# SC1117
# 0.8 Amp Positive Voltage Regulator



## 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 5V output voltage options available in both space saving SOT-223 and TO-263 packages.

## Features

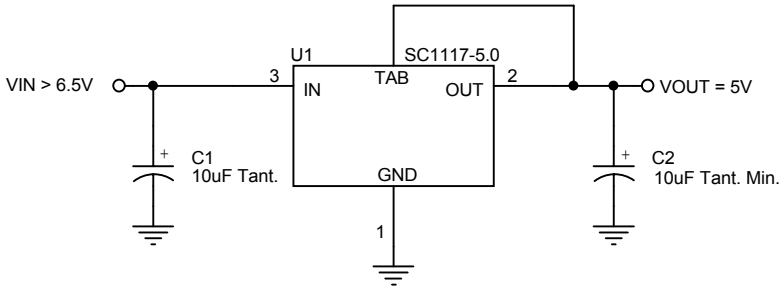
- 15V maximum input voltage
- Low dropout performance: 1.3V max.
- Full current rating over line and temperature
- Fast transient response
- ±2% total output regulation over line, load and temperature
- Adjust pin current max 120µA over temperature
- 5V Fixed output voltage
- Line regulation 0.2% max.
- 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**




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

## Absolute Maximum Ratings

Exceeding the specifications below may result in permanent damage to the device, or device malfunction. Operation outside of the parameters specified in the Electrical Characteristics section is not implied.

| Parameter | Symbol | Maximum | Units |
|---|---|---|---|
| Input Voltage | $V_{IN}$ | 15 | V |
| Power Dissipation | $P_D$ | Internally Limited | W |
| Thermal Resistance Junction to Case<br>SOT-223<br>TO-263 | $\theta_{JC}$ | <br>15<br>3 | °C/W |
| Thermal Resistance Junction to Ambient<br>SOT-223<br>TO-263 | $\theta_{JA}$ | <br>150<br>60 | °C/W |
| Operating Junction Temperature Range | $T_J$ | -40 to 125 | °C |
| Storage Temperature Range | $T_{STG}$ | -65 to 150 | °C |
| Lead Temperature (Soldering) 10 Sec. | $T_{LEAD}$ | 300 | °C |

## Electrical Characteristics

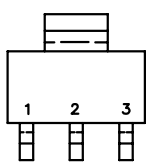
Unless otherwise specified: $V_{IN}$ = 6.5V to 15V and $I_O$ = 0mA to 800mA.

| Parameter | Symbol | $V_{IN}$ | $I_o$ | $T_J$ (5) | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|---|---|
| Output Voltage (1) | $V_O$ | 7V | 10mA | 25°C | 4.95 | 5.00 | 5.05 | V |
| | | 6.5V to 12V | | O.T. | 4.90 | | 5.10 | |
| 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 | $I_Q$ | 15V | | O.T. | | 10 | 14 | mA |
| Temperature Coefficient | $T_C$ | | | O.T. | | 0.005 | | %/°C |
| Temperature Stability | $T_S$ | | 0.5A | O.T. | | 0.5 | | % |
| RMS Output Noise (3) | $V_{IN}$ | | | 25°C | | 0.003 | | $\%V_O$ |
| Ripple Rejection Ratio (4) | $R_A$ | $V_O$ + 1.5V | 0.8 | O.T. | 60 | 72 | | dB |

