1A Adjustable / Fixed Low Dropout Linear Regulator

Key Features

- Low dropout voltage
- Load regulation: 0.05% typical
- Optimized for Low Voltage
- On-chip thermal limiting
- Standard SOT-223, TO-220, and TO-252 packages
- Three-terminal adjustable or fixed low dropout 1.2V, 1.8V, 2.85V, 3.3V, 5V. regulators

Applications

- Active SCSI terminators
- High effciency linear regulators
- Post regulators for switching supplies
- Battery chargers
- 12V to 5V linear regulators
- Motherboard clock supplie

Notice:The distance between Vout pin and Capacitor should not exceed 4cm for excellent peformance.

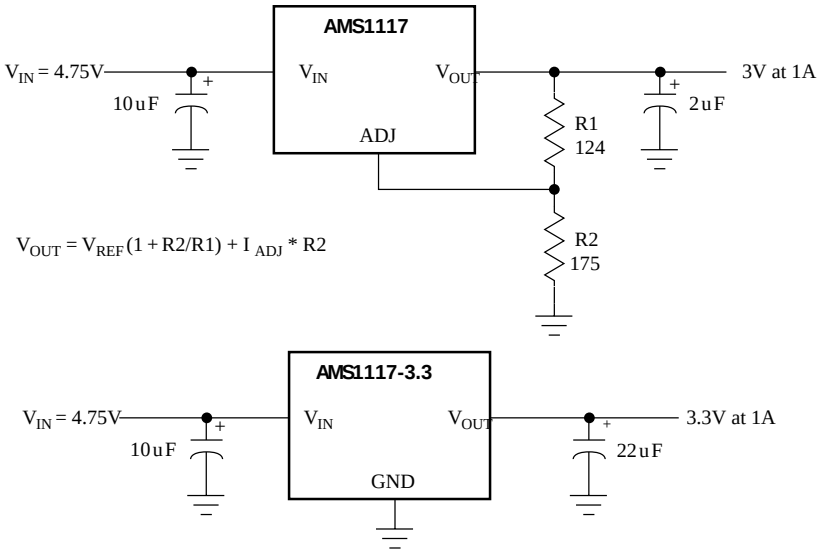
General Description

The AMS1117 and LM1117-1.2/1.8/2.85/3.3 /5V are low dropout three-terminal regulators with 1A output current capability. These devices have been optimized for low voltage where transient response and minimum input voltage are critical. The 2.85V version is designed specifically to be used in Active Terminators for SCSI bus.

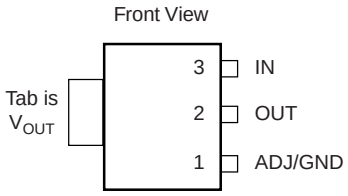
On-chip thermal limiting provides protection against any combination of overload and ambient temperatures that would create excessive junction temperatures.

Unlike PNP type regulators where up to 10% of the output current is wasted as quiescent current, the quiescent current of theAMS1117 flows into the load, increasing efficiency.

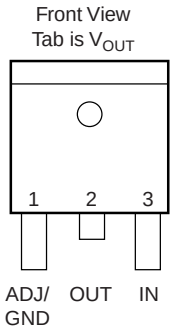
The AMS1117 series regulators are available in the industry-standard SOT-223, TO-220, and TO-252 (DPAK) power packages.



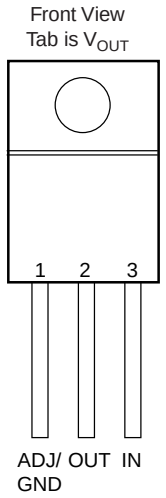
Pin Assignments



4-Lead Plastic SOT-223
Θ_{JC} = 15°C/W*



3-Lead Plastic TO-252
Θ_{JC} = 3°C/W*



3-Lead Plastic TO-220
Θ_{JC} = 3°C/W*

*With package soldered to 0.5 square inch copper area over backside ground plane or internal power plane, Θ_{JA} can vary from 30°C/W to more than 50°C/W. Other mounting techniques may provide better thermal resistance than 30°C/W.

Absolute Maximum Ratings

Parameter	Min.	Max.	Unit
V_{IN}		18	V
Operating Junction Temperature Range	0	125	°C
Storage Temperature Range	-65	150	°C
Lead Temperature (Soldering, 10 sec.)		300	°C

Electrical Characteristic

Operating Conditions: V_{IN}<=7V, T_J = 25 °C unless otherwise specified.

The ~ denotes specifcations which apply over the specifed operating temperature range .

Parameter	Conditions		Min.	Typ.	Max.	Units
Reference Voltage [3]	1.5V<=(V_{IN} - V_{OUT}) <=7V, 10mA<=I_{OUT}<=1A	~	1.225 (-2%)	1.250	1.275 (+2%)	V
Output Voltage [4]	10mA<=I_{OUT}<=1A					
	AMS1117-1.2, 2.7V <=V_{IN}<=8.2V	~	1.152	1.2	1.248	V
	AMS1117-1.8, 3.3V<=V_{IN} <= 8.8V	~	1.764	1.8	1.836	V
	AMS1117-2.85, 4.35V <=V_{IN}<= 9.85V	~	2.793	2.85	2.907	V
	AMS1117-3.3, 4.8V<=V_{IN} <=10.3V	~	3.234	3.3	3.366	V
	AMS1117-5, 6.5V<=V_{IN} <= 12V	~	4.900	5.0	5.100	V
Line Regulation [1,2]	(V_{OUT} + 1.5V)<=V_{IN}<=12V, I_{OUT} = 10mA	~		0.005	0.2	%
Load Regulation [1,2]	(V_{IN}-DV_{OUT}) = 2V, 10mA<=I_{OUT}<=1A	~		0.05	0.5	%
Dropout Voltage	DV_{REF} = 1%, I_{OUT}= 1A	~		1.100	1.200	V
Current Limit	(V_{IN} -DV_{OUT}) = 2V	~	1.1	1.5		A
Adjust Pin Current [3]		~		35	120	A
Adjust Pin Current Change [3,4]	1.5V<=(V_{IN}-DV_{OUT})<=7V, 10mA<=I_{OUT}<=1A	~		0.2	5	A
Minimum Load Current	1.5V<=(V_{IN}-DV_{OUT})<=15V	~	10			mA
Quiescent Current	V_{IN} = V_{OUT} + 1.25V	~		4	13	mA
Ripple Rejection	f = 120Hz, C $_{OUT}$ = 22 F Tantalum, (V_{IN}-DV_{OUT}) = 3V, I_{OUT} = 1A		60	72		dB
Thermal Regulation	T_A = 25°C, 30ms pulse			0.004	0.02	%/W
Temperature Stability		~		0.5		%
Long-Term Stability	T_A = 125°C, 1000hrs.			0.03	1.0	%
RMS Output Noise (% of V_{OUT})	T_A = 25°C, 10Hz<= f <=10kHz			0.003		%
Thermal Resistance, Junction to Case	SOT-223			15		°C/W
	TO-252, TO-220			3		°C/W
Thermal Shutdown	Junction Temperature			155		°C
Thermal Shutdown Hysteresis				10		°C

Notes:

1. See thermal regulation specifications for changes in output voltage due to heating effects. Load and line regulation are measured at a constant junction temperature by low duty cycle pulse testing.
2. Line and load regulation are guaranteed up to the maximum power dissipation (18W). Power dissipation is determined by input/output differential and the output current. Guaranteed maximum output power will not be available over the full input/ output voltage range.
3. AMS1117A only.
4. Output current must be limited to meet the absolute maximum ratings of the part.