

April 13, 1998

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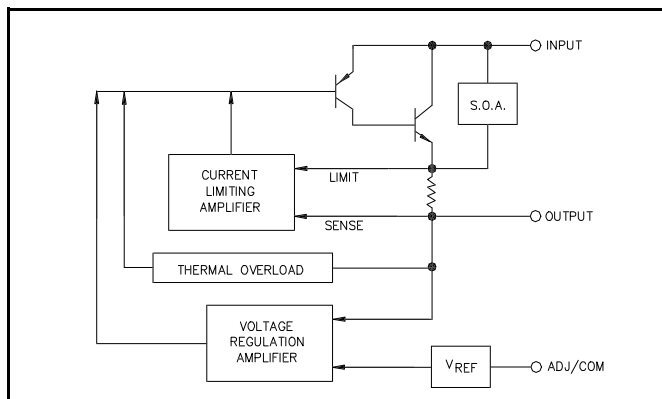
DESCRIPTION

The SC1117 series of high performance positive voltage regulators are designed for use in applications requiring low dropout performance at full rated current. Additionally, the SC1117 series provides excellent regulation over variations in line, load and temperature. Outstanding features include low dropout performance at rated current, fast transient response, internal current limiting and thermal shutdown protection of the output device. The SC1117 series of three terminal regulators offer fixed and adjustable voltage options available in both space saving SOT-223 and TO-263 packages.

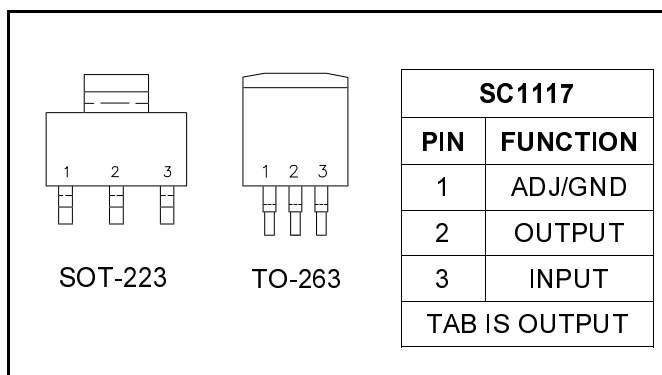
APPLICATIONS

- Low voltage microcontrollers
- Switching power supply post-regulator

BLOCK DIAGRAM



PIN CONFIGURATIONS



FEATURES

- V_{IN} 15V max.
- Low dropout performance, 1.3V max.
- Full current rating over line and temperature
- Fast transient response
- $\pm 2\%$ total output regulation over line, load and temperature
- Adjust pin current max 120 μ A over temperature
- Fixed/adjustable output voltage
- Line regulation 0.2% max.
- Load regulation 0.4% max.
- SOT-223 and TO-263 packages

ORDERING INFORMATION

DEVICE ⁽¹⁾⁽²⁾	PACKAGE	V_{OUT} VOLTS
SC1117CM-X.X SC1117CM	TO-263	See Note (1) 1.30 to 13.5
SC1117CST-X.X SC1117CST	SOT-223	See Note (1) 1.30 to 13.5

Notes:

(1) Where X.X denotes voltage options. Available voltages are: 2.85V, 3.3V and 5V. Leave blank for adjustable version (1.3 to 13.5V). Contact factory for additional voltage options.

(2) Add suffix 'TR' for tape and reel.

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Maximum	Units
Input Voltage	V_{in}	15	V
Power Dissipation	P_D	Internally Limited	W
Thermal Resistance Junction to Case SOT-223 TO-263	θ_{JC}	15 3	$^{\circ}$ C/W
Thermal Resistance Junction to Ambient SOT-223 TO-263	θ_{JA}	150 60	$^{\circ}$ C/W
Operating Junction Temperature Range	T_J	0 to 125	$^{\circ}$ C
Storage Temperature Range	T_{STG}	-65 to 150	$^{\circ}$ C
Lead Temperature (Soldering) 10 Sec.	T_{LEAD}	260	$^{\circ}$ C

