

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.

FEATURES:

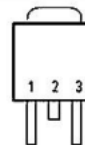
The voltage drop of 1A output current is 1.2V
 Current limiting function
 Overheat protection
 Fixed output voltage 1.2V, 1.8V, 2.5V, 3.3V, 5.0V and adjustable output voltage version
 The voltage accuracy is 2% with a fixed output voltage of 1.2V
 Fixed output voltage 1.8V, 2.5V, 3.3V, 5.0V
 And adjustable 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

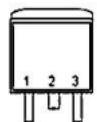
TO-252
TOP VIEW

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



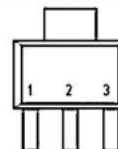
TO-263
TOP VIEW

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



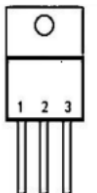
SOT-223
TOP VIEW

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



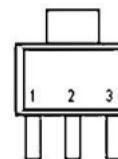
TO-220
FRONT VIEW

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



SOT-89
TOP VIEW

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



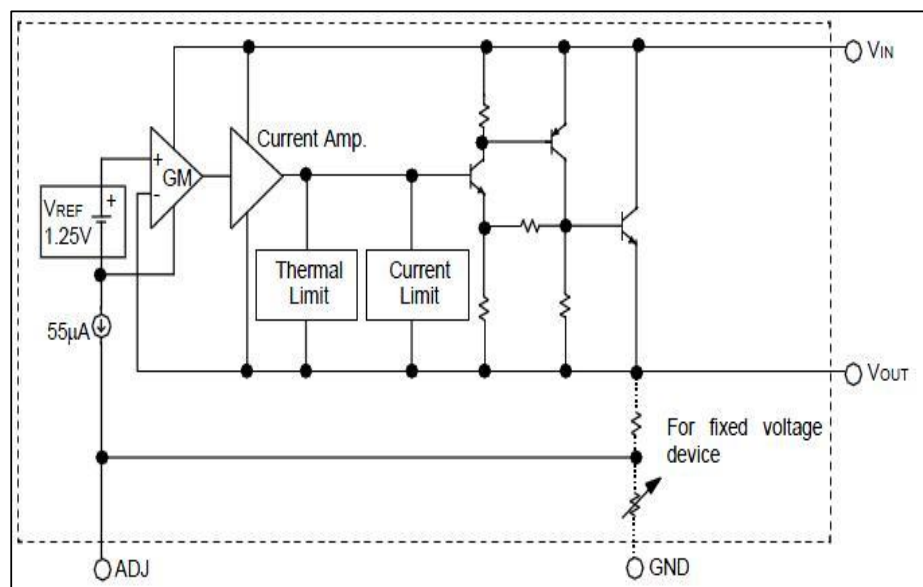
Absolute Maximum ratings

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

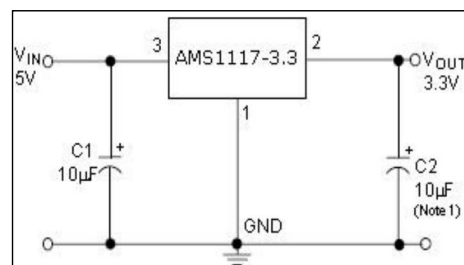
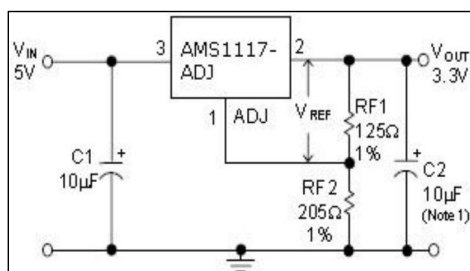
Note1: Maximum permissible power consumption is a function of the maximum operating junction temperature Tj(Max), pair air thermal resistance and ambient temperature. Maximum permissible power consumption At a given ambient temperature, exceeding the maximum allowable power consumption will cause the 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.

