

POWER MANAGEMENT

Description

The SC1117 series of high performance positive voltage regulators are designed for use in applications requiring low dropout performance at 800mA.

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.

Features

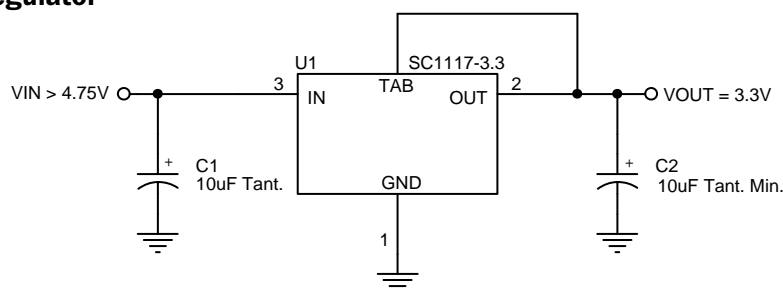
- ◆ 15V maximum input voltage
- ◆ Low dropout performance: 1.3V max.
- ◆ Full current rating over line and temperature
- ◆ Fast transient response
- ◆ $\pm 2\%$ total output regulation over line, load and temperature
- ◆ Adjust pin current max 120 μ A over temperature
- ◆ Fixed/adjustable output voltages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

Applications

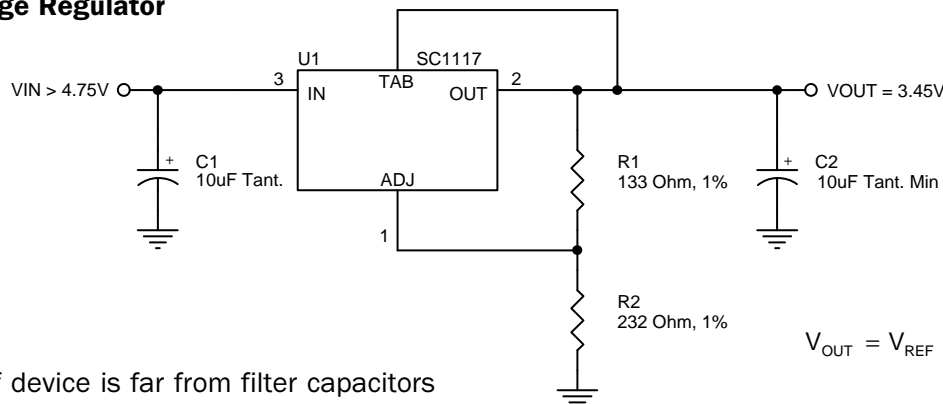
- ◆ Low voltage microcontroller supplies
- ◆ Switching power supply post-regulation

Typical Application Circuit

Fixed Voltage Regulator



Adjustable Voltage Regulator



Notes:

- (1) C1 needed if device is far from filter capacitors
- (2) C2 minimum value required for stability

$$V_{OUT} = V_{REF} \cdot \left(1 + \frac{R2}{R1}\right) + I_{ADJ} \cdot R2$$

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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}	300	$^{\circ}C$

Electrical Characteristics

Unless otherwise specified: 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	V_{IN}	I_O	$T_J^{(5)}$	Min	Typ	Max	Units
Output Voltage ⁽¹⁾	V_O	$V_O + 2V$	10mA	25 $^{\circ}C$	$0.99V_O$	V_O	$1.01V_O$	V
Fixed Voltage Version		$(V_O + 1.5V)$ to $12V$		O.T.	$0.98V_O$	V_O	$1.02V_O$	
Reference Voltage ⁽¹⁾	V_{REF}	5V	10mA	25 $^{\circ}C$	1.238	1.250	1.262	V
Adj Voltage Version				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 ⁽²⁾	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		%/ $^{\circ}C$

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Electrical Characteristics (Cont.)

Unless otherwise specified: 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 $800mA$.

