800mA Bipolar Linear Regulator

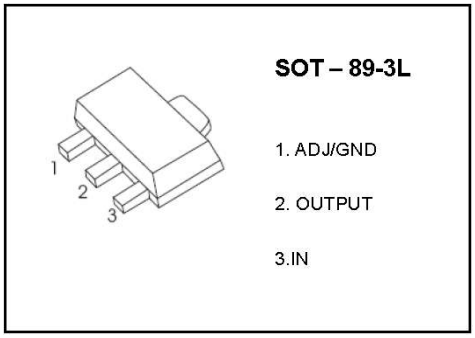
DESCRIPTION

SK1117A is a series of low dropout three-terminal regulators with a dropout of 1.3V at 800mA load current. It features a low standby current 2mA. Other than a fixed version (Vout = 1.2V, 1.8V, 2.5V, 3.3V, 5V, and 12V), It has an adjustable version, which can provide an output voltage from 1.25 to 12V with only two external resistors. offers thermal shut down and current limit functions, to assure stability of chip and power system. Trimming technique is used to guarantee output voltage accuracy within 2%. Other output voltage accuracy such as 1% can be customized on demand. It is available in SOT89-3 power packages.

FEATURES

- Other than a fixed version and an adjustable version, output value can be customized on demand.
- Maximum output current is 800mA
- Range of operation input voltage: Max 18V
- Standby current: 2mA (typ.)
- Line regulation: 0.1%/V (typ.)
- Load regulation: 10mV (typ.)
- Environment Temperature: -40C~85C
- Compatible with tantalum capacitor, electrolytic capacitor and MLCC.

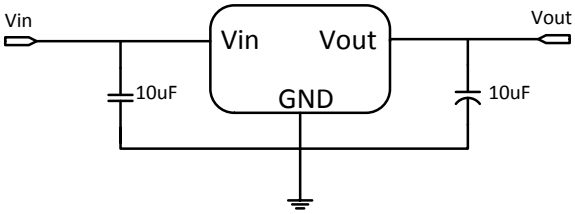
PACKAGE AND PIN CONFIGURATIONS



APPLICATIONS

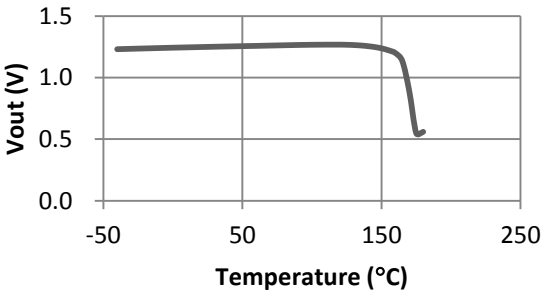
- Power Management for Computer Mother Board, Graphic Card
- LCD Monitor and LCD TV
- DVD Decode Board
- ADSL Modem
- Post Regulators for Switching Supplies

TYPICAL APPLICATION



Application circuit of SK1117A fixed version

TYPICAL ELECTRICAL CHARACTERISTIC



SK1117A-ADJ Vout Vs. Temp

ABSOLUTE MAXIMUM RATING

Parameter		Value
Max Input Voltage		18V①
Max Operating Junction Temperature(Tj)		150°C
Ambient Temperature(Ta)		-40°C – 85°C
Power Dissipation	SOT89-3	500mW
Storage Temperature(Ts)		-40°C - 150°C
Lead Temperature & Time		260°C, 10S

Note: *Exceed these limits to damage to the device. Exposure to absolute maximum rating conditions may affect device reliability.*

RECOMMENDED WORK CONDITIONS

Parameter	Value
Input Voltage Range	Max. 16V
Operating Junction Temperature(Tj)	-40°C –85°C

