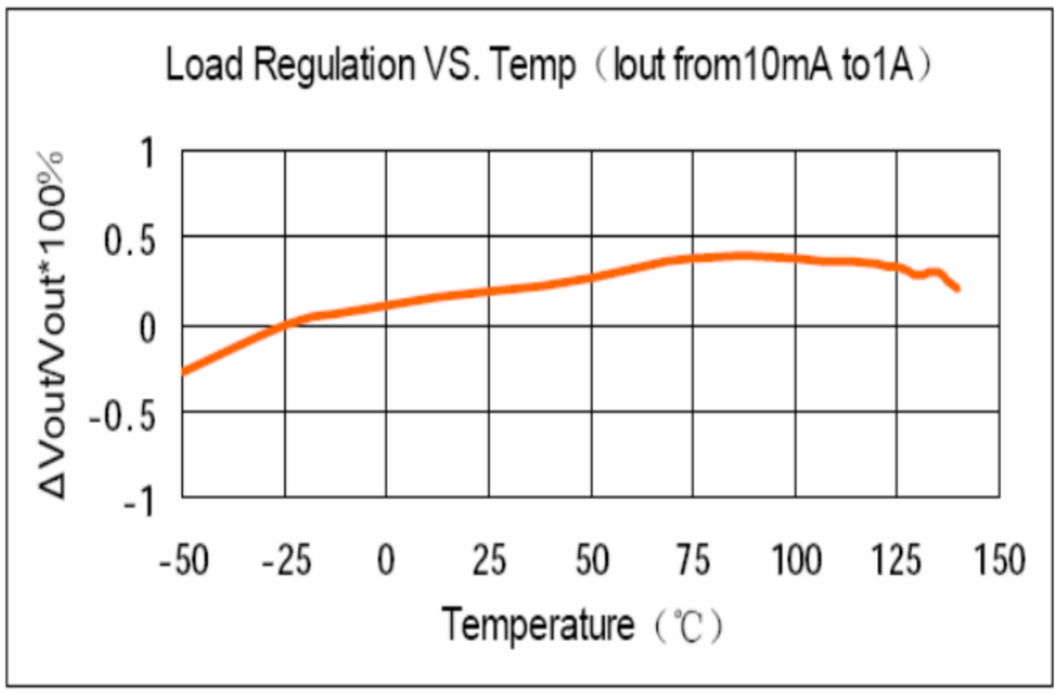
AMS1117 fixed output

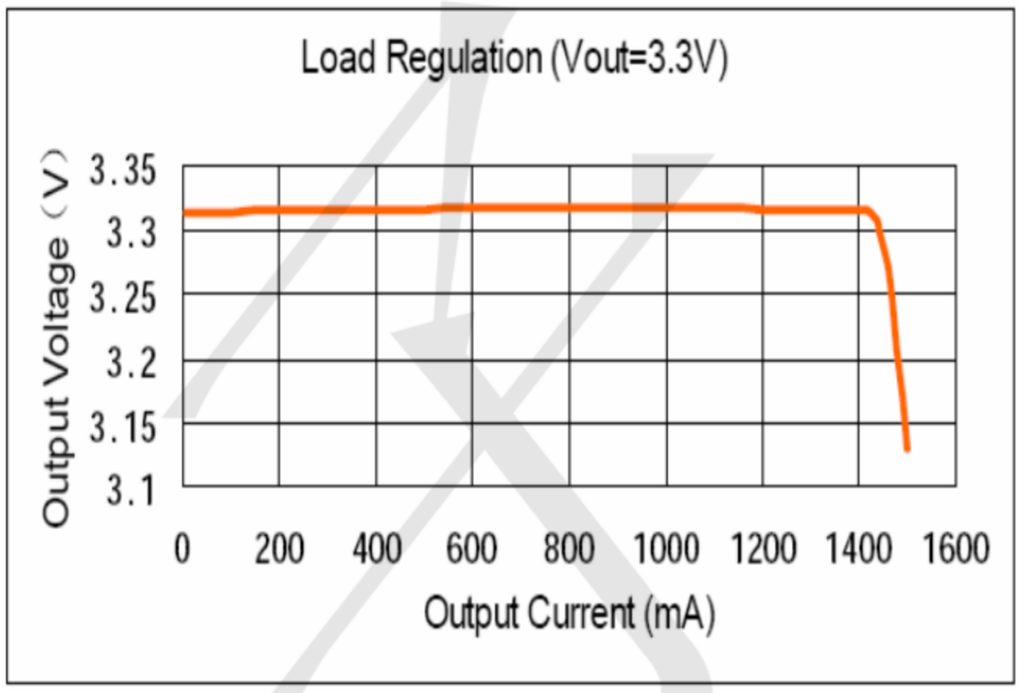
Block Diagram



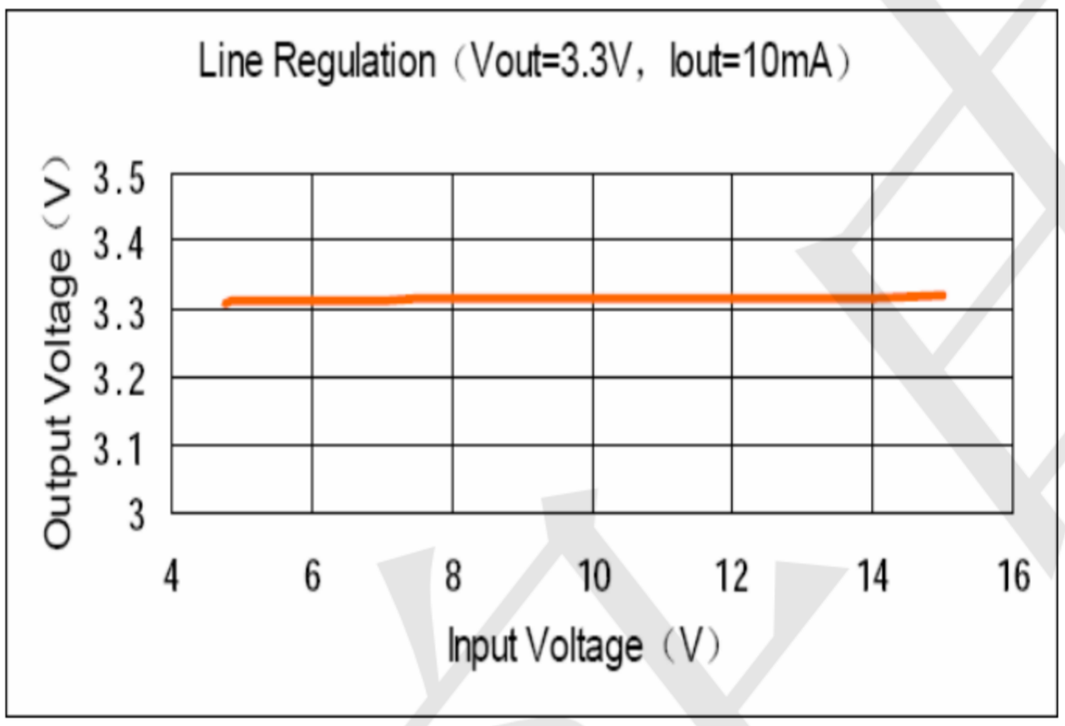
Typical Characteristics

1. Load Regulation

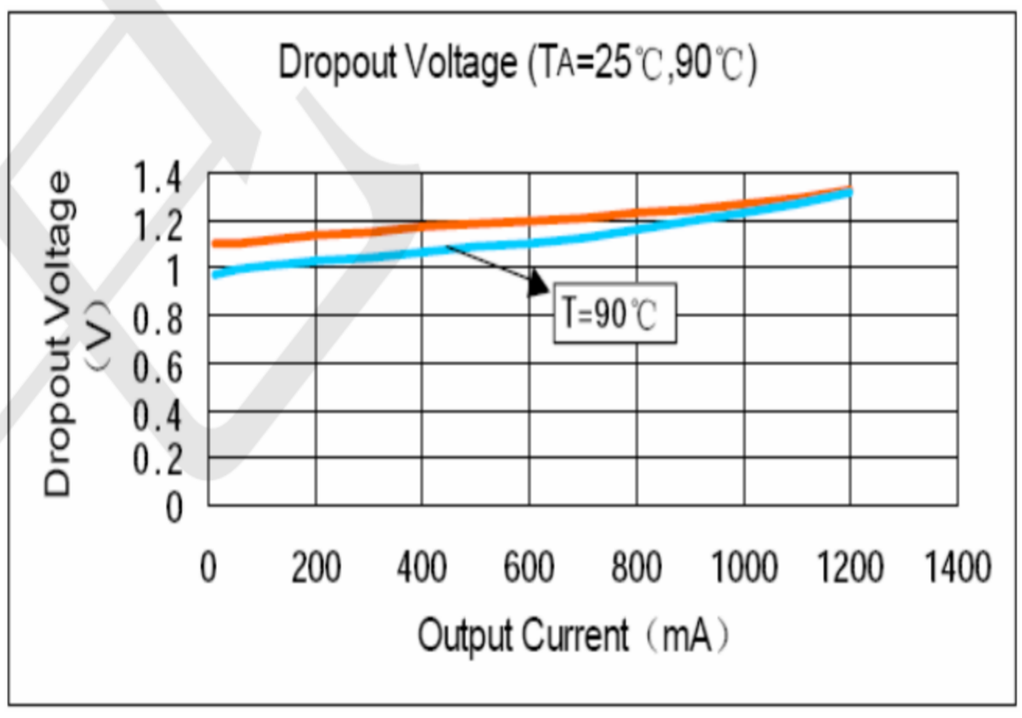




