Adjustable/Fixed Low Dropout Linear Regulator

AMS1117 1A Adjustable/Fixed Low Dropout Linear Regulator

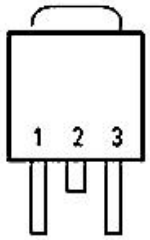
DESCRIPTION

The AMS1117 is a three-terminal output current up to 1A Output low pressure difference linear regulator, 1.2V, 1.8V, 2.5V, 3.3V, 5.0V and adjustable output voltage and other versions, Its voltage drop is only 1.2V at 1A. With its excellent nature Energy and extreme economic performance, suitable for all kinds of electrical production Product.

PIN CONFIGURATION

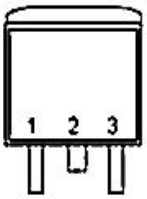
TO-252
TOP VIEW

1: ADJ (GND)
2: VOUT (TAB)
3: VIN



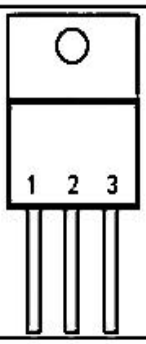
TO-263
TOP VIEW

1: ADJ (GND)
2: VOUT (TAB)
3: VIN



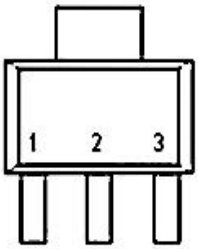
TO-220
FRONT VIEW

1: ADJ (GND)
2: VOUT (TAB)
3: VIN



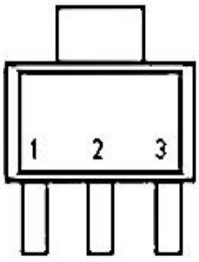
SOT-223
TOP VIEW

1: ADJ (GND)
2: VOUT (TAB)
3: VIN



SOT-89
TOP VIEW

1: ADJ (GND)
2: VOUT (TAB)
3: VIN



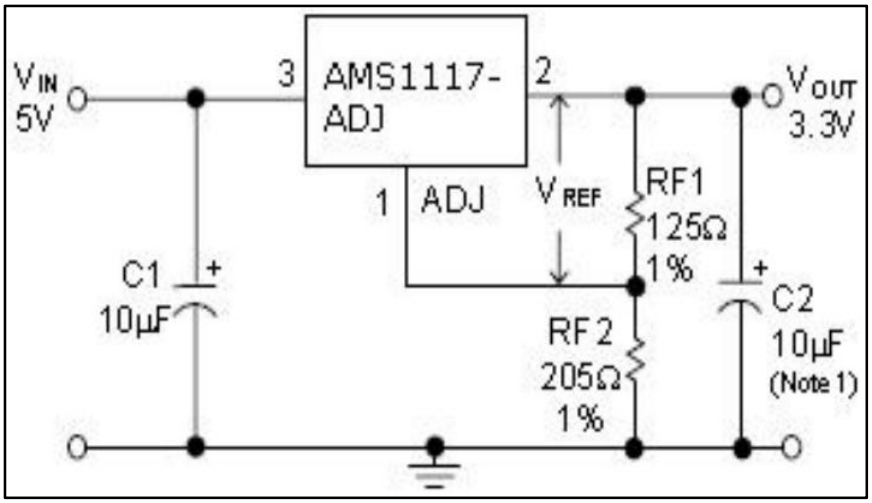
FEATURES:

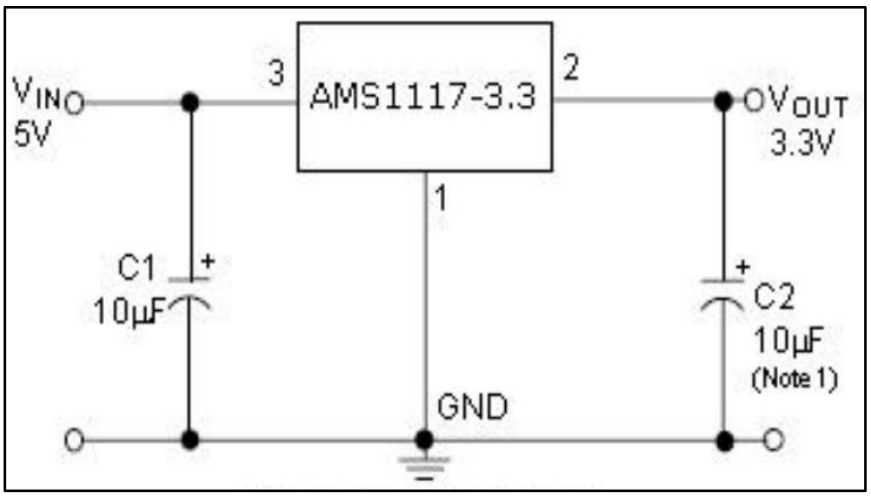
- The voltage drop of 1A output current is 1.2V
- Current limiting function
- Overheat protection
- Fixed output voltage 1.2V, 1.8V, 2.5V, 3.3V, 5.0V and adjustable output voltage version
- The voltage accuracy is 2% with a fixed output voltage of 1.2V
- Fixed output voltage 1.8V, 2.5V, 3.3V, 5.0V And adjustable output voltage accuracy is 1.5%
- Temperature range: -40 ° C to +125 ° C

APPLICATION：

- Palm pilots and laptops
- Battery chargers
- SCSI- ii Active terminal
- mobile telephone
- Battery supply system
- Switching power supply rear voltage regulator