ELECTRICAL CHARACTERISTICS *Tj=25℃*

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Vref	Reference Voltage	SK1117A-ADJ 10mA≤Iout≤800mA , Vin=3.25V	1.225	1.25	1.275	V
Vout	Output Voltage	SK1117A -1.2V 0≤Iout≤800mA , Vin=3.2V	1.176	1.2	1.224	V
		SK1117A -1.8V 0≤Iout≤800mA , Vin=3.8V	1.764	1.8	1.836	V
		SK1117A -2.5V 0≤Iout≤800mA , Vin=4.5V	2.45	2.5	2.55	V
		SK1117A -3.3V 0≤Iout≤800mA , Vin=5.3V	3.234	3.3	3.366	V
		SK1117A -5.0V 0≤Iout≤800mA , Vin=7.0V	4.9	5	5.1	V
		SK1117A -12.0V 0≤Iout≤800mA , Vin=14V	11.76	12	12.24	V
ΔVout	Line Regulation	SK1117A -1.2V Iout=10mA, 2.7V≤Vin≤15V		0.1	0.2	%/V
		SK1117A-ADJ Iout=10mA, 2.75V≤Vin≤16V		0.1	0.2	%/V
		SK1117A -1.8V Iout=10mA, 3.3V≤Vin≤16V		0.1	0.2	%/V
		SK1117A -2.5V Iout=10mA, 4.0V≤Vin≤16V		0.1	0.2	%/V
		SK1117A -3.3V Iout=10mA, 4.8V≤Vin≤16V		0.1	0.2	%/V
		SK1117A -5.0V Iout=10mA, 6.5V≤Vin≤16V		0.1	0.2	%/V
		SK1117A -12.0V Iout=10mA, 13.5V≤Vin≤20V		0.1	0.2	%/V
ΔVout	Load Regulation	SK1117A -1.2V Vin =2.7V, 10mA≤Iout≤800mA		10	30	mV
		SK1117A -ADJ Vin =2.75V, 10mA≤Iout≤800mA		10	30	mV
		SK1117A -1.8V Vin =3.3V, 10mA≤Iout≤800mA		10	30	mV
		SK1117A -2.5V Vin =4.0V, 10mA≤Iout≤800mA		10	30	mV
		SK1117A -3.3V Vin =4.8V, 10mA≤Iout≤800mA		10	30	mV
		SK1117A -5.0V Vin =6.5V, 10mA≤Iout≤800mA		10	30	mV
		SK1117A -12.0V Vin =13.5V, 10mA≤Iout≤800mA		10	30	mV

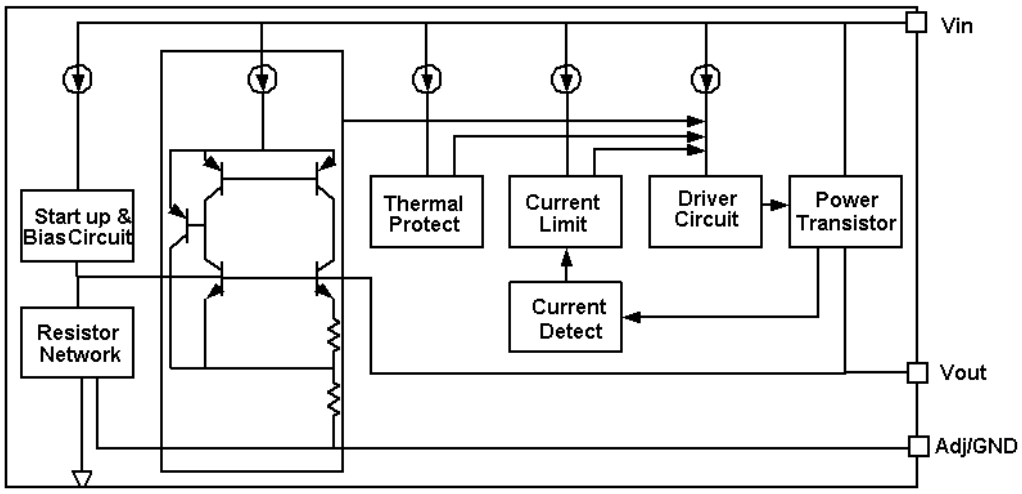
ELECTRICAL CHARACTERISTICS continued

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Vdrop	Dropout Voltage	Iout=100mA		1.23	1.3	V
		Iout=800mA		1.3	1.5	V
Ilimit	Current Limit	Vin-Vout=2V, Tj=25° C	800			mA
Imin	Minimum Load Current	SK1117A -ADJ		2	10	mA
Iq	Quiescent Current	SK1117A-1.2V, Vin =10V		2	5	mA
		SK1117A-1.8V, Vin =12V		2	5	mA
		SK1117A-2.5V, Vin =12V		2	5	mA
		SK1117A-3.3V, Vin =12V		2	5	mA
		SK1117A-5.0V, Vin =12V		2	5	mA
		SK1117SA12.0V, Vin =20V		2	5	mA
IAdj	Adjust Pin Current	SK1117A –ADJ Vin =5V, 10mA≤Iout≤800mA		55	120	uA
Ichange	Iadj change	SK1117A –ADJ Vin =5V, 10mA≤Iout≤800mA		0.2	10	uA
ΔV/ΔT	Temperature coefficient			± 100		ppm
θ_{JC}	Thermal Resistance	SOT-89-3		100		°C/W

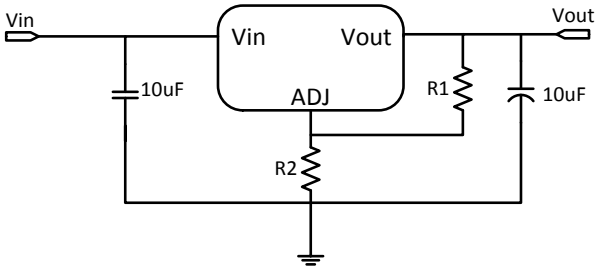
Note1: All test are conducted under ambient temperature 25°C and within a short period of time 20ms

Note2: Load current smaller than minimum load current of SK1117A-ADJ will lead to unstable or oscillation output.