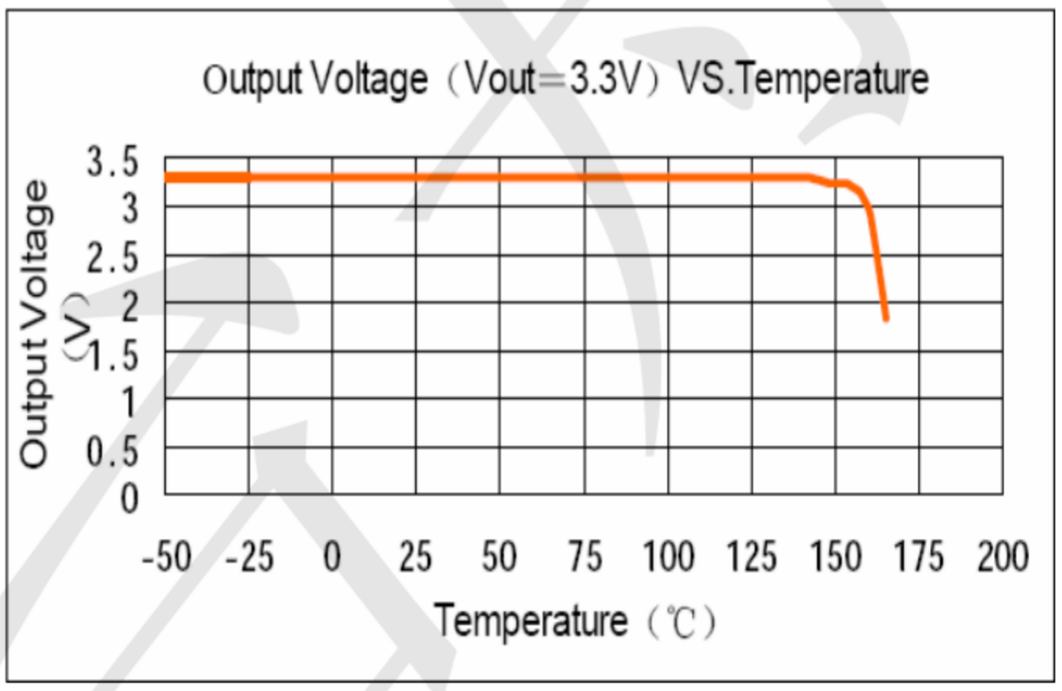
2. Line Regulation

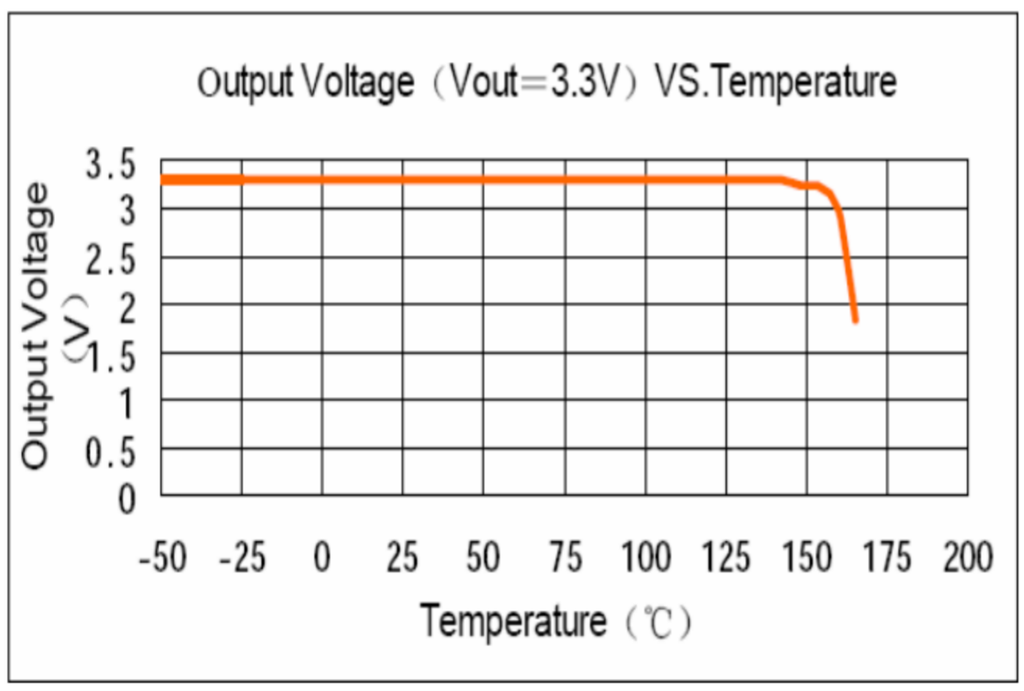


3. Dropout Voltage

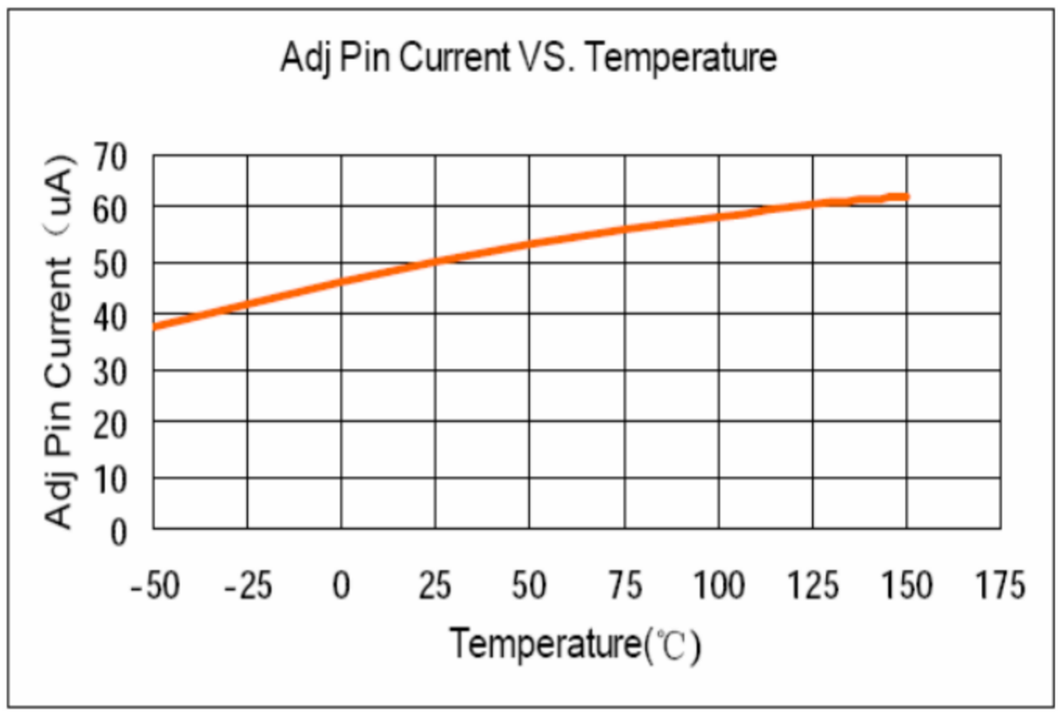


4. Temperature Stability