Typical application circuit





Vref=Vout-Vadj=1.25V（typical value）

Vout=Vref*(1+RF2/RF1)+Iadj*RF2

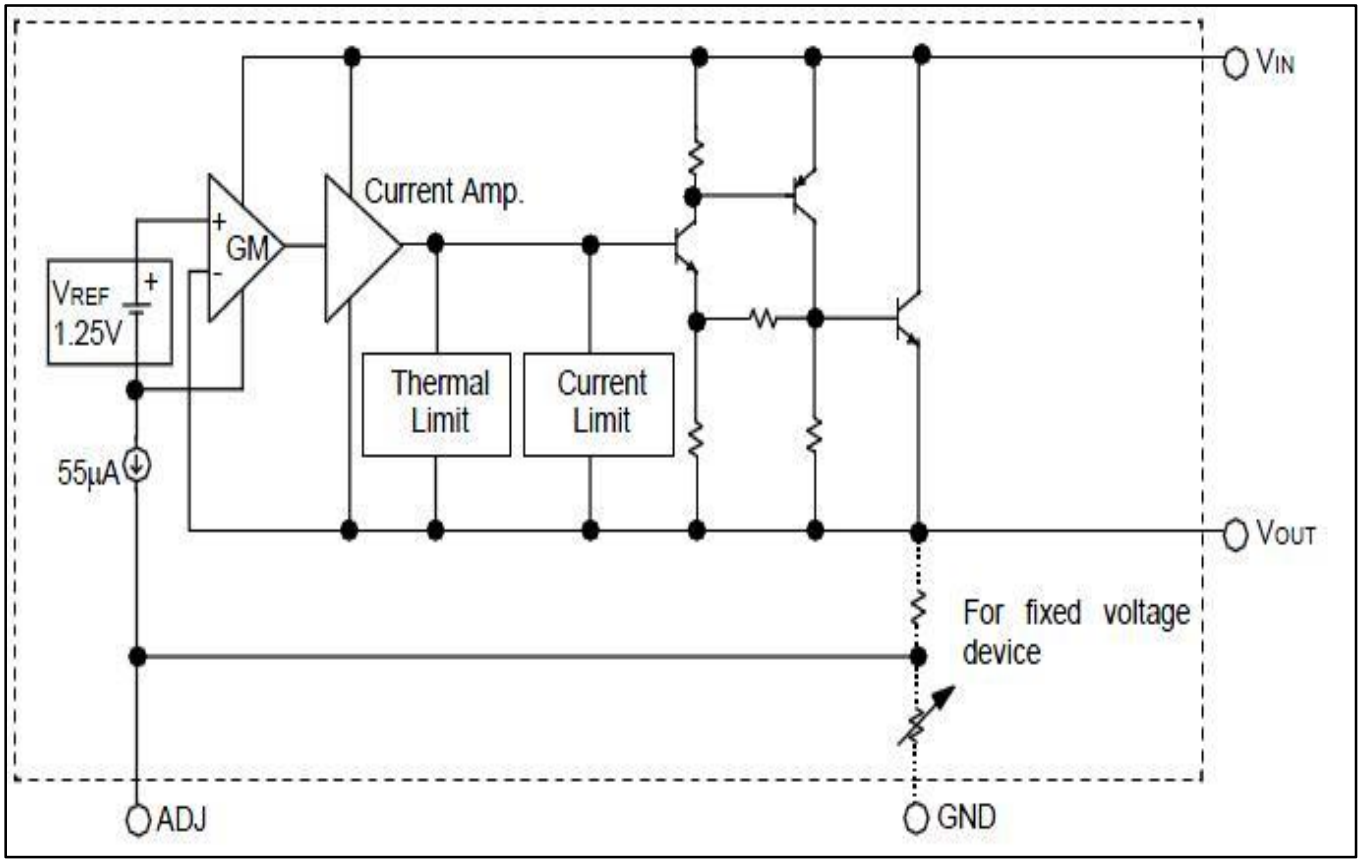
Iadj=55uA（typical value）

Absolute Maximum ratings

Parameter	Symbol	Value	Unit
Input Voltage	**Vin**	18	V
Pin temperature (welding 5 seconds)	**Tlead**	260	℃
Working junction temperature range	**Tj**	150	℃
ESD capability (minimum)	**ESD**	2000	V
Power Dissipation	**PD**	Note1	mW
Operating Junction Temperature Range	**TOPR**	-40~+125	℃
Storage Temperature Range	**TSTG**	-65~+150	℃

Note1: Maximum permissible power consumption is a function of the maximum operating junction temperature Tj(Max), pair air thermal resistance and ambient temperature. Maximum permissible power consumption At a given ambient temperature, exceeding the maximum allowable power consumption will cause the chip temperature to be too high, and the regulator will therefore enter overheat protection State. The pair air thermal resistance of different packaging types is different, depending on the packaging technology.

The internal block diagram :



Recommended working conditions :

Parameter	Symbol	Value	Unit
Input Voltage	**Vin**	12	V
Working junction temperature range	**Tj**	-40~+125	℃

ELECTRICAL CHARACTERISTICS

(Tamb=25℃, normal junction temperature range -40~+125℃ unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
reference voltage	**Vref**	AMS1117-ADJ, IOUT=10mA, VIN-VOUT=2V, TJ=25°C 10mA≤IOUT≤1A, 1.4V≤VIN-VOUT≤10V	1.231 1.225	1.250 1.250	1.268 1.275	V
Output Voltage	**VOUT**	AMS1117-1.2, IOUT=10mA, VIN=3.2V ,TJ=25°C 10mA≤ IOUT≤1A, 3.0V≤VIN≤10V	1.176 1.152	1.200 1.200	1.224 1.248	V
		AMS1117-1.5, IOUT=10mA, VIN=3.5V ,TJ=25°C 10mA≤ IOUT≤1A, 3.0V≤VIN≤10V	1.477 1.470	1.500 1.500	1.522 1.530	V
		AMS1117-1.8, IOUT=10mA, VIN=3.8V, TJ=25°C , 0≤IOUT≤1A, 3.2V≤VIN≤10V	1.773 1.746	1.800 1.800	1.827 1.854	V
		AMS1117-2.5, IOUT=10mA, VIN=4.5V,TJ=25°C , 0≤IOUT≤1A,， 3.9V≤VIN ≤ 10V	2.462 2.450	2.500 2.500	2.538 2.550	V
		AMS1117-3.3, IOUT=10mA, VIN=5V,TJ=25°C , 0≤IOUT≤ 1A， 4.75V≤VIN≤10V	3.250 3.235	3.300 3.300	3.349 3.365	V
		AMS1117-5.0, IOUT=10mA, VIN=7V, TJ=25°C , 0≤ IOUT≤1A,， 6.5V≤VIN≤12V	4.925 4.900	5.000 5.000	5.075 5.100	V
Temperature stability of output voltage	**TSout**			0.3		%
linearity control	**Rline**	VINMIN ≤VIN≤ 12V, VOUT=Fixed/Adj, Iout=10mA		6	15	mV
load regulation	**Rload**	10mA≤IOUT≤1A, VOUT=Fixed/Adj		6	18	mV
differential pressure	**Vdrop**	IOUT=100mA IOUT=500mA IOUT=1A		1.00 1.05 1.20	1.20 1.25 1.30	V