AMS1117 Series

The internal block diagram :



Typical application circuit



$$V_{ref} = V_{out} - V_{adj} = 1.25V \text{ (typical value)}$$

$$V_{out} = V_{ref} \cdot (1 + R_{F2}/R_{F1}) + I_{adj} \cdot R_{F2}$$

$$I_{adj} = 55\mu A \text{ (typical value)}$$

Recommended working conditions :

Parameter	Symbol	Value	Unit
Input Voltage	V_{in}	12	V
Working junction temperature range	T_j	-40~+125	°C

AMS1117 Series

ELECTRICAL CHARACTERISTICS

(Tamb=25°C, normal junction temperature range -40~+125°C 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		1.00	1.20	V
		IOUT=500mA		1.05	1.25	
		IOUT=1A		1.20	1.30	

AMS1117 Series

ELECTRICAL CHARACTERISTICS

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
quiescent current	I _q	4.25V≤VIN≤6.5V		5	10	mA
Ripple rejection ratio	PSRR	f _{RIPPLE} =120Hz, (VIN-VOUT)=3V, V _{RIPPLE} =1VPP	50	60		dB
Adjustable current	I _{adj}			60	120	uA
Adjustable pin current change		0≤I _{OUT} ≤800mA, 1.4V ≤VIN-VOUT≤10V		0.2	5	uA
Temperature protection	TSD			150		°C
current-limiting protection	I _{limit}		1.4	1.6	1.8	A
temperature stability				0.5		%
RMS output noise		% of V _{OUT} , 10Hz≤f≤10kHz		0.005		%
Thermal resistance coefficient (No heat sink)		SOT-223-3L		120		°C/W
		TO-252-2L		100		

RATING AND CHARACTERISTIC CURVES (AMS1117 Series)