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ELECTRICAL CHARACTERISTICS

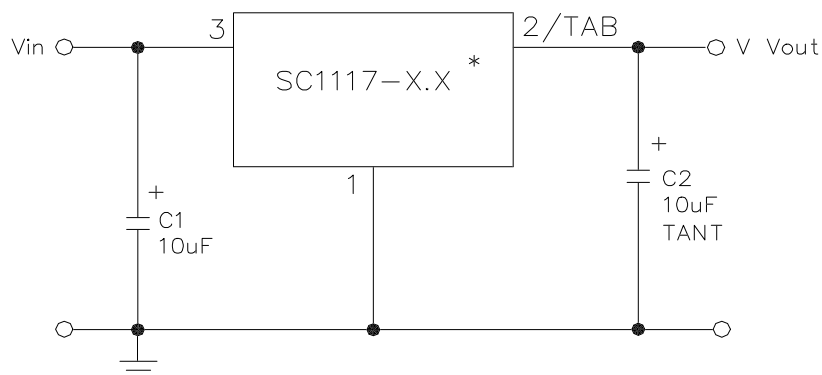
 Unless otherwise noted: Adj $V_{IN} = 2.65V$ to $15V$ and Adj $I_o = 10mA$ to $800mA$;
 Fixed $V_{IN} = (V_{OUT} + 1.5)$ to $15V$ and Fixed $I_o = 0mA$ to $800mA$.

Parameter	Symbol	Test Conditions			Test Limits			Units
		V_{IN}	I_o	$T_j^{(4)}$	Min	Typ	Max	
Output Voltage ⁽¹⁾ (Fixed Voltage Versions)	V_o	$V_o + 2V$	10mA	25°C	0.99 V_o	V_o	1.01 V_o	V
		($V_o + 1.5V$) to 12V		O.T.	0.98 V_o	V_o	1.02 V_o	
Reference Voltage ⁽¹⁾ (Adjustable Voltage Version)	V_{REF}	5V	10mA	25°C	1.238	1.250	1.262	V
				O.T.	1.225	1.250	1.270	
Line Regulation ⁽¹⁾	$REG_{(LINE)}$		10mA	O.T.		0.035	0.2	%
Load Regulation ⁽¹⁾	$REG_{(LOAD)}$	6.5V		O.T.		0.2	0.4	%
Dropout Voltage $\Delta V_{OUT}, \Delta V_{REF} = 1\%$	V_D		800mA	O.T.		1.2	1.3	V
Current Limit	I_{CL}			O.T.	0.8			A
Quiescent Current Fixed Voltage Version	I_Q	15V		O.T.		10	14	mA
Temperature Coefficient	T_C			O.T.		0.005		%/°C
Adjust Pin Current	I_{ADJ}			O.T.		55	120	μA
Adjust Pin Current Change	ΔI_{ADJ}			O.T.		0.2	5	μA
Temperature Stability	T_S			O.T.		0.5		%
Minimum Load Current Adj Voltage Version	I_o	$V_o + 5V$		O.T.		5	10	mA
RMS Output Noise ⁽²⁾	V_N			25°C		0.003		% V_o
Ripple Rejection Ratio ⁽³⁾	R_A	$V_o + 5V$		O.T.	60	72		dB

NOTES:

1. Low duty cycle pulse testing with Kelvin connections required.
2. Bandwidth of 10 Hz to 10kHz.
3. 120Hz input ripple (C_{ADJ} for ADJ = 25μF).
4. Over Temp. (O.T.) = over specified operating junction temperature range.

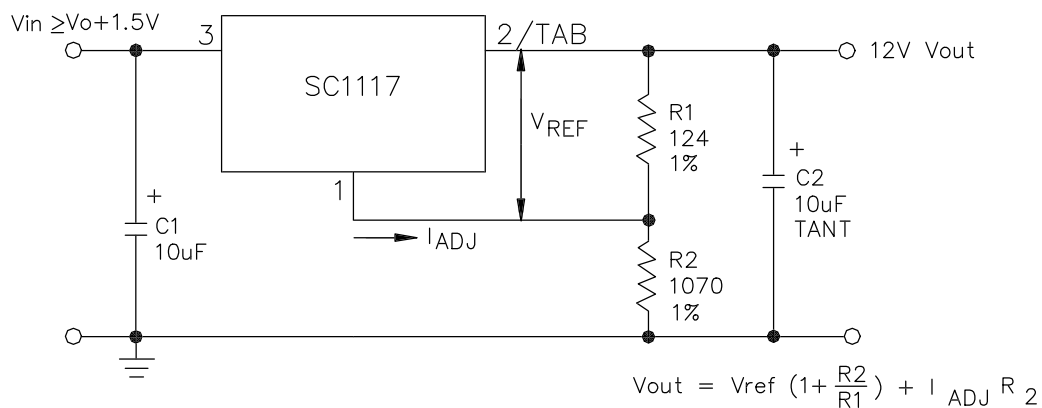
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TYPICAL APPLICATIONS
FIXED VOLTAGE REGULATOR⁽¹⁾⁽²⁾


(1) C1 NEEDED IF DEVICE IS FAR FROM FILTER CAPACITORS.