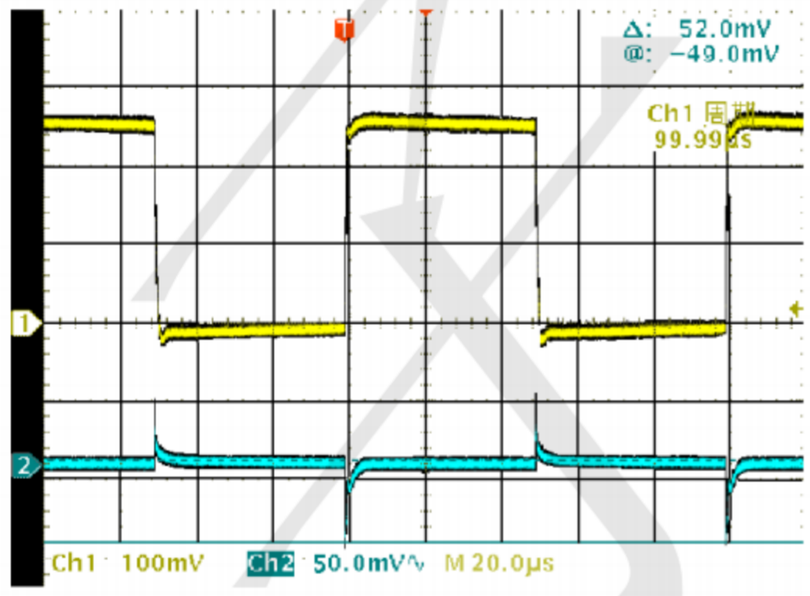


5. ADJ Pin Current vs. Temperture



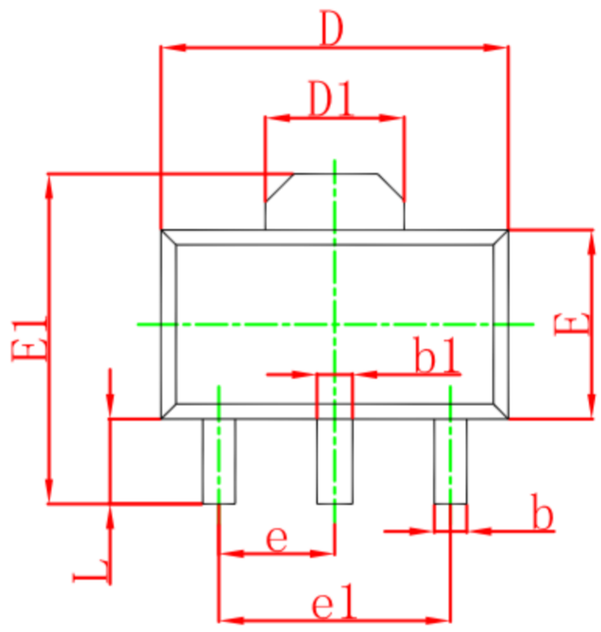
6. Load Transient Response

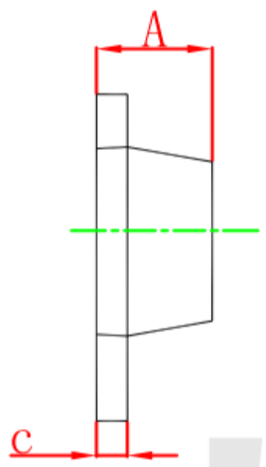
Load Current Change from 2mA to 500mA



<50mV