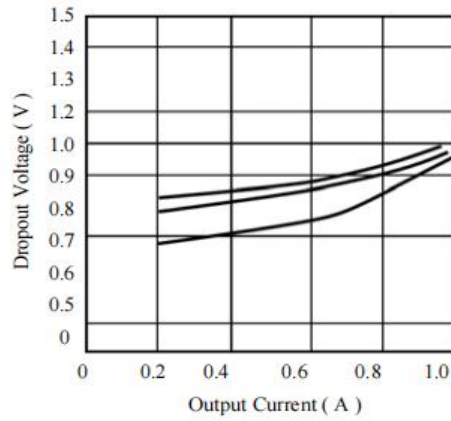


Figure 4. Dropout Voltage VS. Output Current

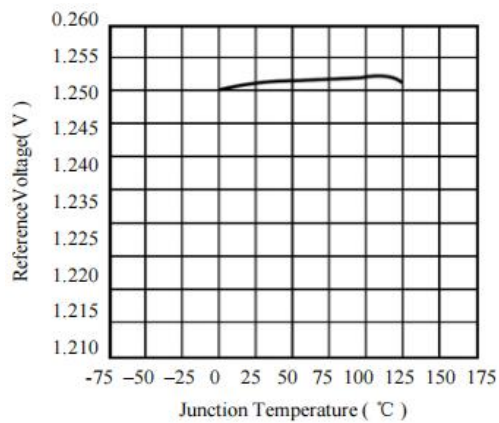


Figure 5. Reference Voltage VS. Temperature

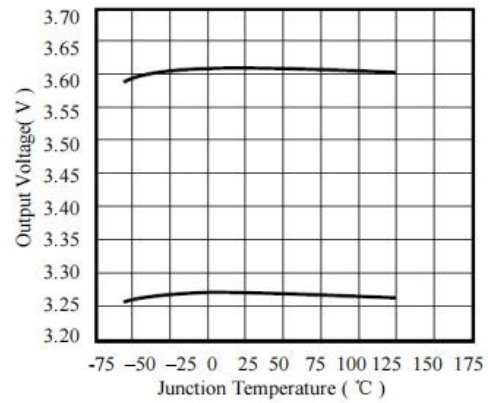


Figure 6. Output Voltage VS. Temperature

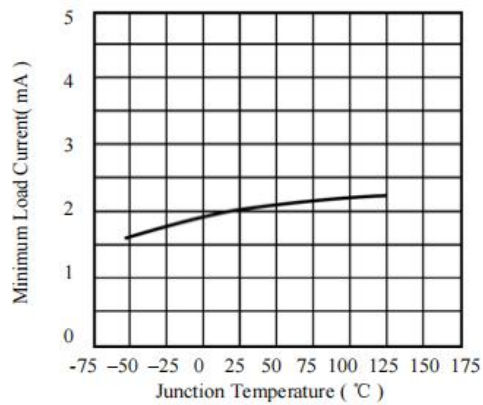


Figure 7. Minimum Load Current VS. Temperature

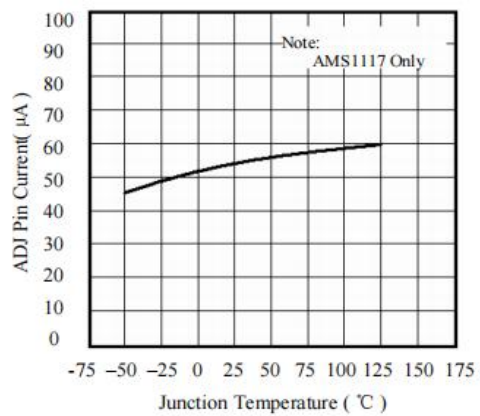
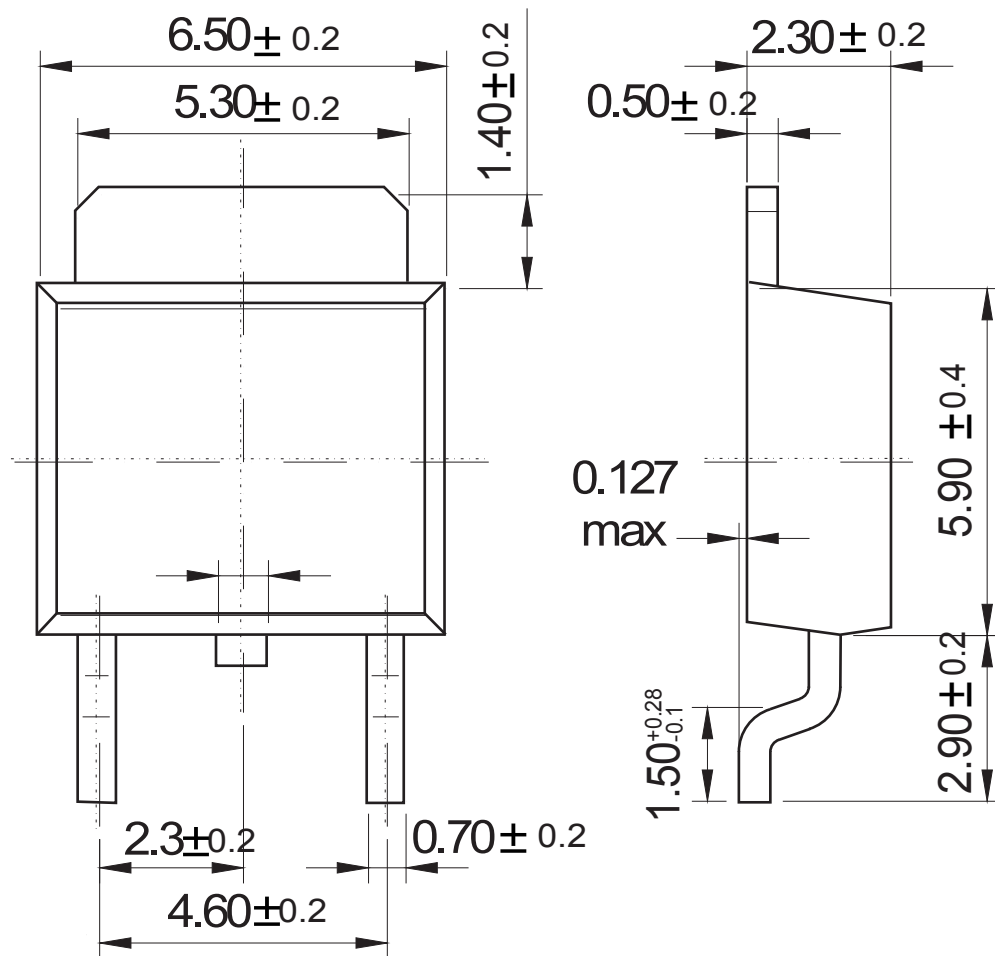