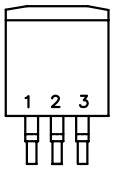
**NOTES:**

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

## Pin Configuration




SOT-223




TO-263

| PIN | FUNCTION |
|---|---|
| 1 | GND |
| 2 | OUTPUT |
| 3 | INPUT |

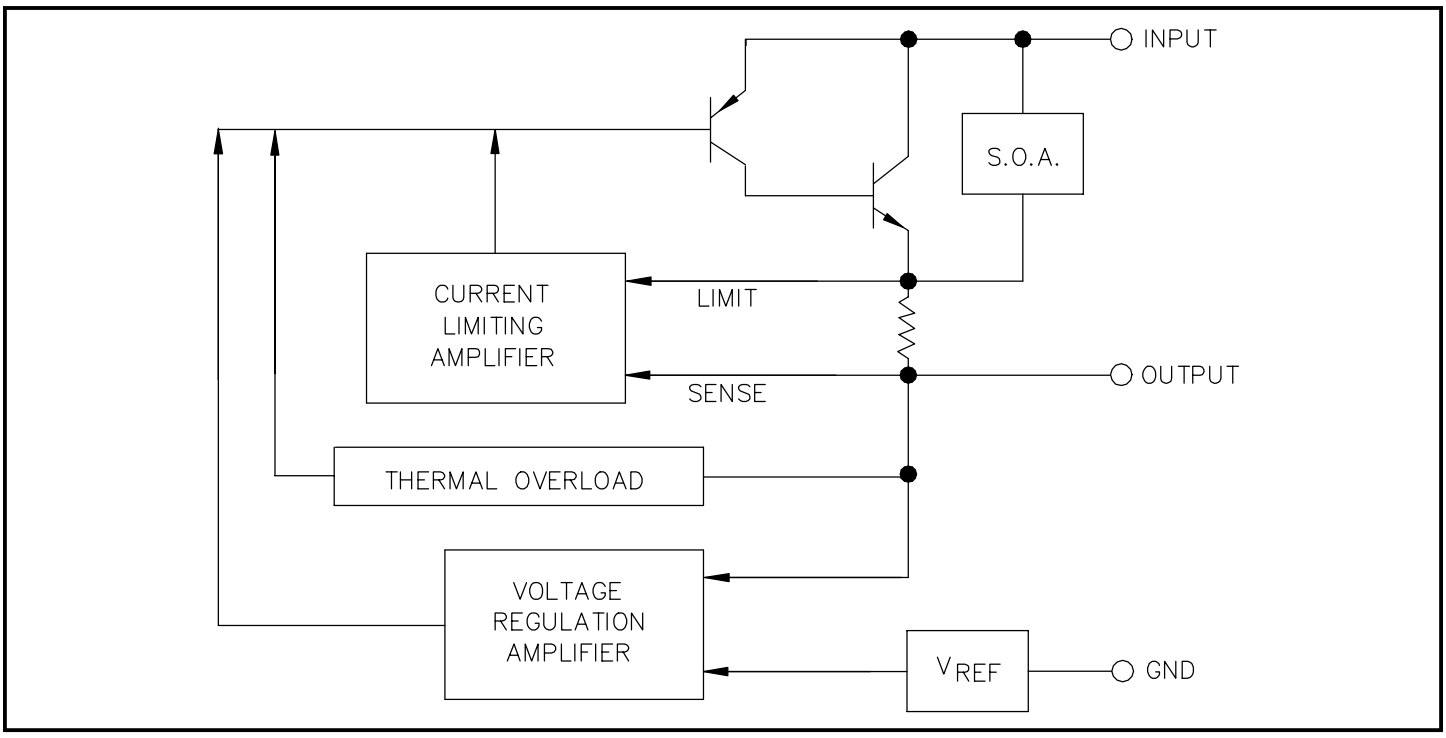
TAB IS OUTPUT

## Ordering Information

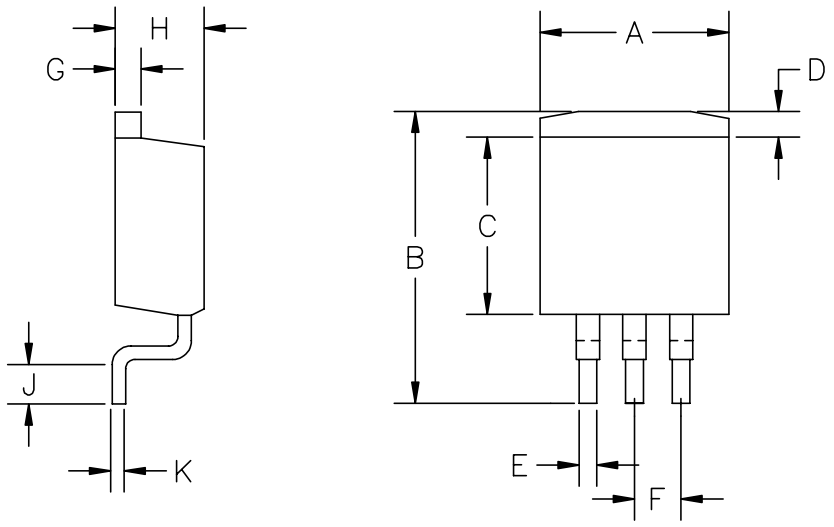
| Device (1)(2) | Package |
|---|---|
| SC1117CM-5.0.TR | TO-263 |
| SC1117CST-5.0.TR | SOT-223 |

**Notes:**
(1) 5V option available only.
(2) Only available in tape and reel packaging. A reel contains 800 (TO-263) or 2500 (SOT-223) devices.