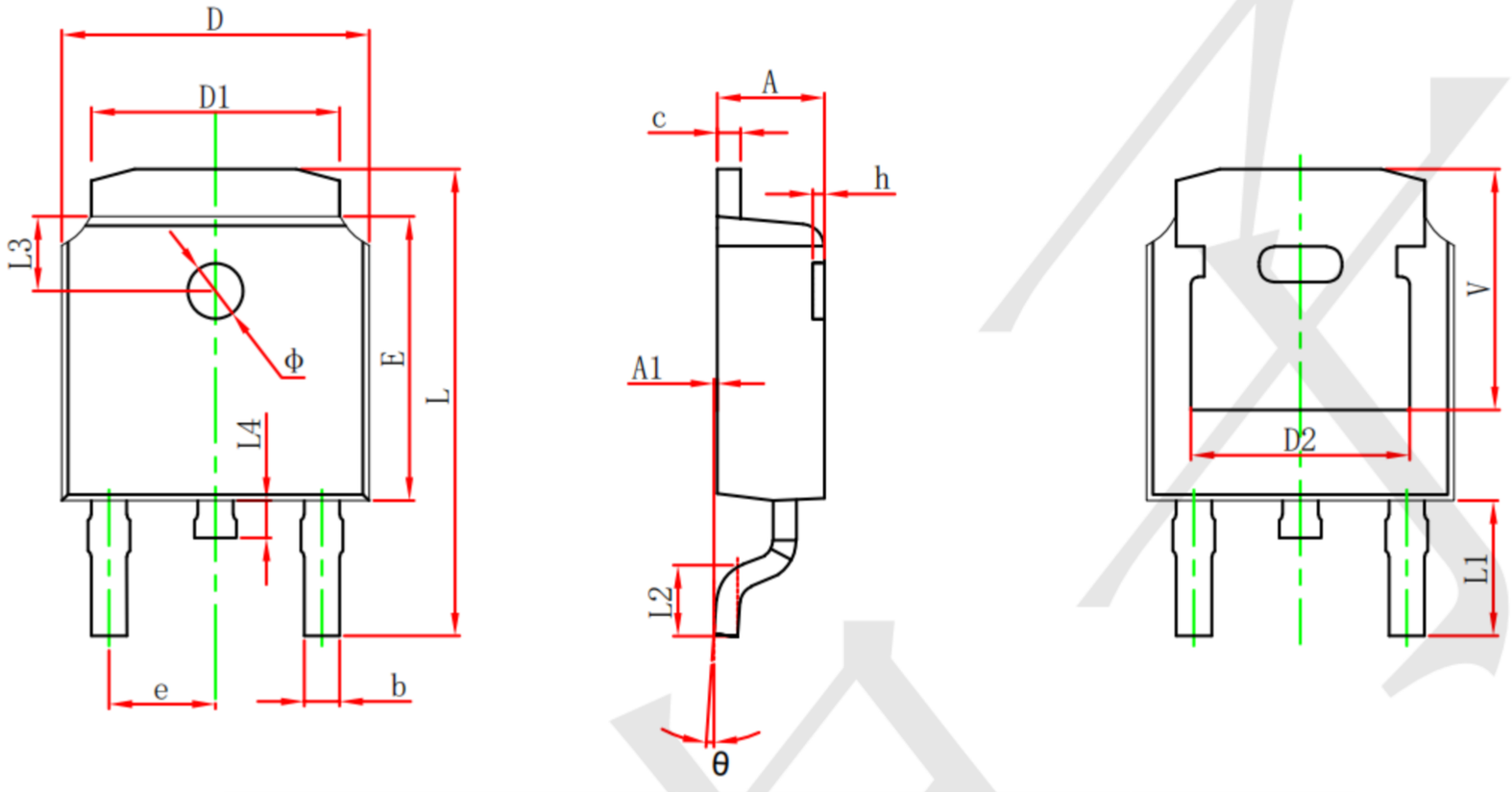
SOT89-3 Package Information





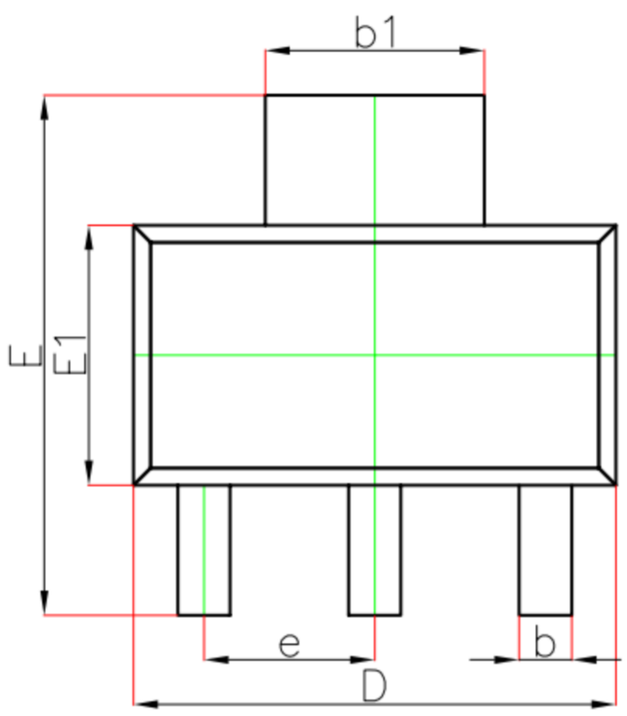
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060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