Figure 8. ADJ Pin Current VS. Temperature

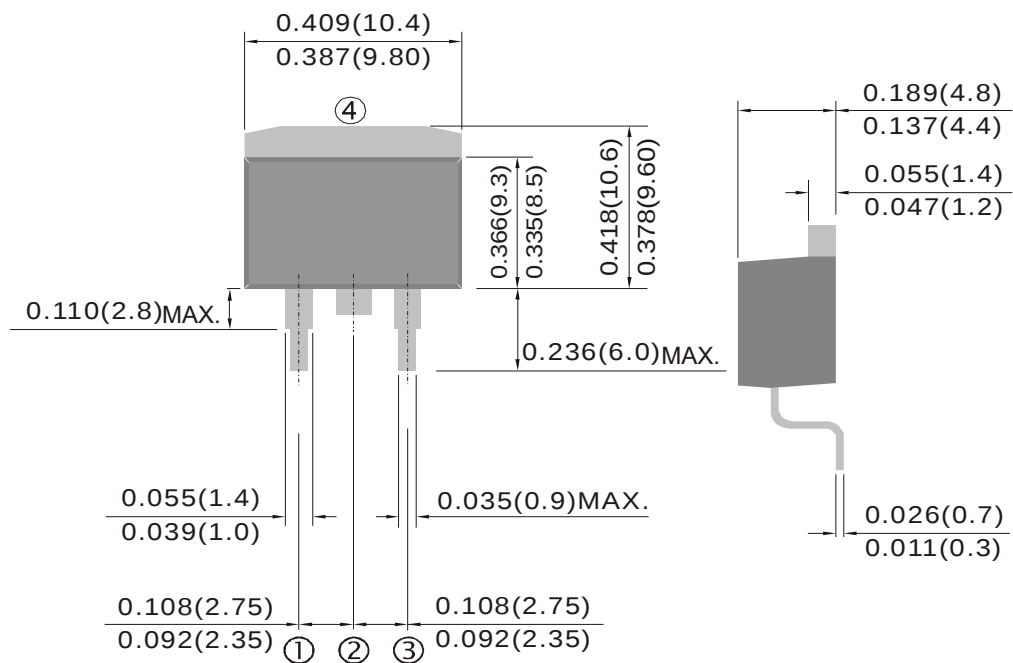
TO-252

Unit: mm



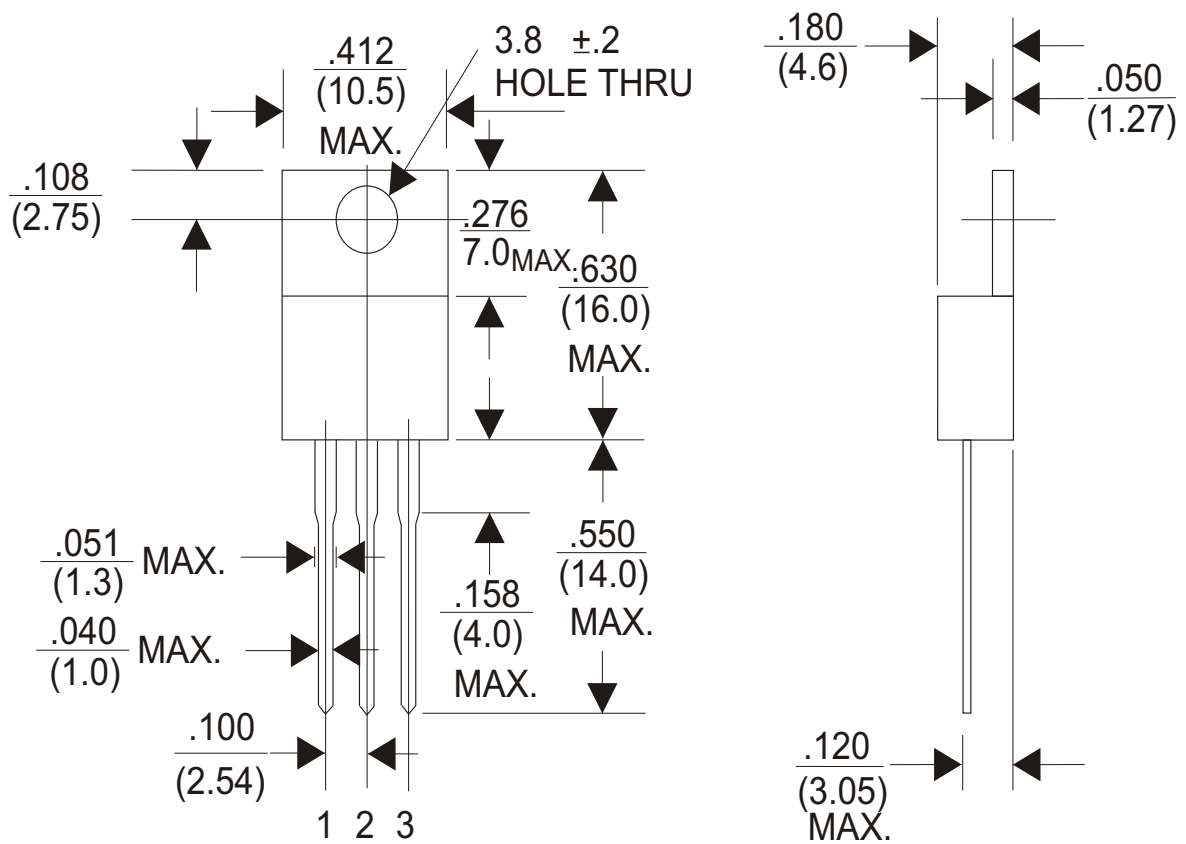