(2) C2 REQUIRED FOR STABILITY.

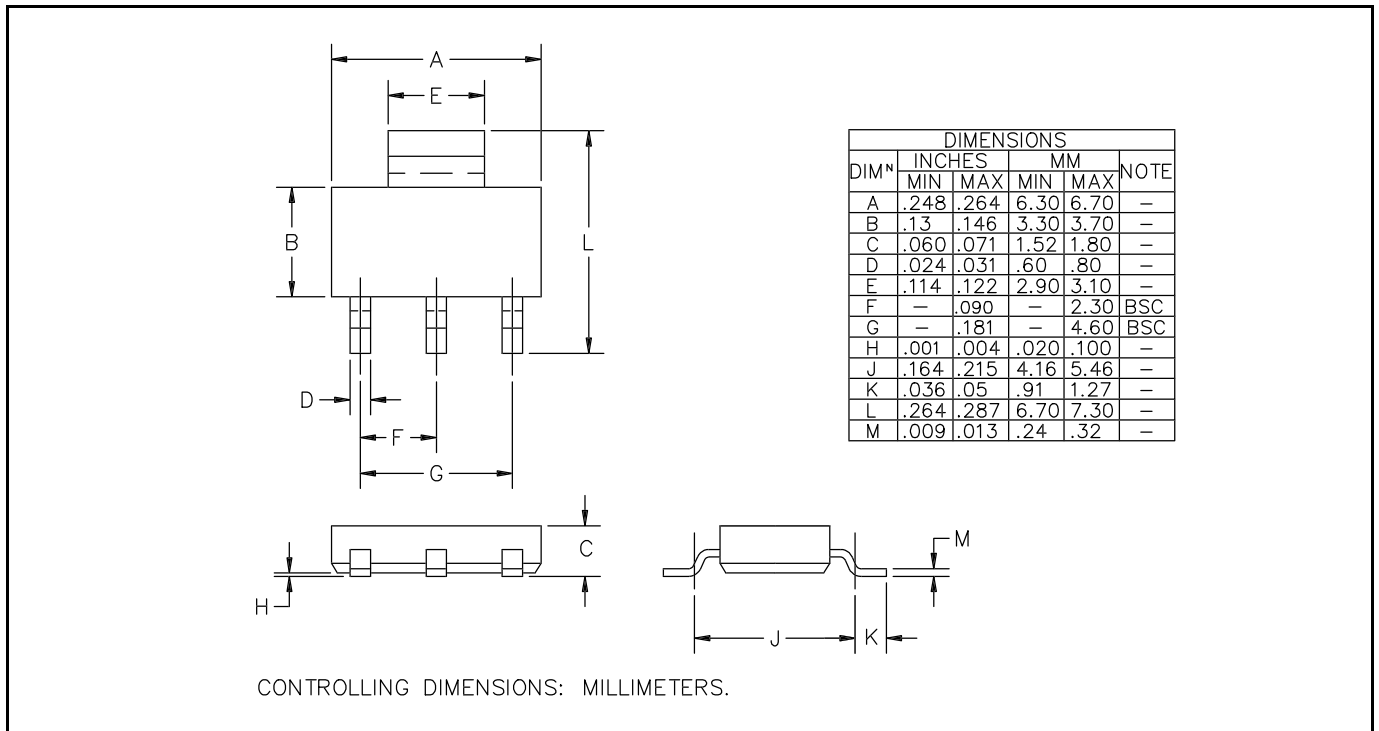
* X.X = 2.85, 3.3 OR 5.0

ADJUSTABLE VOLTAGE REGULATOR⁽¹⁾⁽²⁾


(1) C1 NEEDED IF DEVICE IS FAR FROM FILTER CAPACITORS.

(2) C2 REQUIRED FOR STABILITY.

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DEVICE OUTLINE - SOT-223

DEVICE OUTLINE - TO-263