BLOCK DIAGRAM



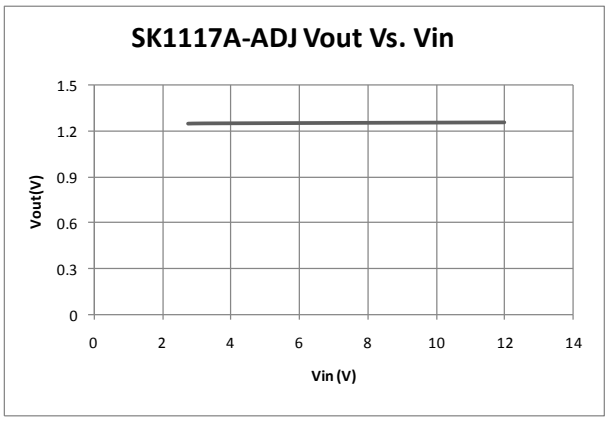
Adjustable Output Voltage Version

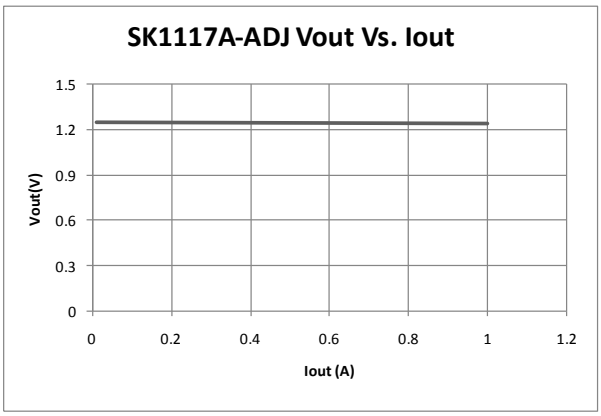


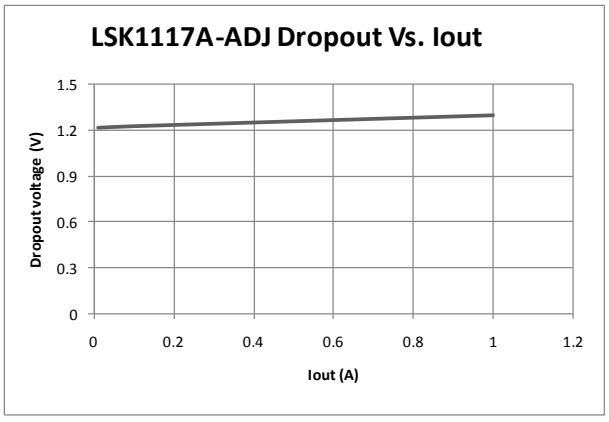
Application Circuit of SK1117A-ADJ

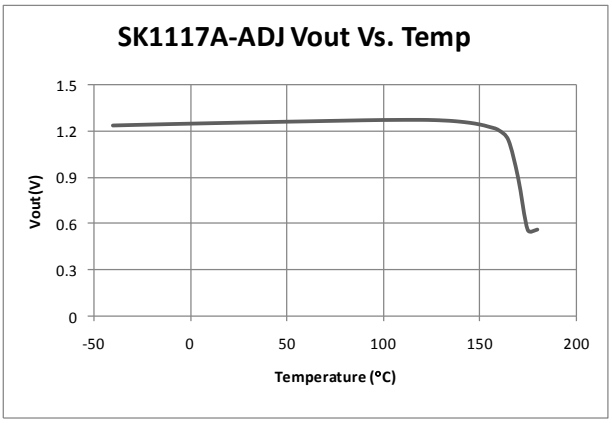
The output voltage of adjustable version follows the equation: Vout=1.25 (1+R2/R1)+IAdj R2. We can ignore IAdj because IAdj (about 50uA) is much less than the current of R1 (about 2~10mA).

TYPICAL PERFORMANCE CHARACTERISTICS *T=25°C unless specified.*









Package specification