



PRODUCT DATA SHEET



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AMS1117-X.X

1A Bipolar Linear Regulator

Features

- Output current is 1A
- Range of operation input voltage: 15V
- Line regulation: 0.03%/V (typ.)

Applications

- Power Management for Computer Mother Board, Graphic Card
- LCD Monitor and LCD TV

General Description

AMS1117 is a series of low dropout three-terminal regulators with a dropout of 1.3V at 1A load current. AMS1117 features a very low standby current 2mA compared to 5mA of competitor.

Other than a fixed version, Vout = 1.2V, 1.5V, 1.8V, 2.5V, 2.85V, 3.3V, and 5V, AMS1117 has an adjustable version, which can provide an output voltage from 1.25 to 12V with

- Standby current: 2mA (typ.)
- Load regulation: 0.2%/A (typ.)
- Environment Temperature: -20°C~85°C
- DVD Decode Board
- ADSL Modem
- Post Regulators for Switching Supplies

only two external resistors.

AMS1117 offers thermal shut down function, 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%. AMS1117 is available in SOT-223, SOT-89 power package.

Typical Application



Application circuit of AMS1117 fixed version



Block Diagram



Pin Configuration



SOT-89 (Top View)



Table1: AMS1117 series (SOT223 PKG)

PIN NO.	PIN NAME	FUNCTION
1	1 VSS/ADJ VSS/ADJ pin	
2	VOUT	Output voltage pin
3	VIN	Input voltage pin
4	VOUT	Output voltage pin

Table2: AMS1117 series (SOT-89 PKG)

PIN NO.	PIN NAME	FUNCTION
1	VSS/ADJ	VSS/ADJ pin
2	VOUT	Output voltage pin
3	VIN	Input voltage pin





Absolute Maximum Ratings

Max Input Voltage ······	18V
Max Operating Junction Temperature(Tj) ······	150 ℃
Ambient Temperature(Ta) ······	-20℃~125℃
Storage Temperature(Ts)	-40°C∼150° C
Lead Temperature & Time	260℃ 10S
Caution: Exceed these limits to damage to the device. Exposure to absolute maximum rating condition	ons may affect
device reliability.	

Electrical Characteristics

TA=25°C, unless otherwise noted.

Symbol	Parameter	Conditions Min Typ M		Max	Unit	
Vin	Input voltage			15	18	V
Vref	Reference	AMS1117-Adj	1.225	1.25	1.275	V
	voltage	10mA \leqslant Iout \leqslant 1A , Vin=3.25V				
		AMS1117-1.2V	1.176	1.2	1.224	V
		0≤lout≤1A , Vin=2.7V				
		AMS1117-1.5V	1.47	1.5	1.53	V
		0≤lout≤1A , Vin=3.0V				
		AMS1117-1.8V	1.764	1.8	1.836	V
Vout	Output voltage	0≤lout≤1A , Vin=3.3V				
		AMS1117-2.5V	2.45	2.5	2.55	V
		0≤lout≤1A , Vin=4.0V				
		AMS1117-2.85V	2.793	2.85	2.907	V
		0≤lout≤1A , Vin=4.35V				
		AMS1117-3.3V	3.234	3.3	3.366	V
		0≤lout≤1A , Vin=4.8V				
		AMS1117-5.0V	4.9	5	5.1	V
		0≤lout≤1A , Vin=6.5V				

		AMS1117-1.2V	4	19	mV
		lout=10mA, 2.7V≪Vin≪10V			
		AMS1117-1.5V	5	26	mV
		lout=10mA, 3.0V≪Vin≪10V			
		AMS1117-ADJ	5	24	mV
		lout=10mA, 2.75V≪Vin≪12V			
riangleVout	Line	AMS1117-1.8V	5	32	mV
	regulation	lout=10mA, 3.3V≪Vin≪12V			