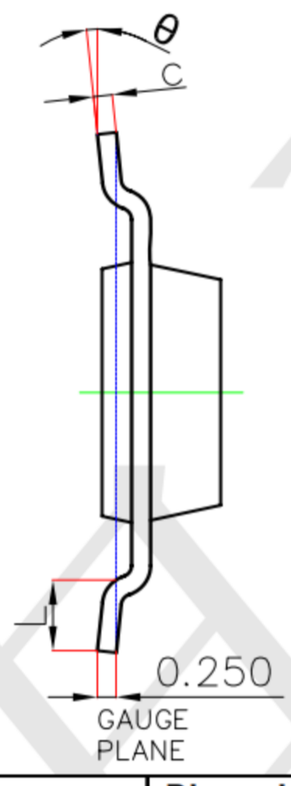
TO252-2 Package Information

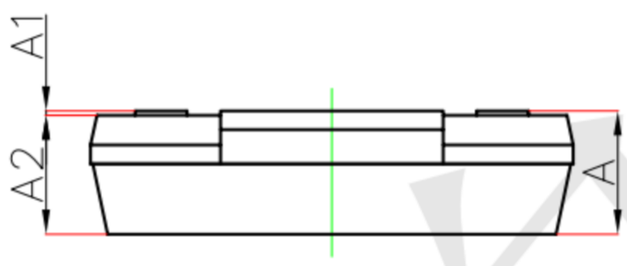


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.635	0.770	0.025	0.030
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	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°

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TPESD5311N FDMS7670AS-TP SN7002W TPADM809LAKSZ TPAPX809S-31SA TPSPX3819M5-L-3-3
DDTA143ZCA BV15C DMP6350S FDC6301N-TP IRFR2405TRPBF-TP QM3003J-TP LTH7
TPADM809SAKSZ TPB05A40-323 TPB1A30-123 TPWSB5557Z ESD5B5.0ST1G-P SI3932DV
TPD1213A-02SM TPESD0504S6-A TPGC12C-1 TPS3809L30DBVR-TP TPZVN3320FTA BSN20W
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