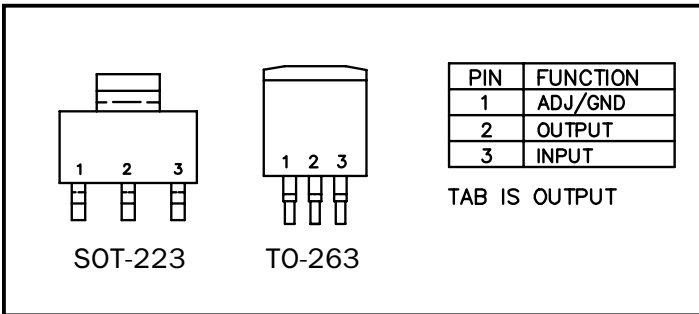
Parameter	Symbol	V_{IN}	I_o	$T_J^{(5)}$	Min	Typ	Max	Units
Adjust Pin Current	I_{ADJ}			O.T.		55	120	μA
Adjust Pin Current Change	ΔI_{ADJ}			O.T.		0.2	5	μA
Temperature Stability	T_S		0.5A	O.T.		0.5		%
Minimum Load Current Adj Voltage Version	I_o	$V_o + 1.5V$		O.T.		5	10	mA
RMS Output Noise ⁽³⁾	V_N			25°C		0.003		$\%V_o$
Ripple Rejection Ratio ⁽⁴⁾	R_A	$V_o + 1.5V$	0.8A	O.T.	60	72		dB

NOTES:

