

April 14, 1998

TEL:805-498-2111 FAX:805-498-3804 WEB:http://www.semtech.com

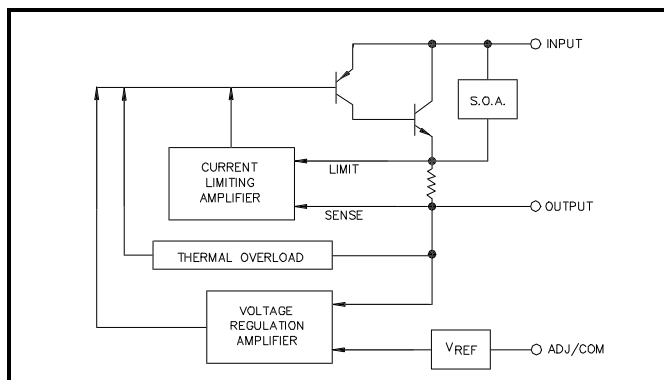
## DESCRIPTION

The EZ1117 series of high performance positive voltage regulators are designed for use in applications requiring low dropout performance at full rated current. Additionally, the EZ1117 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 EZ1117 series of three terminal regulators offer fixed and adjustable voltage options available in the space saving SOT-223 and TO-263 packages.

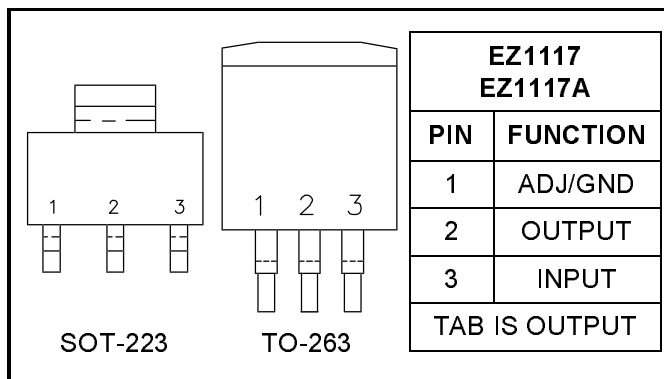
## APPLICATIONS

- Active SCSI termination
- Low voltage microcontrollers
- Switching power supply post-regulator

## BLOCK DIAGRAM



## PIN CONFIGURATIONS



## FEATURES

- Low dropout performance,  
1.2V max. for EZ1117  
1.3V max. for EZ1117A
- Full current rating over line and temperature
- Fast transient response
- $\pm 2\%$  total output regulation over line, load and temperature
- Adjust pin current max 90 $\mu$ 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 <sup>(1)(2)</sup>        | PACKAGE | V <sub>OUT</sub> VOLTS |
|---------------------------------|---------|------------------------|
| EZ1117CST-X.X<br>EZ1117ACST-X.X | SOT-223 | See Note (1)           |
| EZ1117CM-X.X<br>EZ1117ACM-X.X   | TO-263  | See Note (1)           |

Notes:

(1) Where X.X denotes voltage options. Available voltages are: 2.5V, 2.85V and 3.3V. Leave blank for adjustable version (1.3 to 5.7V). Contact factory for additional voltage options.

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

## ABSOLUTE MAXIMUM RATINGS

| Parameter   | Symbol            | Maximum            | Units          |
|---|-------------------|--------------------|----------------|
| Input Supply Voltage  | V <sub>IN</sub>   | 7                  | V              |
| Power Dissipation   | P <sub>D</sub>    | Internally Limited | W              |
| Thermal Resistance Junction to Case<br>SOT-223<br>TO-263    | $\theta_{JC}$     | 15<br>3            | $^{\circ}$ C/W |
| Thermal Resistance Junction to Ambient<br>SOT-223<br>TO-263 | $\theta_{JA}$     | 156<br>60          | $^{\circ}$ C/W |
| Operating Junction Temperature Range                        | T <sub>J</sub>    | 0 to 125           | $^{\circ}$ C   |
| Storage Temperature Range                                   | T <sub>STG</sub>  | -65 to 150         | $^{\circ}$ C   |
| Lead Temperature (Soldering) 10 Sec                         | T <sub>LEAD</sub> | 260                | $^{\circ}$ C   |