ELECTRICAL CHARACTERISTICS

(Tamb=25℃, normal junction temperature range -40~+125℃ unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
quiescent current	**Iq**	4.25V≤VIN≤ 6.5V		5	10	mA
Ripple rejection ratio	**PSRR**	fRIPPLE=120Hz, (VIN-VOUT)=3V, VRIPPLE=1VPP	50	60		dB
Adjustable current	**Iadj**			60	120	uA
Adjustable pin current change		0≤ IOUT≤800mA, 1.4V ≤VIN-VOUT≤10V		0.2	5	uA
Temperature protection	**TSD**			150		℃
current-limiting protection	**Ilimit**		1.4	1.6	1.8	A
temperature stability				0.5		%
RMS output noise		% of VOUT, 10Hz≤f≤10kHz		0.005		%
Thermal resistance coefficient (No heat sink)		SOT-223		120		℃/W
		TO-252		100		

Typical Performance Characteristics

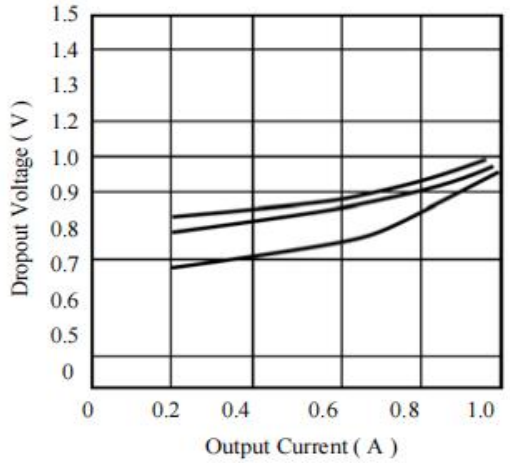


Figure 4. Dropout Voltage VS. Output Current

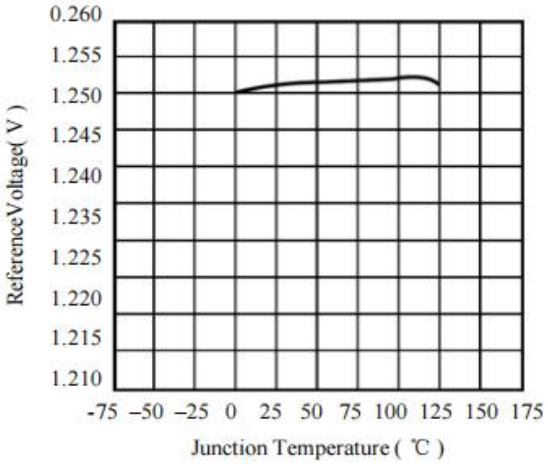


Figure 5. Reference Voltage VS. Temperature

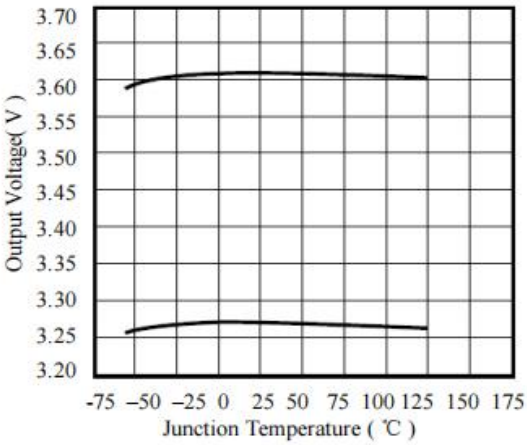


Figure 6. Output Voltage VS. Temperature

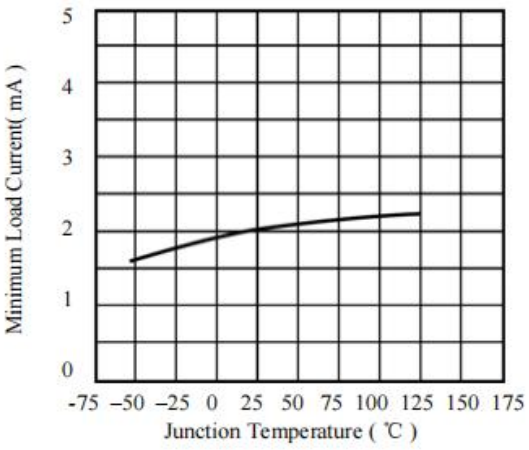


Figure 7. Minimum Load Current VS. Temperature

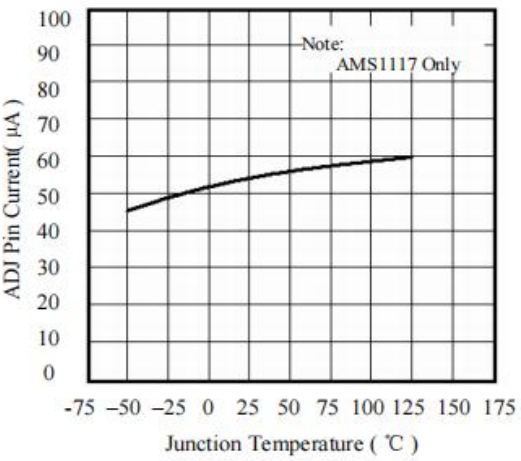
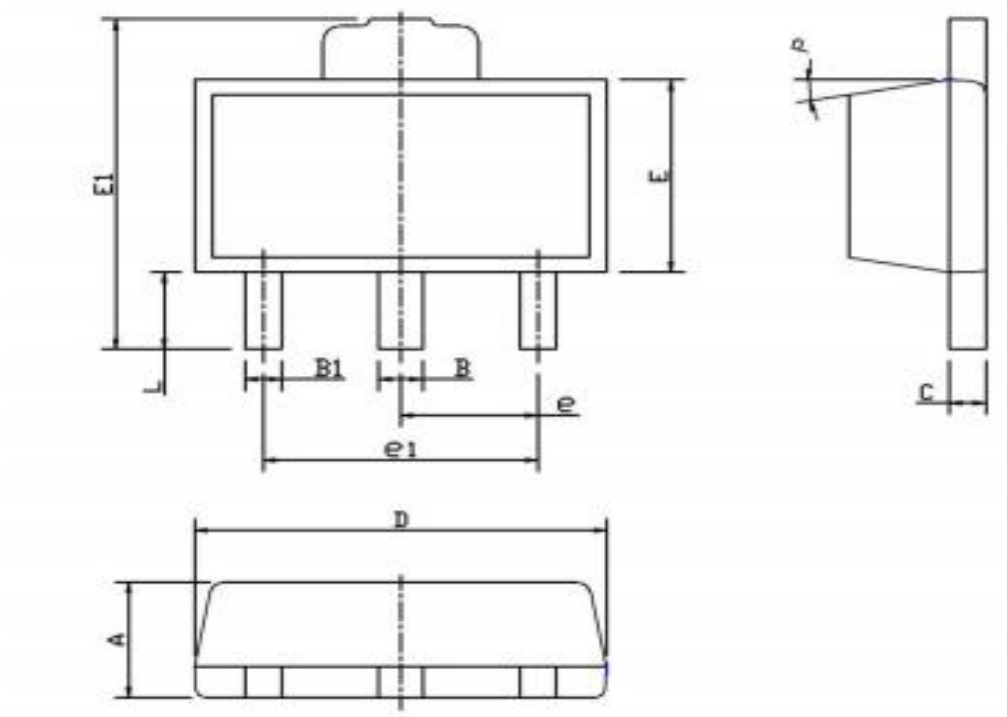