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

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Pin Configuration



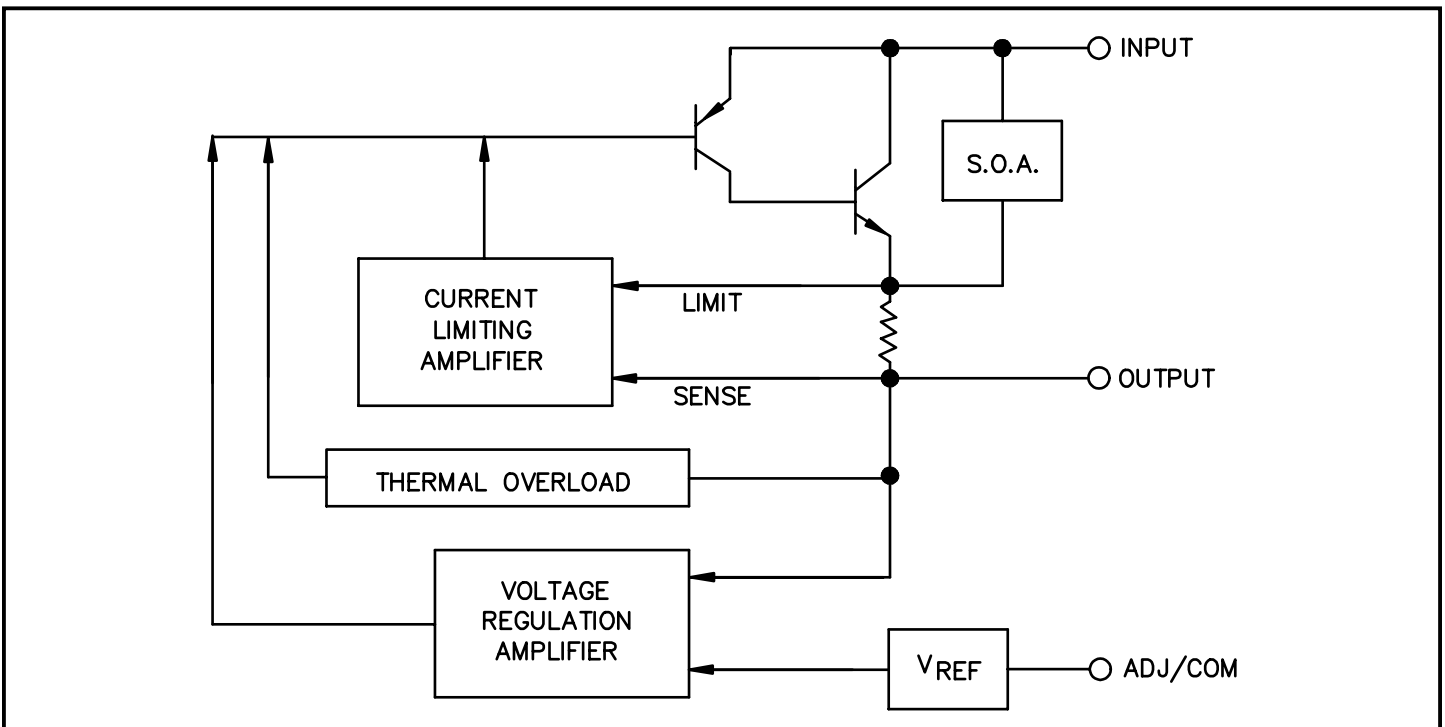
