



1A Bipolar Linear Regulator

Features

- Maximum output current is 1A
- Input Voltage Range: 2.5V~18V
- Line regulation: 0.1%/V(typ.)
- Standby current: 2mA (typ.)
- Load regulation: 10mV(typ.)
- Environment Temperature: -40~85(°C)

General Description

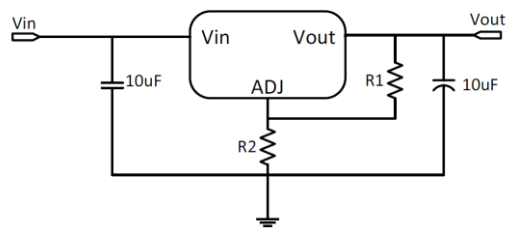
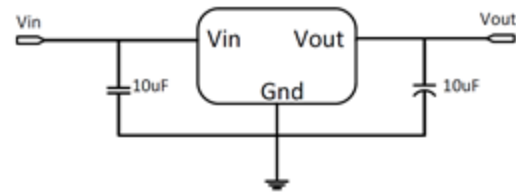
AF1117A is a series of low dropout voltage, three-terminal regulators. Its application circuit is very simple: the fixed version only needs two capacitors and the adjustable version only needs two resistors and two capacitors to work. Other than a fixed version, $V_{out}=1.2V, 1.8V, 2.5V, 3.3V, 5V$ and $12V$, AF1117A has an adjustable version, which can provide an output voltage from 1.25V to 5.0V with only two external resistors. The output voltage of adjustable version follows the equation: $V_{out}=1.25 \times (1 + R2/R1) + I_{Adj} \times R2$. We can ignore I_{Adj} because I_{Adj} (about 50uA) is much less than the current of R1 (about 2~10mA). To meet the minimum load current (>10mA) requirement, R1 is recommended to be 125ohm or lower. As AF1117A-ADJ can keep itself stable at load current about 2mA, R1 is not allowed to be higher than 625ohm.

AF1117A offers thermal shut down and current limit functions, to assure the stability of chip and power system. And it uses trimming technique to guarantee output voltage accuracy within 2%. Other output voltage accuracy can be customized on demand, such as 1%.

AF1117A is available in SOT-223 and SOT-89-3L power package.

The moisture sensitivity level is currently up to MSL3.

Typical Applications



Ordering Information

AF1117A	XX	L/P
①	②	③

Notes:

- ①: Product code
- ②: Output Voltage
33: 3.3V
- ③: Package
L: SOT-223
P: SOT-89-3L

Package	Packing	Shipping
SOT-223	Tape and	2.5K/Reel
SOT-89-3L	Reel	1K/Reel

Applications

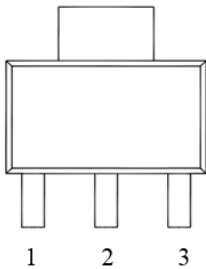
- Power management for Computer Mother Board, Graphic Card
- LCD Monitor and LCD TV
- DVD Decode Board
- ADSL Modem
- Post Regulators for Switching Supplies



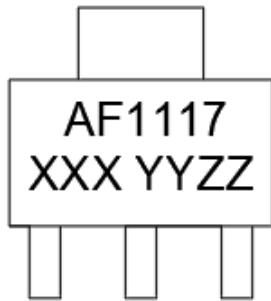
➤ Pin Configuration

SOT-223

Top View



1.Vss/Adj 2.Vout 3.Vin
Marking



Marking Notes:

AF1117: Product code

XXX: Output Voltage

3V3: 3.3V

ADJ: adjustable

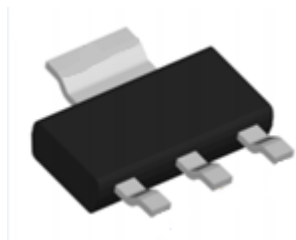
YY: Year

18: 2018

ZZ: Week

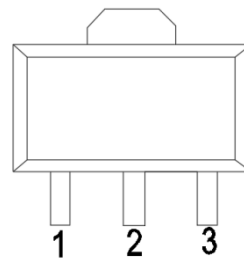
05: Fifth week

Bottom view

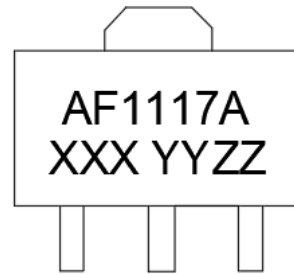


SOT-89-3

Top View



1.GND 2.Vout 3.Vin
Marking



Marking Notes:

AF1117A: Product code

XXX: Output Voltage

3V3: 3.3V

ADJ: adjustable

YY: Year

18: 2018

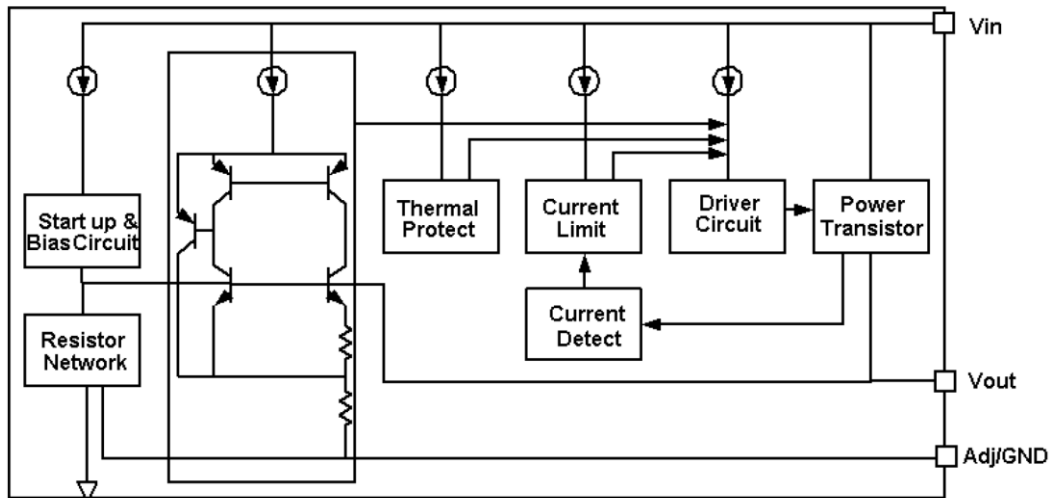
ZZ: Week

05: Fifth week

Bottom view



➤ **Block Diagram**



➤ **Thermal Information**

Package Thermal Resistance	Rating	Unit
SOT-223	20	°C/W
SOT-89	30	

➤ **Absolute Maximum Rating**

Parameter	Value
Max Input Voltage	18V
Max Power Dissipation	1.2W
Max Output Current	1A
Max Operating Junction Temperature	150°C
Ambient Temperature	-40°C~85°C
Storage Temperature	-40°C~150°C
Lead Temperature & Time	260°C,10s



➤ Electrical Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Vref	Reference voltage	AF1117A-ADJ 10mA ≤ Iout ≤ 1A, Vin = 3.25V	1.225	1.25	1.275	V
Vout	Output Voltage	AF1117A-1.2V 0 ≤ Iout ≤ 1A, Vin = 3.2V	1.176	1.2	1.224	V
		AF1117A-1.8V 0 ≤ Iout ≤ 1A, Vin = 3.8V	1.76	1.8	1.836	
		AF1117A-2.5V 0 ≤ Iout ≤ 1A, Vin = 4.5V	2.45	2.5	2.55	
		AF1117A-3.3V 0 ≤ Iout ≤ 1A, Vin = 5.3V	3.234	3.3	3.366	
		AF1117A-5.0V 0 ≤ Iout ≤ 1A, Vin = 7.0V	4.9	5	5.1	
		AF1117A-12.0V 0 ≤ Iout ≤ 1A, Vin = 14V	11.76	12	12.24	
ΔVout	Line Regulation	AF1117A-ADJ Iout = 10mA 2.75V ≤ Vin ≤ 12V		0.1	0.4	%V
		AF1117A-1.2V Iout = 10mA 2.7V ≤ Vin ≤ 10V		0.1	0.4	
		AF1117A-1.8V Iout = 10mA 3.3V ≤ Vin ≤ 12V		0.1	0.4	
		AF1117A-2.5V Iout = 10mA 4.0V ≤ Vin ≤ 12V		0.1	0.4	
		AF1117A-3.3V Iout = 10mA 4.8V ≤ Vin ≤ 12V		0.1	0.4	
		AF1117A-5.0V Iout = 10mA 6.5V ≤ Vin ≤ 12V		0.1	0.4	
Vdrop	Dropout voltage	Iout = 100mA		1.23	1.3	V
		Iout = 1A		1.3	1.5	V
ΔVout	Load Regulation	AF1117A-ADJ Vin = 2.75V, 10mA ≤ Iout ≤ 1A		10	32	mV
		AF1117A-1.2V Vin = 2.7V, 10mA ≤ Iout ≤ 1A		10	32	
		AF1117A-1.8V Vin = 3.3V, 10mA ≤ Iout ≤ 1A		10	32	
		AF1117A-2.5V Vin = 4.0V, 10mA ≤ Iout ≤ 1A		10	32	
		AF1117A-3.3V Vin = 4.8V, 10mA ≤ Iout ≤ 1A		10	32	
		AF1117A-5.0V		10	32	