## Block Diagram



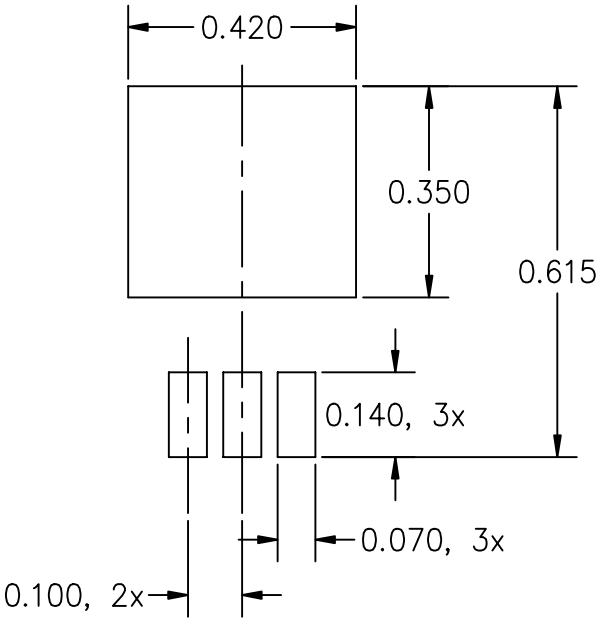
## Outline Drawing - TO-263




| DIMENSIONS | | | | | |
|---|---|---|---|---|---|
| DIM | INCHES | | MM | | NOTE |
| | MIN | MAX | MIN | MAX | |
| A | .380 | .405 | 9.65 | 10.29 | — |
| B | .575 | .625 | 14.60 | 15.88 | — |
| C | .325 | .340 | 8.25 | 8.64 | — |
| D | .055 | .066 | 1.40 | 1.68 | — |
| E | .020 | .039 | .50 | .99 | — |
| F | .100 BSC | | 2.54 BSC | | — |
| G | .045 | .055 | 1.14 | 1.40 | — |
| H | .160 | .190 | 4.06 | 4.83 | — |
| J | .090 | .110 | 2.28 | 2.80 | — |
| K | .018 | .029 | .457 | .736 | — |