Ordering Information

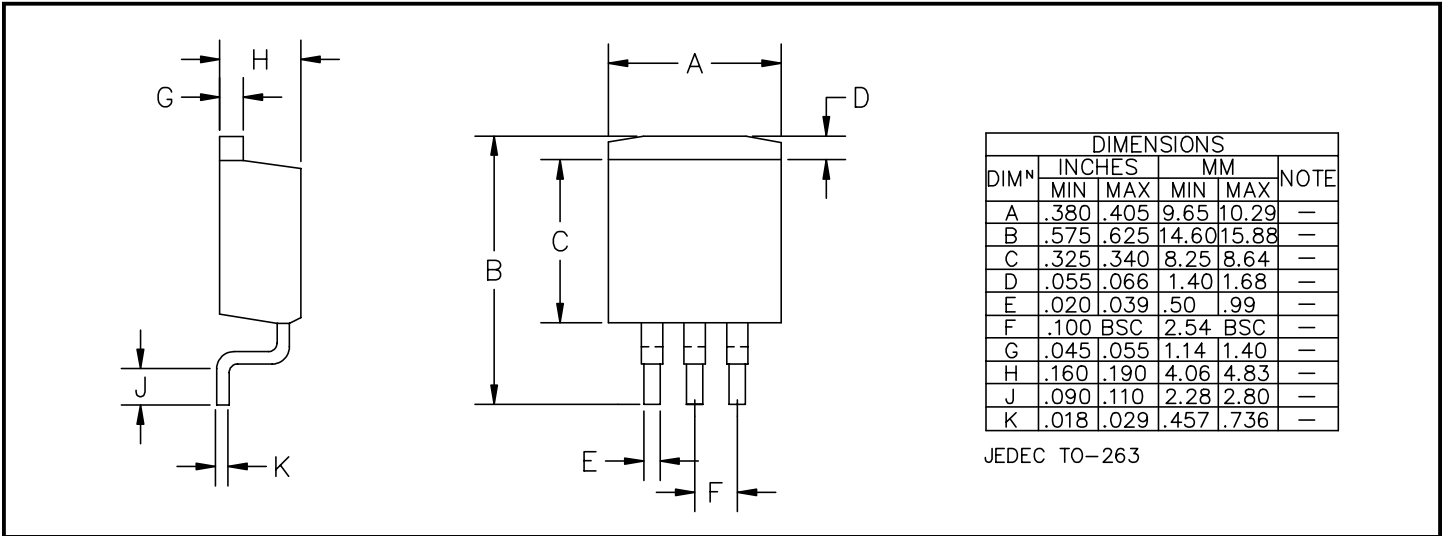
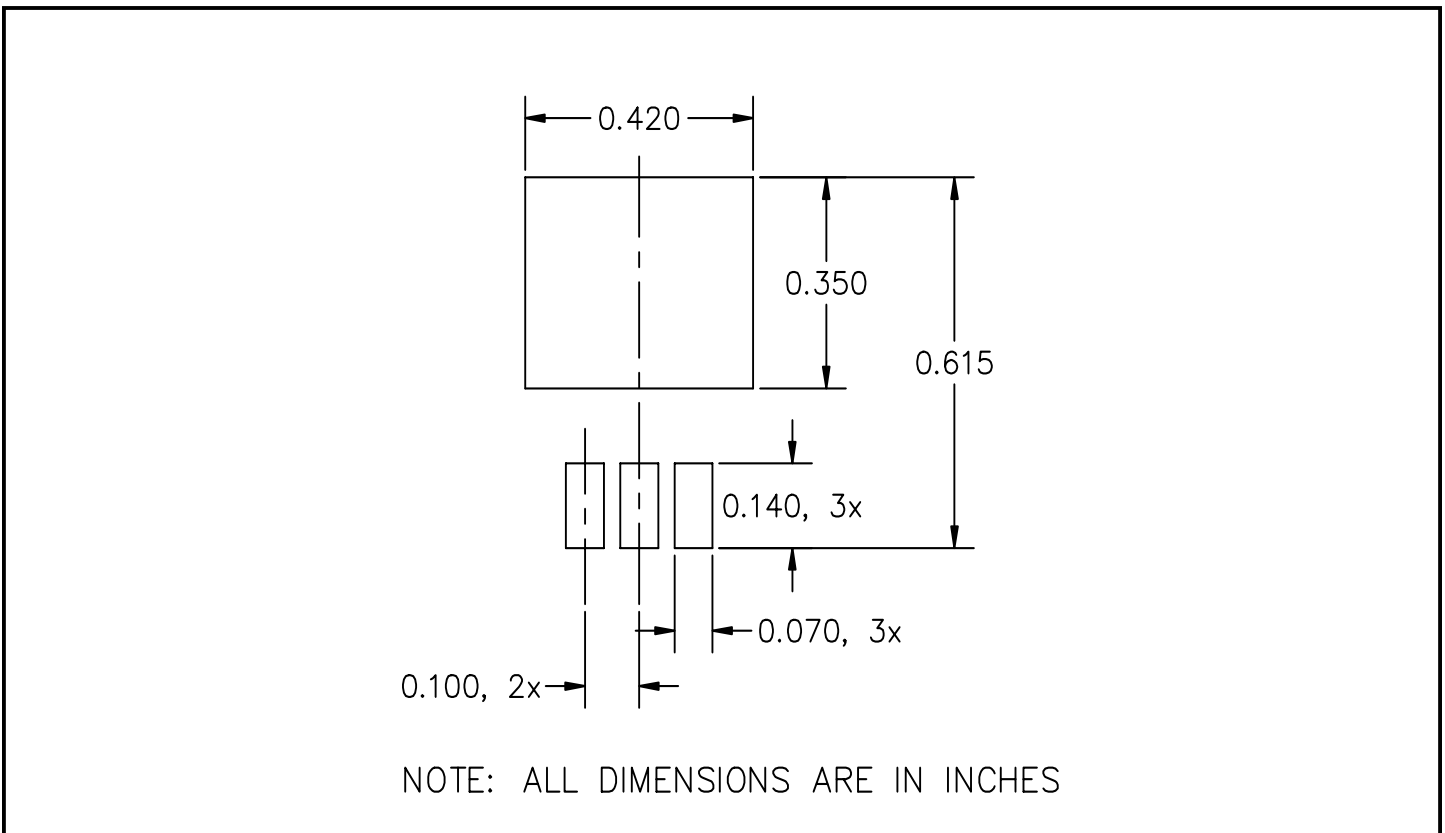
Device ⁽¹⁾⁽²⁾	Package
SC1117CM-X.X.TR	TO-263
SC1117CST-X.X.TR	SOT-223