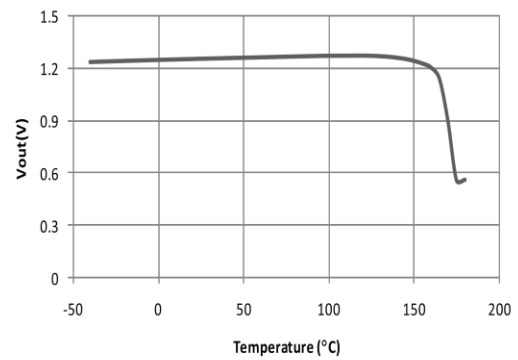
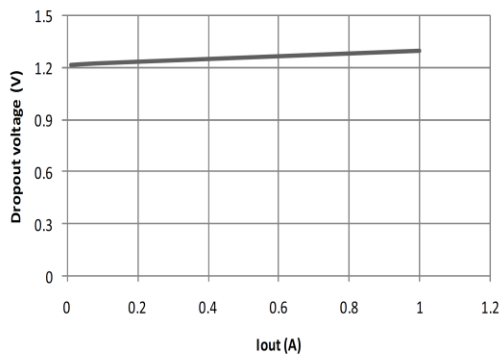
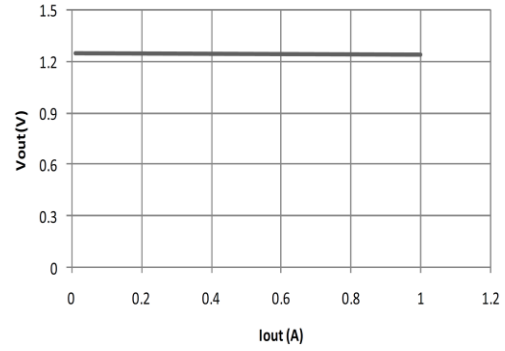
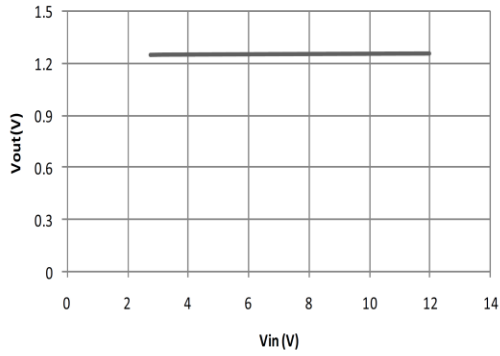