Dimensions in inches and (millimeters)

TO-263 / D²PAK



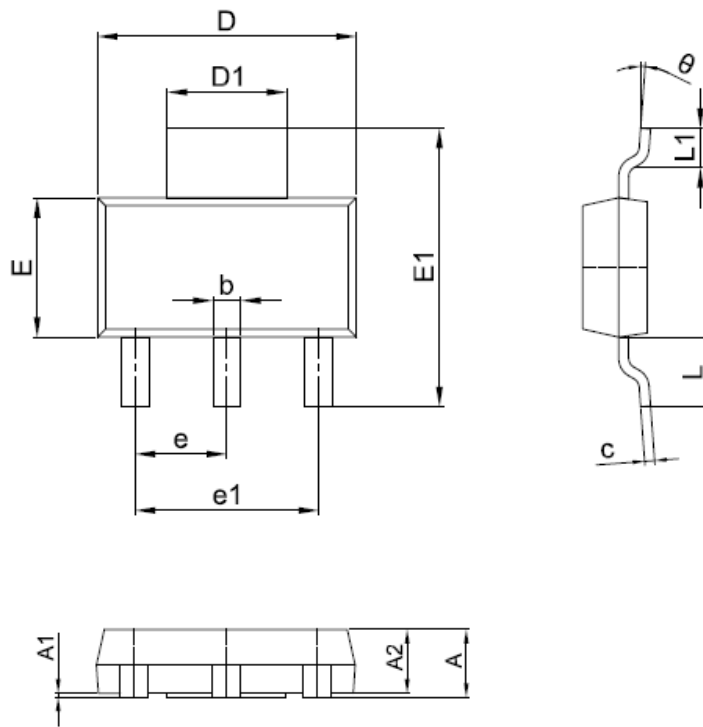
Dimensions in inches and (millimeters)

