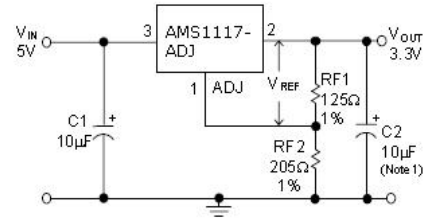
overview

AMS1117is an output current up to1AA three-terminal output low dropout linear regulator, with1.2V,1.8V,2.5V, 3.3V,5.0Vand adjustable output voltage versions with a voltage drop in the1Aonly for1.2V. With its excellent performance and extreme economic performance, it is suitable for various electrical products Taste.

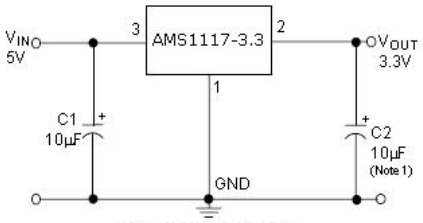
features

- 1AThe voltage drop at the output current is only1.2V
- Current limiting function
- Overheat protection function
- with fixed output voltage1.2V,1.8V,2.5V,3.3V, 5.0Vand adjustable output voltage versions
- fixed output voltage1.2VThe voltage accuracy is2%
- fixed output voltage1.8V,2.5V,3.3V,5.0V and adjustable output voltage with an accuracy of1.5%
- temperature range:-40℃ ~ +125℃

Typical Application Circuit



可調節輸出電壓版本



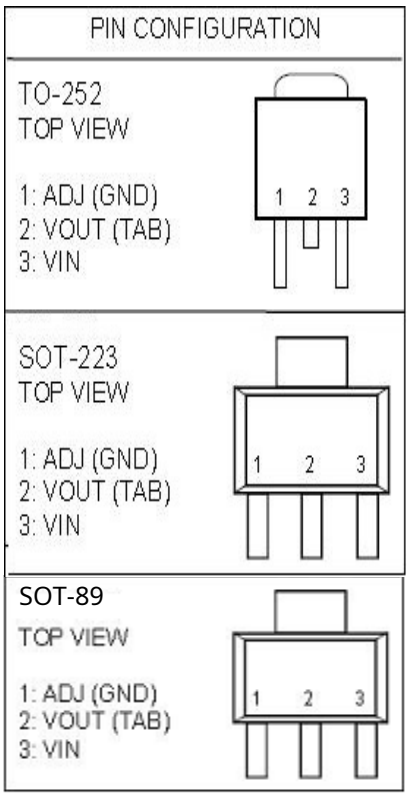
固定輸出電壓版本

Vref=Vout-Vadj=1.25V (typical value)

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

Iadj=55uA (typical value)

Package and pin definition

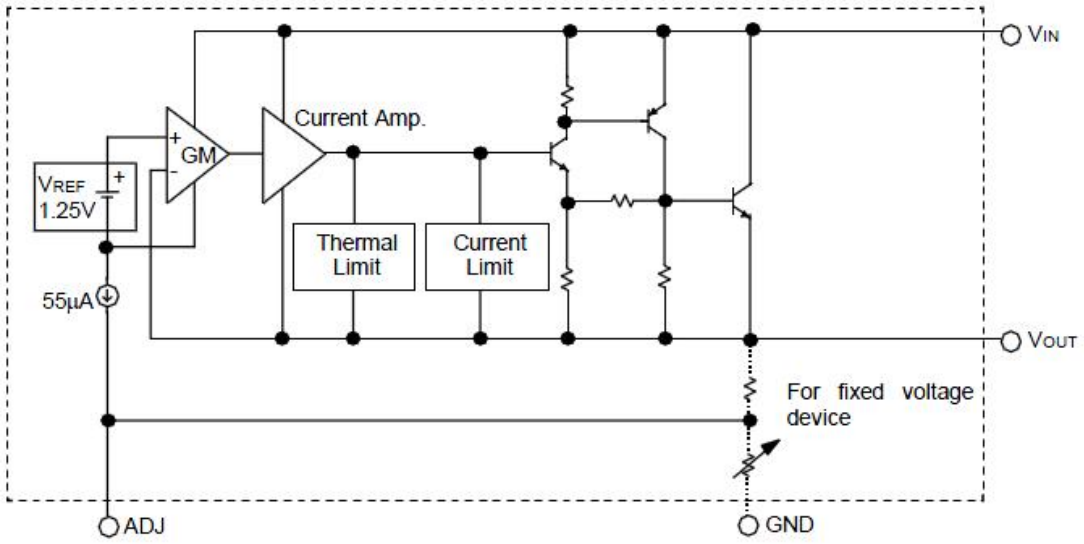


(commonly packaged asSOT-223,TO-252)

application

- Laptops, PDAs & Notebooks
- battery charger
- SCSI-II active terminal
- mobile phone
- cordless phone
- battery powered system
- portable device
- Switching power supply post regulator