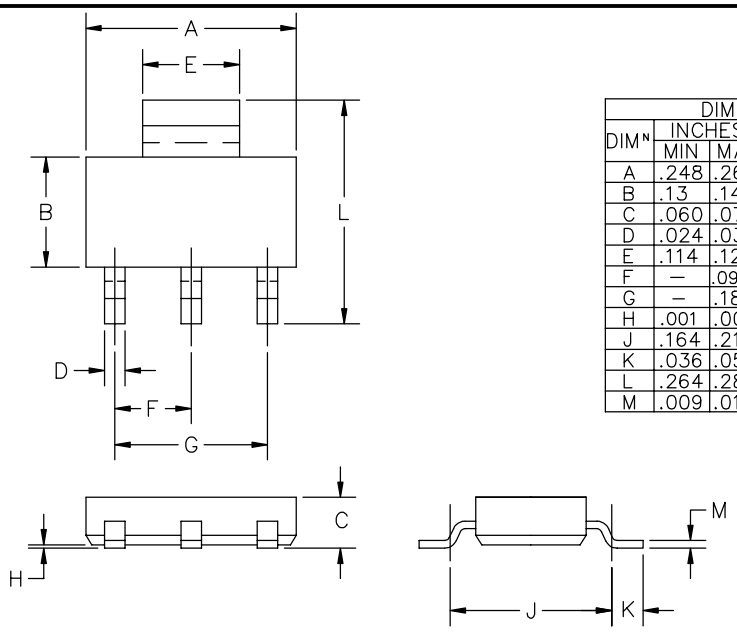
JEDEC TO-263

## Land Pattern - TO-263




NOTE: ALL DIMENSIONS ARE IN INCHES

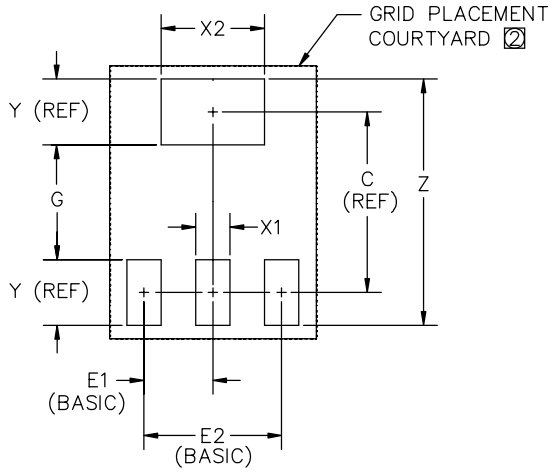
## Outline Drawing - SOT-223




| DIMENSIONS | | | | | |
|---|---|---|---|---|---|
| DIM | INCHES | | MM | | NOTE |
| | MIN | MAX | MIN | MAX | |
| A | .248 | .264 | 6.30 | 6.70 | – |
| B | .13 | .146 | 3.30 | 3.70 | – |
| C | .060 | .071 | 1.52 | 1.80 | – |
| D | .024 | .031 | .60 | .80 | – |
| E | .114 | .122 | 2.90 | 3.10 | – |
| F | – | .090 | – | 2.30 | BSC |
| G | – | .181 | – | 4.60 | BSC |
| H | .001 | .004 | .020 | .100 | – |
| J | .164 | .215 | 4.16 | 5.46 | – |
| K | .036 | .05 | .91 | 1.27 | – |
| L | .264 | .287 | 6.70 | 7.30 | – |
| M | .009 | .013 | .24 | .32 | – |

CONTROLLING DIMENSIONS: MILLIMETERS.

## Land Pattern - SOT-223




| DIMENSIONS [1] | | | | | |
|---|---|---|---|---|---|
| DIM | INCHES | | MM | | NOTE |
| | MIN | MAX | MIN | MAX | |
| C | – | .24 | – | 6.20 | – |
| E1 | – | .09 | – | 2.30 | – |
| E2 | – | .18 | – | 4.60 | – |
| G | .15 | .16 | 4.00 | 4.20 | – |
| X1 | .03 | .04 | 1.00 | 1.20 | – |
| X2 | .13 | .14 | 3.40 | 3.60 | – |
| Y | – | .09 | – | 2.20 | – |
| Z | .32 | .33 | 8.20 | 8.40 | – |

[2] GRID PLACEMENT COURTYARD IS 18 x 14 ELEMENTS (9 mm X 7mm) IN ACCORDANCE WITH THE INTERNATIONAL GRID DETAILED IN IEC PUBLICATION 97.

[1] CONTROLLING DIMENSION: MILLIMETERS

## Contact Information

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