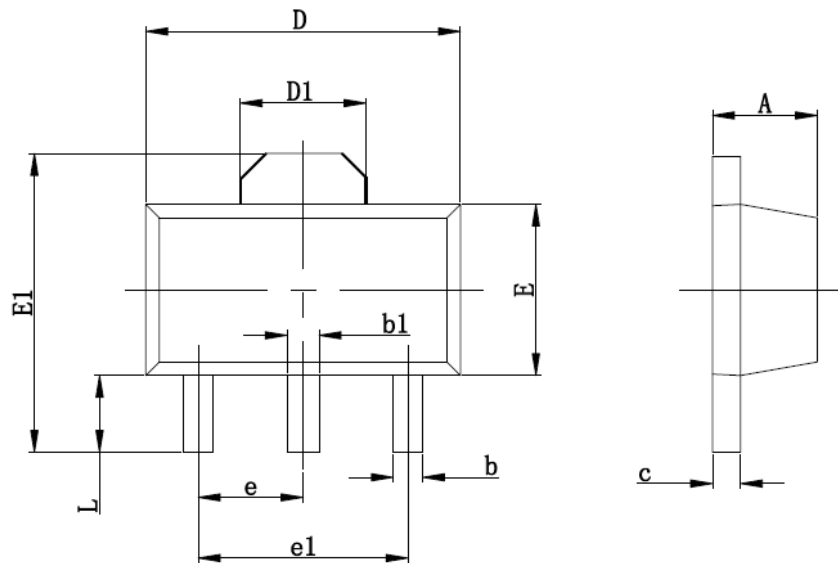
AF1117A

		Vin=6.5V,10mA ≤ Iout ≤ 1A				
		AF1117A-12.0V Vin=13.5V,10mA ≤ Iout ≤ 1A		10	32	
IQ	Quiescent Current	AF1117A-ADJ,Vin=12V		2	5	mA
		AF1117A-1.2V,Vin=10V		2	5	
		AF1117A-1.8V,Vin=12V		2	5	
		AF1117A-2.5V,Vin=12V		2	5	
		AF1117A-3.3V,Vin=12V		2	5	
		AF1117A-5.0V,Vin=12V		2	5	
		AF1117A-12.0V,Vin=20V		2	5	
PSRR	Power Supply Rejection Ratio	f=100Hz, Cout=104		-65		dB
		f=1KHz, Cout=104		-65		
		f=10KHz, Cout=104		-60		
		f=22KHz, Cout=104		-70		
Iadj	Adjust pin current	AF1117A-ADJ Vin=5V,10mA ≤ Iout ≤ 1A		55	120	uA
Ichange	Change current	AF1117A-ADJ Vin=5V,10mA ≤ Iout ≤ 1A		0.2	10	uA
Ilim	Output Limit Current	Vin-Vout=2V	0.8			A
Imin	Minimum load current	AF1117A-ADJ	2	10		mA
ΔV/ΔT	Temperature Coefficient	Iout =40mA		±100		ppm/°C



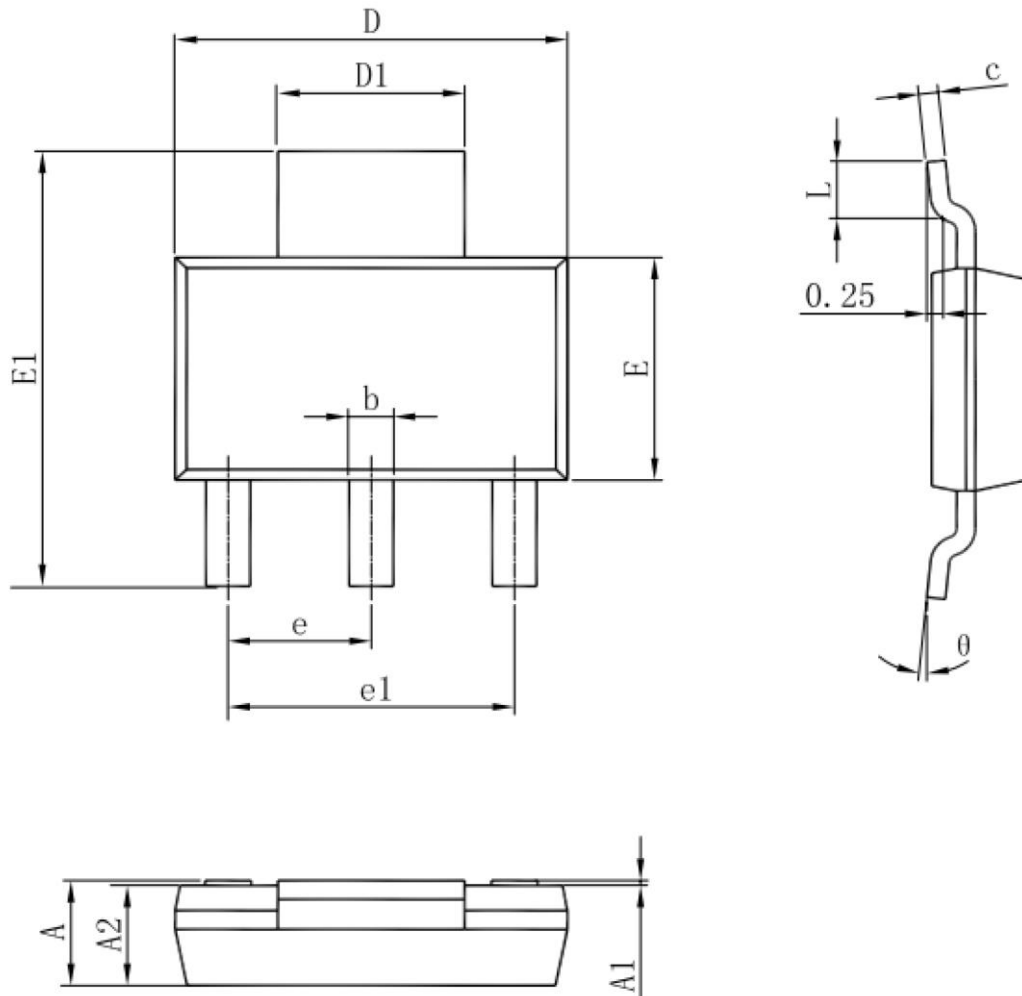
➤ Typical Performance Characteristics



➤ **Package Information**


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.350	0.520	0.013	0.197
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	2.350	2.550	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP		0.060TYP	
e1	3.000 TYP		0.118TYP	
L	0.900	1.100	0.035	0.047

SOT-89-3



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°

SOT-223



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