Internal block diagram



Limit parameter

parameter	symbol	scope	unit
Input working voltage	Vin	18	V
Pin temperature (soldering5Second)	Tlead	260	℃
Operating Junction Temperature Range	Tj	150	℃
Storage temperature	Tstg	-65~+150	℃
power consumption	PD	Internal Limits (Note1)	mW
ESDCapability (minimum)	ESD	2000	V

Note1: The maximum allowable power dissipation is the maximum operating junction temperatureTj(max),Junction-to-air thermal resistance as a function of ambient temperature. The maximum allowable power dissipation is at a given ambient temperature. Exceeding the maximum allowable power dissipation will cause the chip temperature to be too high, and the regulator will enter the overheating protection state. The junction-to-air thermal resistance of different package types is different, which is determined by the packaging technology.

Recommended working conditions

parameter	symbol	scope	unit
Input voltage	Vin	12	V
Operating Junction Temperature Range	Tj	- 40~+125	℃

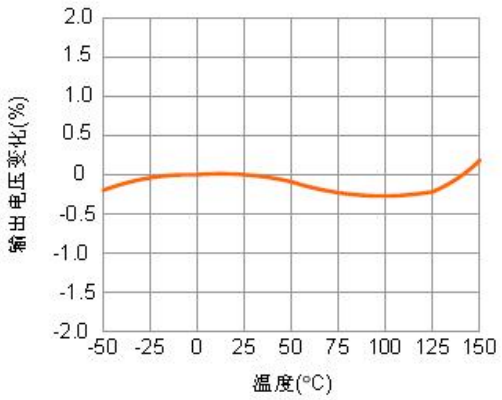
electrical characteristics(Unless otherwise specified, the parameters shown in black font,Tamb=25℃, normal operating junction temperature range -40~+125℃)

parameter	symbol	Test Conditions	minimum value	typical value	maximum value	unit
The 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
The 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
output voltage temperature stability	TSout			0.3		%
linear adjustment	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
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 pin current	Iadj			60	**120**	uA
Adjustable pin current Variety		0≤IOUT≤800mA, 1.4V ≤VIN-VOUT≤10V		0.2	**5**	uA

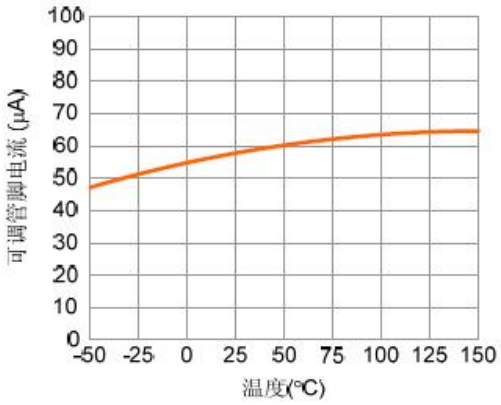
參數	符號	測試條件	最小值	典型值	最大值	單位
溫度保護點	TSD			150		℃
限流保護點	Ilimit		1.4	1.6	1.8	A
溫度穩定性				0.5		%
長期穩定性		TA=125°C, 1000Hrs		0.3		%
RMS 輸出噪聲		% of VOUT, 10Hz≤f≤10kHz		0.005		%
熱阻係數（無散熱片）	θ_{JA}	SOT223-3L		120		℃/W
		TO252-2L		100		
熱阻係數（結到殼）	θ_{JC}	SOT89-3L		30		℃/W
		SOT223-3L		15		
		TO252-2L		10		
		TO-220		4.5		

