SK6117C 1A Bipolar Linear Regulator

GENERAL DESCRIPTION

The SK6117C series are low dropout three-terminal regulators optimized for low voltage where transient response and minimum input voltage are critical.

The SK6117C provides current-limit and thermal-shutdown features. The circuit includes a trimmed bandgap reference to assure within 2% output voltage accuracy.

The SK6117C thermal shutdown provides protection against a combination of high current and ambient temperature that would create excessive junction temperature.

The SK6117C is available in SOT223 package.

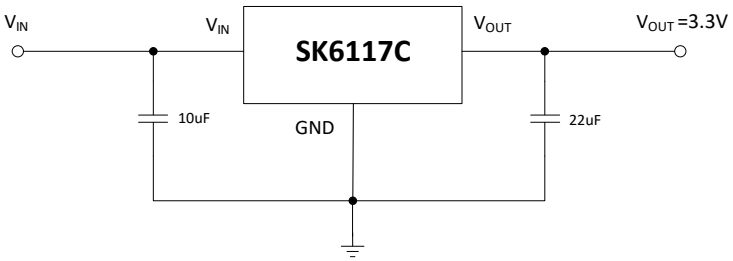
FEATURES

- Maximum Input Voltage: 18V
- Rated Output Current: 0.8A
- Current Limit: 1A
- Output Noise from 10Hz to 10kHz: 0.003% of V_{OUT}
- PSRR: 70dB @120Hz
- Typical Quiescent Current: 3.5mA
- Output Voltage Accuracy: ±2%
- On-chip Thermal Shutdown
- No External Components
- Compatible with Low ESR Ceramic Capacitor

APPLICATIONS

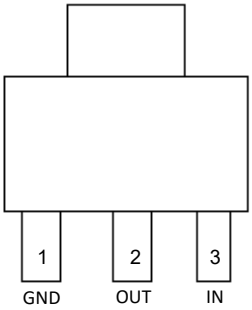
- USB devices
- TV and Monitors
- Add-on cards
- Mother Boards

TYPICAL APPLICATION CIRCUIT



PIN CONFIGURATION

TOP VIEW



SOT223

PIN DESCRIPTION

Pin No.	Pin Name	Function
1	GND	Input
2	OUT	Output
3	IN	Input

ORDERING INFORMATION

Part Number	Package	Temperature	Tape and Reel
SK6117C-XXLR	SOT223	-40 ~ +85℃	2500

Note: *XX indicates output voltage. For example, 33 means product outputs 3.3V.*

ABSOLUTE MAXIMUM RATINGS (Note1)

Parameter	Symbol	Range	Unit
Input Voltage	VIN	20	V
Operating Junction Temperature	TJ	150	°C
Lead Temperature (Soldering, 10sec)	TLEAD	260	°C
Storage Temperature Range	TSTG	-65 to 150	°C
Thermal resistance(without heatsink), SOT223	θJA	125	°C/W
Thermal resistance(with heatsink), SOT223	θJA	100	°C/W

Note (1): Absolute maximum ratings indicate stresses beyond which may cause permanent damage to the device.

ESD RATINGS

Parameter	Symbol	Range	Unit
ESD rating (Human Body Mode)	HBM	3000	V
ESD rating (Machine Mode)	MM	300	V

ORDERING INFORMATION

Parameter	Symbol	Min.	Max.	Unit
Input voltage	VIN		18	V
Operating junction Temperature	TJ	-40	125	°C

ELECTRICAL CHARACTERISTICS

Test conditions: V_{IN}≤ 10V, V_O=3.3V, I_O=10mA, T_A=25℃, unless otherwise noted.

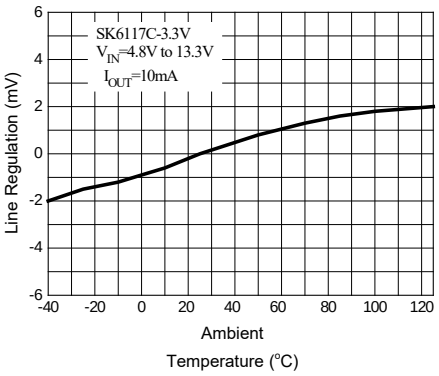
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Output Voltage	V_O	25℃	3.234	3.3	3.366	V
Line Regulation	V_{Rline}	1.5V ≤V_{IN} – V_O≤ 10V	-	0.5	6	mV
Load Regulation	V_{Rload}	10mA≤I_O≤0.8A	-	2	15	mV
Quiescent Current	I_Q		-	3.5	5	mA
Current Limit	I_{LIMIT}		0.8	0.9	-	A
Ripple Rejection	PSRR	f=120Hz,I_O=0.3A,V_{IN}-V_O =3V,C_{OUT}= 22uF	-	70	-	dB
Dropout Voltage	V_{DROP}	ΔV_O = 1%, I_O=0.8A	-	1.2	1.3	V
RMS output noise (% of V_O)	N_O	10Hz ≤f≤ 10kHz	-	0.003	-	%
Temperature Stability			-	0.5	-	%
Thermal Shutdown	θ_{JTS}		-	160	-	℃
Thermal Shutdown Hysteresis	-		-	16	-	℃
Thermal Resistance	θ_{JC}		-	15	-	℃/W

Test conditions: V_{IN}≤ 10V, V_O=5.0V, I_O=10mA, T_A=25℃, unless otherwise noted.