Figure 8. ADJ Pin Current VS. Temperature

Mechanical Dimensions

2.01 SOT-89 封装图：

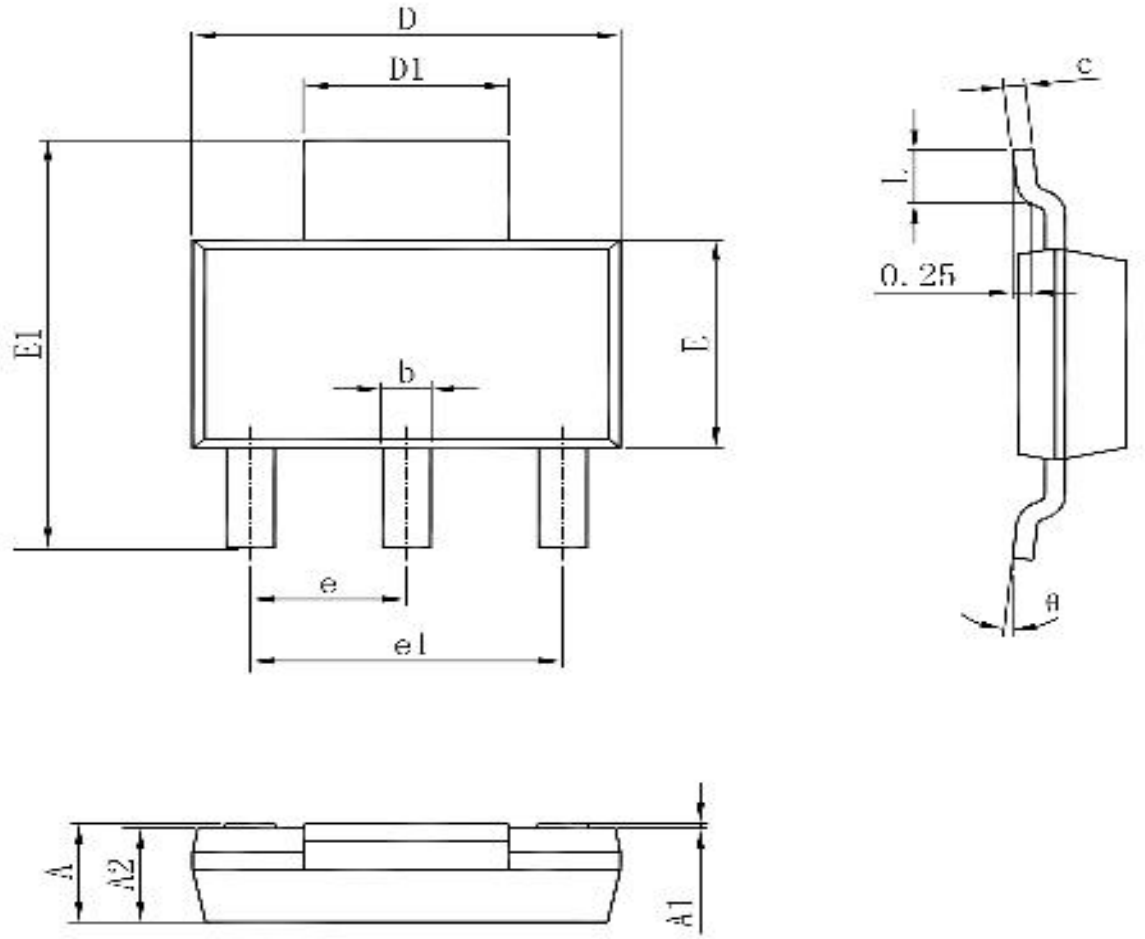


2.02 SOT-89 尺寸：

SOT-89		Unit：mm	
Symbol	Min	TYP	Max
A	1.40	1.50	1.65
B	0.38	0.48	0.65
B1	0.30	0.40	0.55
C	0.30	0.40	0.50
D	4.35	4.50	4.75
E	2.35	2.45	2.60
E1	3.90	4.10	4.35
e	1.35	1.50	1.65
e1	2.80	3.00	3.20
L	0.70	0.90	1.10
p	8°	10°	12°