Т

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Т

		AMS1117-2.5V	8	41	mV
		lout=10mA, 4.0V≪Vin≪12V			
		AMS1117-2.85V	8	46	mV
		lout=10mA, 4.35V≪Vin≪12V			
		AMS1117-3.3V	9	49	mV
		lout=10mA, 4.8V≪Vin≪12V			
		AMS1117-5.0V	10	56	mV
		lout=10mA, 6.5V≪Vin≪12V			
		· · ·			
		AMS1117-1.2V	3	8	mV
		Vin =2.7V, 10mA≤lout≤1A			
		AMS1117-1.5V	3	8	mV
		Vin =3.0V, 10mA≤lout≤1A			
		AMS1117-ADJ	4	8	mV
		Vin =2.75V, 10mA≤lout≤1A			
riangleVout	Load	AMS1117-1.8V	4	12	mV
	regulation	Vin =3.3V, 10mA≤lout≤1A			
		AMS1117-2.5V	5	16	mV
		Vin =4.0V, 10mA≤lout≤1A			
		AMS1117-2.85V	6	20	mV
		Vin =4.35V, 10mA≤lout≤1A			
		AMS1117-3.3	7	24	mV
		Vin =4.8V, 10mA≤lout≤1A			
		AMS1117-5.0	10	36	mV
		Vin =6.5V, 10mA≪lout≪1A			
Vdrop	Dropout voltage	lout =100mA	1.15	1.3	V
		lout=1A	1.3	1.5	V
Imin	Minimum load	AMS1117-ADJ	2	10	mA
	current				
		AMS1117-1.2V,Vin=10V	2	5	mA
		AMS1117-1.5V,Vin=10V	2	5	mA
lq	Quiescent	AMS1117-1.8V,Vin=12V	2	5	mA
	Current	AMS1117-2.5V,Vin=12V	2	5	mA
		AMS1117-2.85V,Vin=12V	2	5	mA
		AMS1117-3.3V,Vin=12V	2	5	mA
		AMS1117-5.0V,Vin=12V	2	5	mA
ladj	Adjust pin	AMS1117-ADJ	55	120	uA
	current	Vin=5V,10mA≤lout≤1A			
Ichange	ladj change	AMS1117-ADJ	0.2	10	uA



		Vin=5V,10mA≤lout≤1A		
	Thermal	Junction Temperature	+200	Ŷ
	Shutdown			C
OTP	Thermal	Junction Temperature	+30	
	Shutdown			°C
	Hysteresis			
	Temperature	Vin=4.5V, lout=10mA	30	
\triangle Vout	coefficient	VOUT=3.3V		mV
		20℃ ≤Ta ≤120℃		
0	Thermal	SOT-223	20	°⊂ \\\\
o JC	resistance	SOT-89	10	C/W

Note1: All test are conducted under ambient temperature 25° C and within a short period of time 20ms

Note2: Load current smaller than minimum load current of AMS1117-ADJ will lead to unstable or oscillation output.

Detailed Description

AMS1117 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. It is composed of some modules including start-up circuit, bias circuit, bandgap, thermal shutdown, power transistors and its driver circuit and so on.

The thermal shut down modules can assure chip and its application system working safety when the junction temperature is larger than 140°C.

The bandgap module provides stable reference voltage, whose temperature coefficient is compensated by careful design considerations. The temperature coefficient is under 100 ppm/°C. And the accuracy of output voltage is guaranteed by trimming technique.

Typical Application

AMS1117 has an adjustable version and six fixed versions (1.2V, 1.5V, 1.8V, 2.5V, 2.85V, 3.3V and 5V)

Fixed Output Voltage Version



Application circuit of AMS1117 fixed version

- 1) Recommend using 10uF tan capacitor as bypass capacitor (C1) for all application circuit.
- 2) Recommend using 10uF tan capacitor to assure circuit stability.



Typical Performance Characteristics TA=25°C, unless otherwise noted



Output Voltage vs. Input Voltage (VOUT=3.3V)

Output Voltage vs. Output Current (VOUT=3.3V)



Line Regulation vs. Junction Temperature



Output Voltage vs. Input Voltage (VOUT=1.8V)



Output Voltage vs. Output Current (VOUT=1.8V)



Load Regulation vs. Junction Temperature





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Reference Voltage vs. Junction Temperature

Output Voltage vs. Junction Temperature



Minimum Load Current vs. Junction Temperature



Adjust Pin Current vs. Junction Temperature







Dropout Voltage vs. Ouput Current





.ine Transient Response



Load Transient Response





AMS1117-X.X

Package Information









PCB Board

Symbol	Dimensions In	Millimeters	Dimensions	In Inches
Symbol	Min	Max	Min	Max
Α	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
С	0.250	0.350	0.010	0.014
D	6.400	6.600	0.252	0.260
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°



3-pin SOT89 Outline Dimensions



Sumbal	Dimensions In Millimeters		Dimensions In Inches		
Symbol	Min.	Max.	Min.	Max.	
Α	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	
С	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	
е	1.500 TYP.		0.060 TYP.		
e1	3.000	TYP.	0.118 TYP.		
L	0.900	1.200	0.035	0.047	





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