April 14, 1998

**ELECTRICAL CHARACTERISTICS <sup>(6)</sup>**

Unless otherwise specified:

 Adj. Option:  $V_{IN} = 2.65V$  to  $7.0V$  and Adj  $I_O = 10mA$  to  $I_{RATED}$ 

 Fixed Options:  $I_O = 0mA$  to  $I_{RATED}$ 

 Fixed 2.5V:  $V_{IN} = 3.9V$  to  $7.0V$ 

 Fixed 2.85V:  $V_{IN} = 4.25V$  to  $7.0V$ 

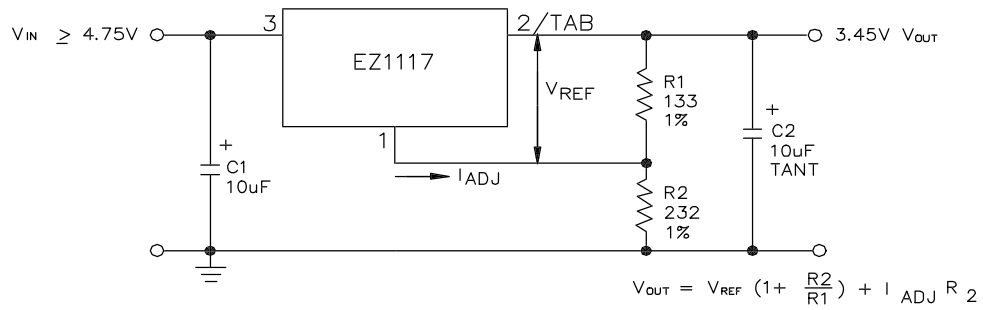
 Fixed 3.3V:  $V_{IN} = 4.75V$  to  $7.0V$ 

| Parameter   | Symbol           | Test Conditions |                                    |             | Test Limits |                              |                              | Units   |
|---|------------------|-----------------|------------------------------------|-------------|-------------|------------------------------|------------------------------|---------|
|   |                  | $V_{IN}$        | $I_O$                              | $T_j^{(5)}$ | Min         | Typ                          | Max                          |         |
| Output Voltage <sup>(1)</sup><br>(Fixed Voltage Versions) | $V_O$            | 5V              | 0mA                                | 25°C        | 0.99  $V_O$ | $V_O$                        | 1.01  $V_O$                  | V       |
|   |                  |                 |                                    | O.T.        | 0.98  $V_O$ | $V_O$                        | 1.02  $V_O$                  |         |
| Reference Voltage <sup>(1)</sup><br>(Adj 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 <sup>(1)</sup>                            | $REG_{(LINE)}$   |                 | 10mA                               | O.T.        |             | 0.035                        | 0.2                          | %       |
| Load Regulation <sup>(1)</sup>                            | $REG_{(LOAD)}$   | 5V              |                                    | O.T.        |             | 0.2                          | 0.4                          | %       |
| Dropout Voltage <sup>(2)</sup><br>EZ1117A                 | $V_D$            |                 | 100mA<br>500mA<br>800mA<br>1,000mA | O.T.        |             | 1.00<br>1.05<br>1.10<br>1.10 | 1.10<br>1.15<br>1.20<br>1.30 | V       |
|   |                  |                 |                                    |             |             |                              |                              |         |
| Current Limit<br>EZ1117<br>EZ1117A                        | $I_{CL}$         |                 |                                    | O.T.        | 0.8<br>1.0  |                              |                              | A       |
| Quiescent Current<br>Fixed Voltage Version                | $I_Q$            | 5V              |                                    | O.T.        |             | 10                           | 13                           | mA      |
| Temperature Coefficient                                   | $T_C$            |                 |                                    | O.T.        |             | 0.005                        |                              | %/°C    |
| Adjust Pin Current  | $I_{ADJ}$        |                 |                                    | O.T.        |             | 55                           | 90                           | µA      |
| Adjust Pin Current<br>Change                              | $\Delta I_{ADJ}$ |                 |                                    | O.T.        |             | 0.2                          | 5                            | µA      |
| Temperature Stability                                     | $T_S$            |                 |                                    | O.T.        |             | 0.5                          |                              | %       |
| Minimum Load Current<br>Adj Voltage Version               | $I_O$            | 5V              |                                    | O.T.        |             | 5                            | 10                           | mA      |
| RMS Output Noise <sup>(3)</sup>                           | $V_N$            |                 |                                    | 25°C        |             | 0.003                        |                              | % $V_O$ |
| Ripple Rejection Ratio <sup>(4)</sup>                     | $R_A$            | 5V              |                                    | O.T.        | 60          | 72                           |                              | dB      |