Mechanical Dimensions

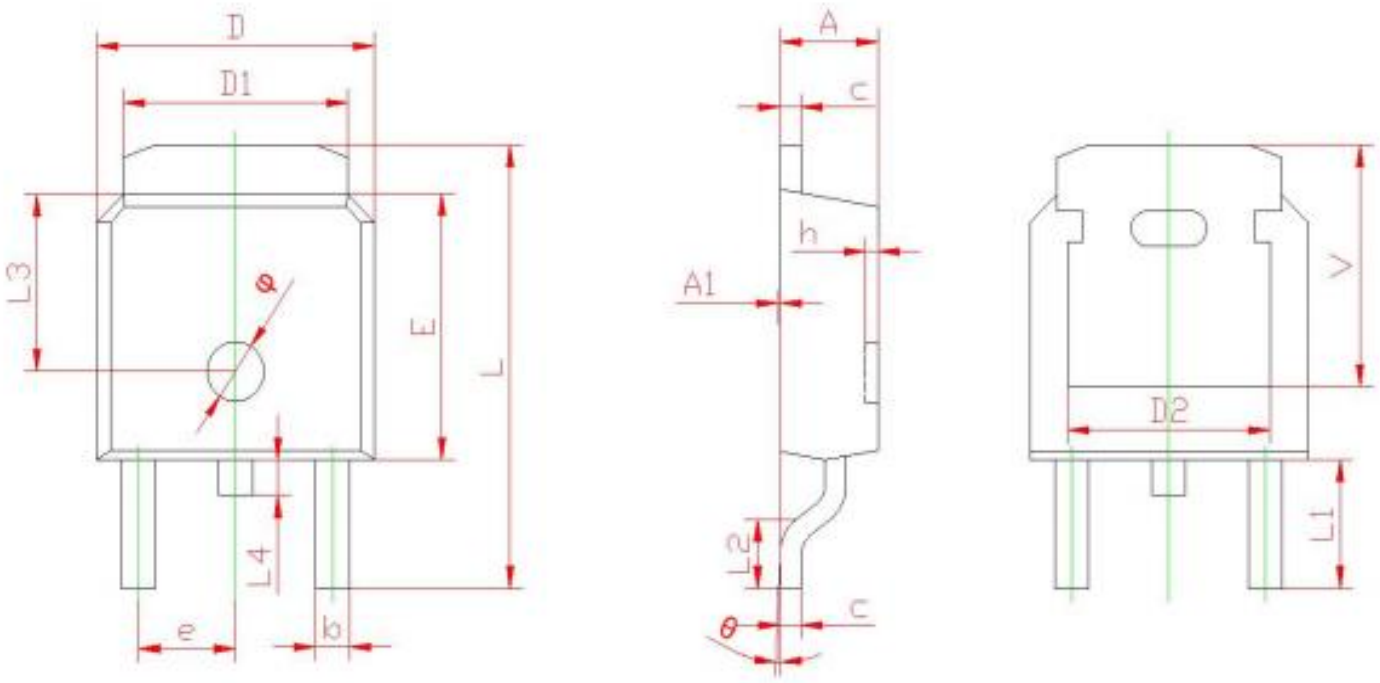
SOT-223 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.520	1.800	0.060	0.071
A1	0.000	0.100	0.000	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.820	0.026	0.032
c	0.250	0.350	0.010	0.014
D	6.200	6.400	0.244	0.252
D1	2.900	3.100	0.114	0.122
E	3.300	3.700	0.130	0.146
E1	6.830	7.070	0.269	0.278
e	2.300(BSC)		0.091(BSC)	
e1	4.500	4.700	0.177	0.185
L	0.900	1.150	0.035	0.045
θ	0°	10°	0°	10°

Mechanical Dimensions

TO-252 PACKAGE OUTLINE DIMENSIONS



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	0.660	0.860	0.026	0.034
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	4.800 REF		0.189 REF	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 REF		0.114 REF	
L2	1.400	1.700	0.055	0.067
L3	4.00 REF		0.157 REF	
L4	0.600	1.000	0.024	0.039
φ	1.200	1.400	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.500 REF		0.217 REF	