Notes:

- (1) Where X.X denotes voltage options. Available voltages are: 2.85V, 3.3V and 5V. Leave blank (e.g. SC1117CM.TR) for adjustable version (1.3 to 13.5V). Contact factory for additional voltage options.
- (2) Only available in tape and reel packaging. A reel contains 800 (TO-263) or 2500 (SOT-223) devices.

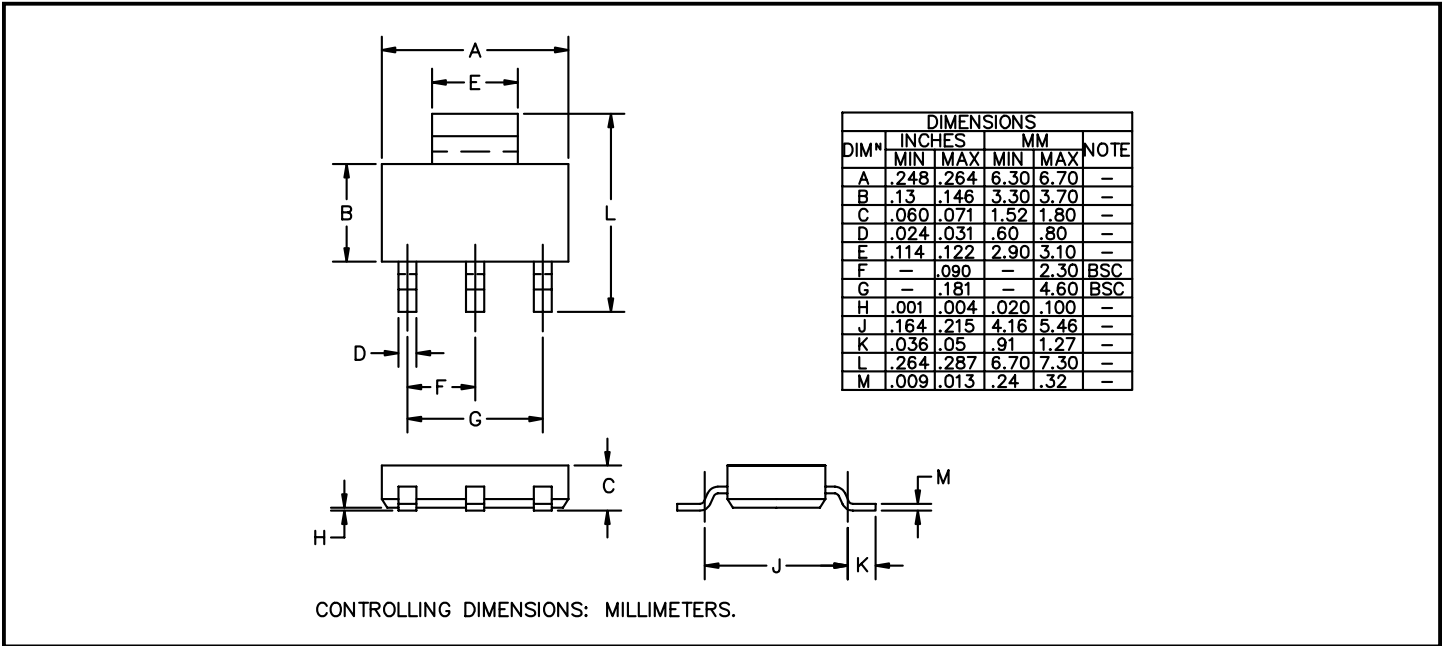
Block Diagram



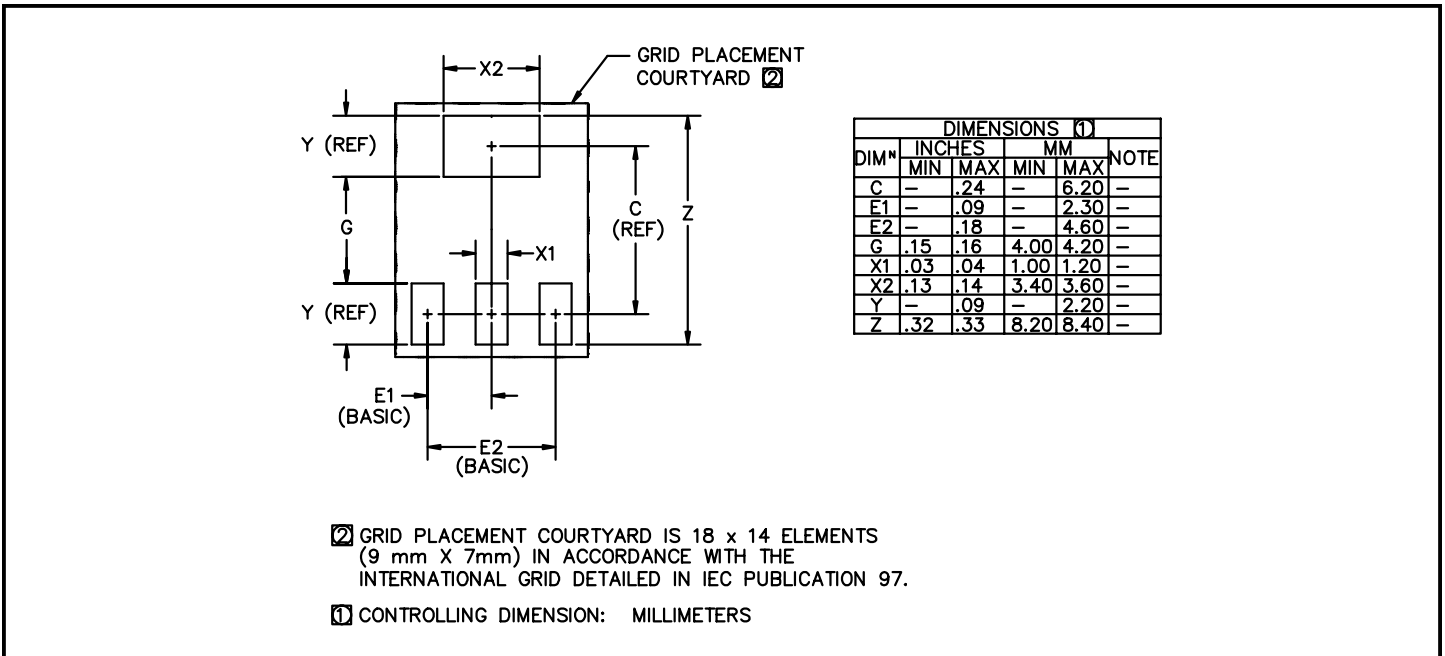
POWER MANAGEMENT
Outline Drawing - TO-263

Land Pattern - TO-263


POWER MANAGEMENT

Outline Drawing - SOT-223



Land Pattern - SOT-223



Contact Information

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