■ **Typical electrical characteristic curve**

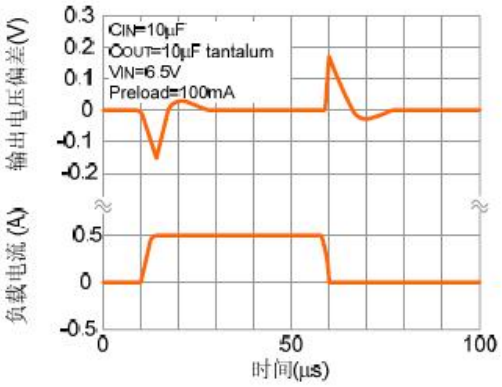
温度稳定性



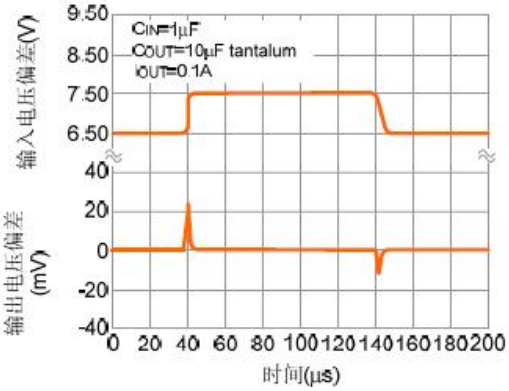
可调管脚电流



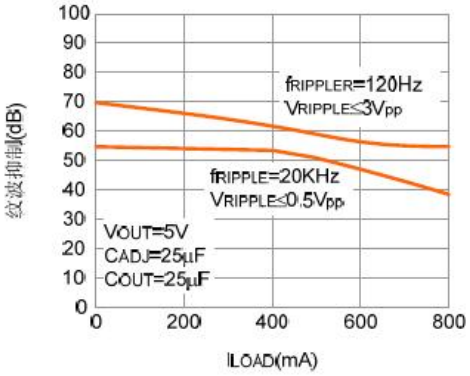
负载瞬态反应（VOUT=5 V）



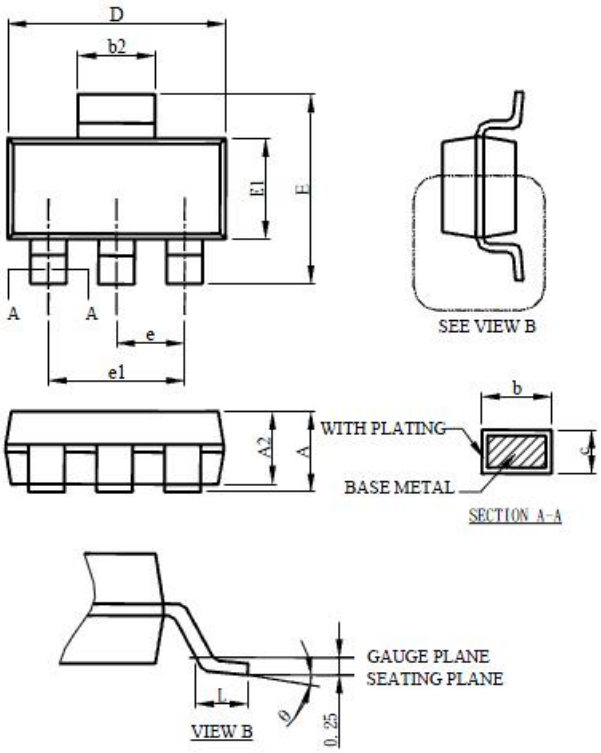
线性瞬态响应（VOUT=5 V）



纹波抑制 VS 电流



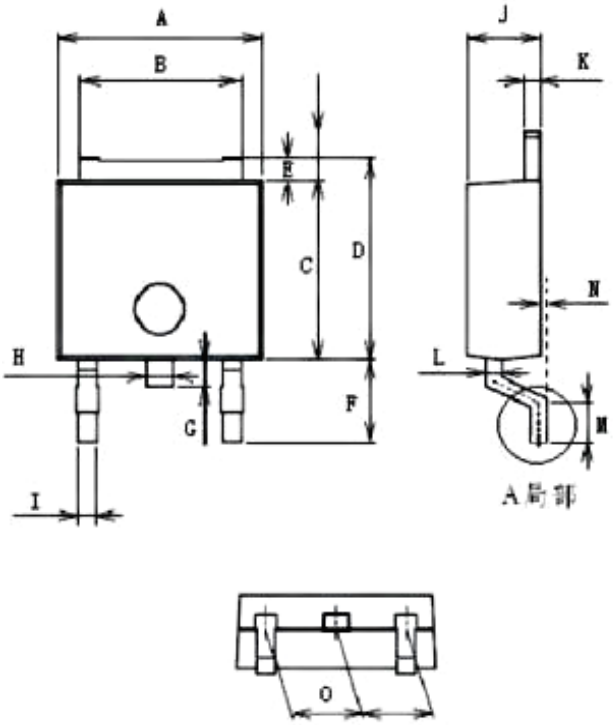
SOT223Package Outline Drawing



SYMBOL	SOT-223	
	MILLIMETERS	
	MIN.	MAX.
A		1.80
A1	0.02	0.10
A2	1.55	1.65
b	0.66	0.84
b2	2.90	3.10
c	0.23	0.33
D	6.30	6.70
E	6.70	7.30
E1	3.30	3.70
e	2.30 BSC	
e1	4.60 BSC	
L	0.90	
θ	0°	8°

Note:
1.Refer to JEDEC TO-261AA.
2.Dimension D and E1 are determined at the outermost extremes of the plastic body exclusive of mold flash, tie bar burrs, gate burrs, and interlead flash, but including any mismatch between the top and bottom of the plastic body.
3.Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.