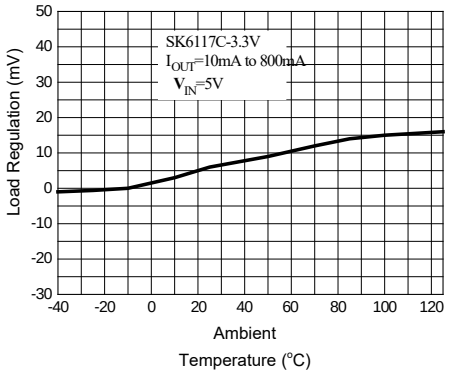
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Output Voltage	V_O	25℃	4.900	5.0	5.100	V
Line Regulation	V_{Rline}	1.5V ≤V_{IN} – V_O≤ 10V	-	0.5	6	mV
Load Regulation	V_{Rload}	10mA≤I_O≤0.8A	-	2	15	mV
Quiescent Current	I_Q	-		3.5	6	mA
Current Limit	I_{LIMIT}	-	0.8	0.9	-	A
Ripple Rejection	PSRR	f=120Hz,I_O=0.3A,V_{IN}-V_O =3V,C_{OUT}= 22uF	-	70	-	dB
Dropout Voltage	V_{DROP}	ΔV_O = 1%, I_O=0.8A	-	1.2	1.3	V
RMS output noise (% of V_O)	N_O	10Hz ≤f≤ 10kHz	-	0.003	-	%
Temperature Stability		-	-	0.5	-	%
Thermal Shutdown	θ_{JTS}		-	160	-	℃
Thermal Shutdown Hysteresis	-		-	16	-	℃
Thermal Resistance	θ_{JC}		-	15	-	℃/W

TYPICAL PERFORMANCE CHARACTERISTICS

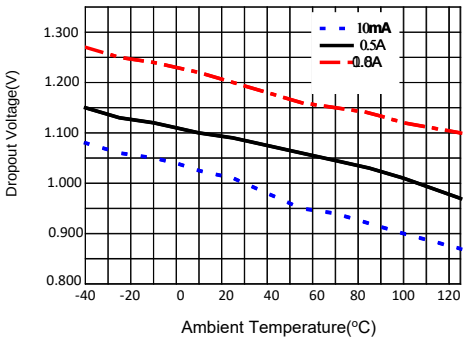
Line Regulation vs. Ambient Temperature



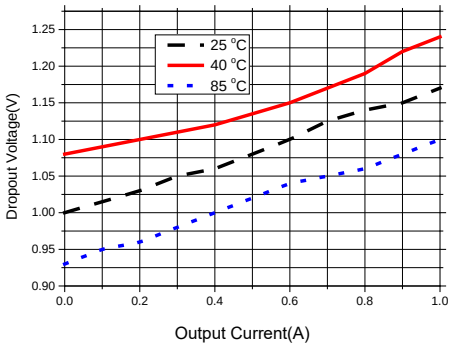
Load Regulation vs. Ambient Temperature



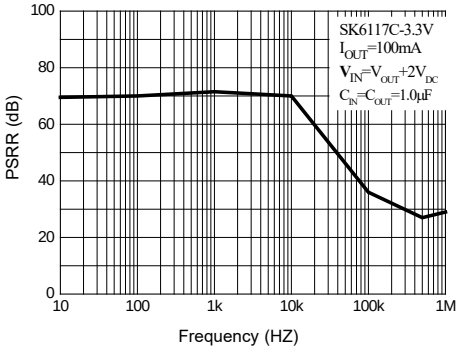
Dropout voltage vs Ambient Temperature



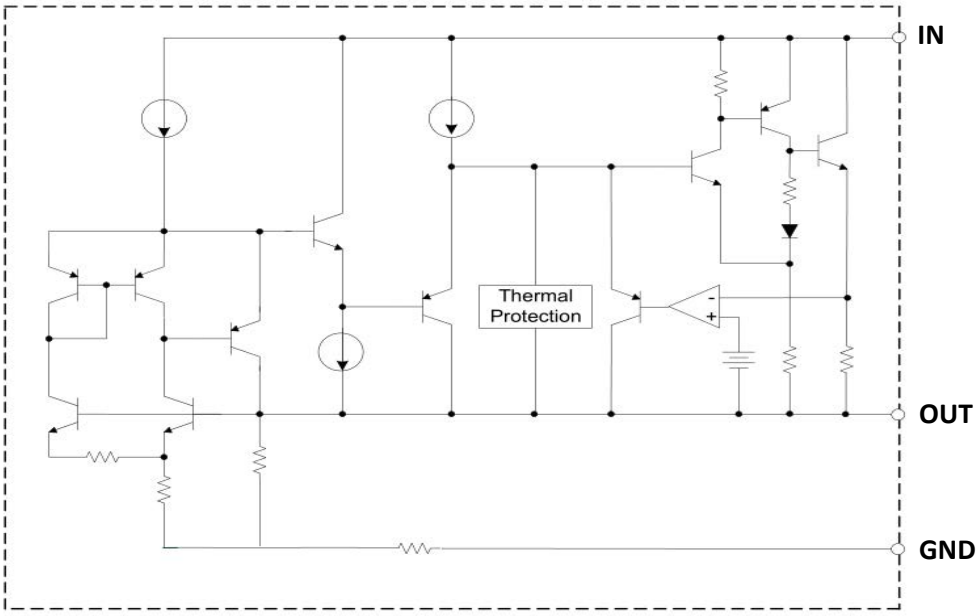
Output voltage vs Output Current



PSRR vs. Frequency



FUNCTIONAL BLOCK DIAGRAM



PACKAGE DIMENSION: SOT223