TO-220



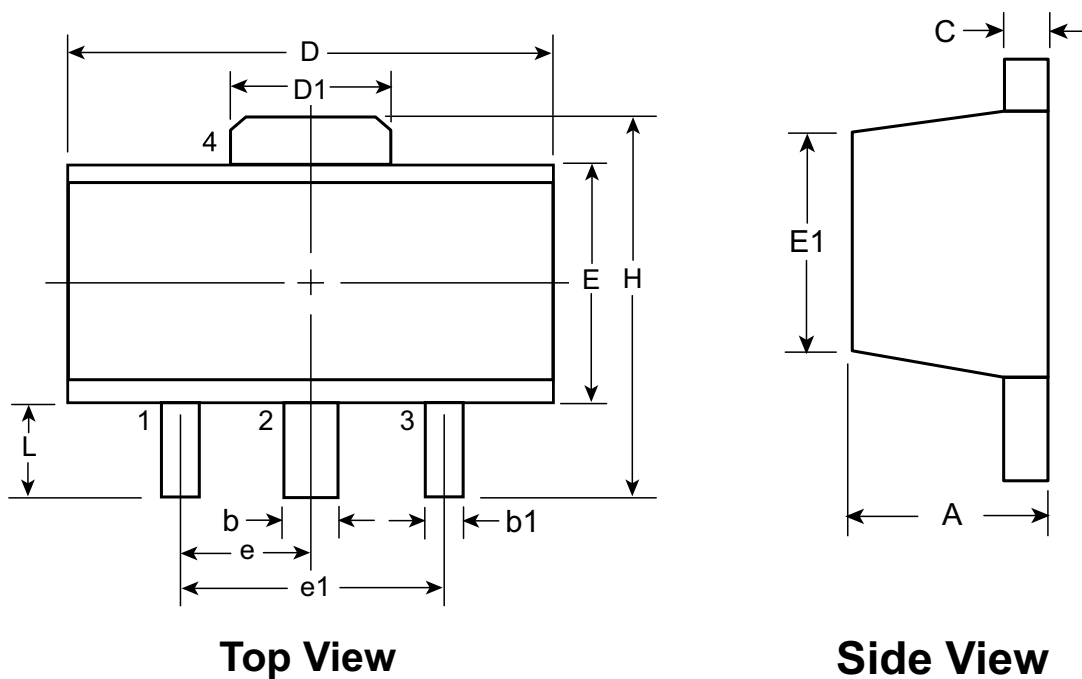
Dimensions in inches and (millimeters)

SOT-223



Symbol	Min.	Typ	Max.
A	1.52	1.62	1.80
A1	0.00	0.05	0.10
A2	1.50	1.60	1.70
b	0.65	0.70	0.75
c	0.20	0.25	0.30
D	6.40	6.50	6.60
D1	2.90	3.00	3.10
E	3.30	3.50	3.70
E1	6.85	7.00	7.15
e	2.20	2.30	2.40
e1	4.40	4.60	4.80
L	1.65	1.75	1.85
L1	0.90	1.00	1.10
θ	0°	5°	10°

SOT-89 PACKAGE OUTLINE



Symbol		A	b	b1	C	D	D1	E	E1	e	e1	H	L
Dimensions (mm)	MIN	1.40	0.44	0.36	0.3	4.40	1.50	2.29	2.00†	1.50 BSC	3.00 BSC	3.94	0.89
	NOM	-	-	-	-	-	-	-	-			-	-
	MAX	1.60	0.56	0.48	0.5	4.60	1.75	2.60	2.29			4.25	1.20

Dimensions in mm