TO-252Package Outline Drawing



Unit: mm

Item	Min	Max
A	6. 40	6. 70
B	5. 20	5. 40
C	6. 00	6. 30
D	6. 55	6. 85
E	0. 45	0. 60
F	3. 07	3. 35
G	0. 85	1. 05
H	0. 75	0. 95
I	0. 55	0. 75
J	2. 20	2. 40
K	0. 43	0. 58
L	0. 43	0. 58
M	0. 90	1. 10
N	0. 90	1. 10
O	2. 20	2. 40

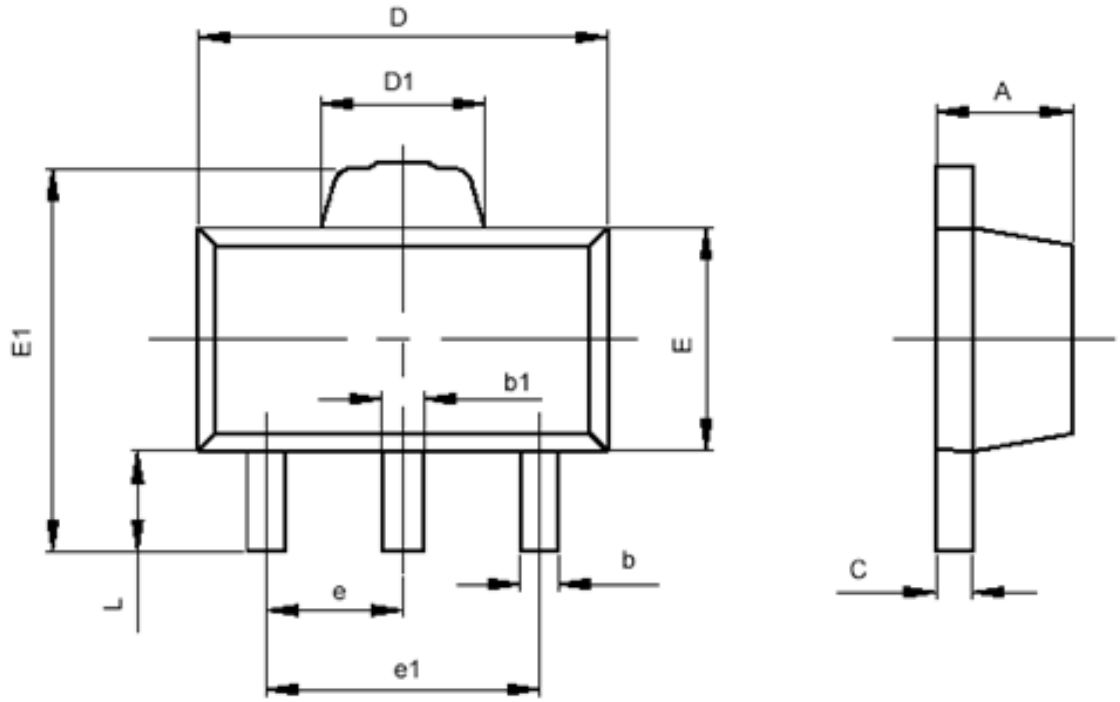
statement:

● Our company reserves the right to change the manual without prior notice;

● Any semiconductor product has the possibility of failure or failure under the characteristic conditions. The buyer is responsible for complying with safety standards and taking safety measures when using our products for system design and complete machine manufacturing, so as to avoid potential failure risks that may cause personal injury or the occurrence of property damage;

● There is no end to product improvement, and our company will wholeheartedly provide customers with better semiconductor products.

■ **SOT-89Package Outline Drawing**



符号	最小值（mm）	最大值（mm）
A	1.400	1.600
b	0.320	0.520
b1	0.360	0.560
c	0.350	0.440
D	4.400	4.600
D1	1.400	1.800
E	2.300	2.600
E1	3.940	4.250
e	1.500TYP	
e1	2.900	3.100
L	0.900	1.100