**NOTES:**

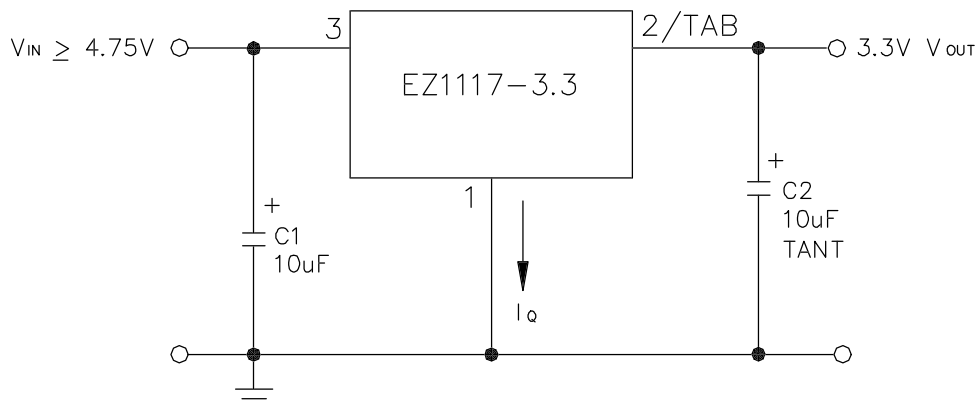
- (1) Low duty cycle pulse testing with Kelvin connections required.
- (2)  $\Delta V_{OUT}, \Delta V_{REF} = 1\%$
- (3) Bandwidth of 10 Hz to 10kHz.
- (4) 120Hz input ripple ( $C_{ADJ}$  for ADJ = 25µF).
- (5) O.T. = over specified operating junction temperature range.
- (6)  $I_{RATED} = 1A$  for EZ1117A and 800mA for EZ1117.

April 14, 1998

**TYPICAL APPLICATIONS**
**ADJUSTABLE VOLTAGE REGULATOR <sup>(1)(2)</sup>**


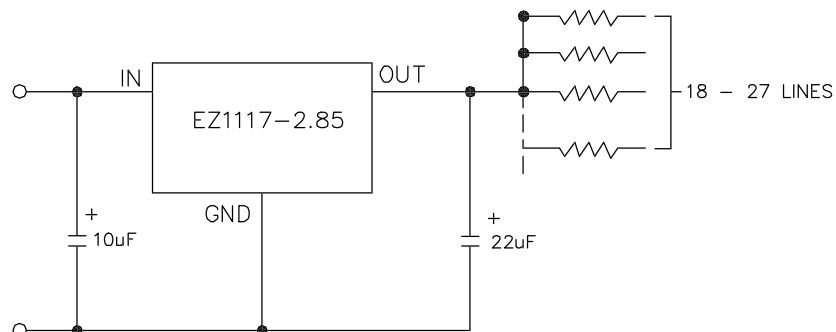
(1) C1 NEEDED IF DEVICE IS FAR FROM FILTER CAPACITORS.

(2) C2 REQUIRED FOR STABILITY.

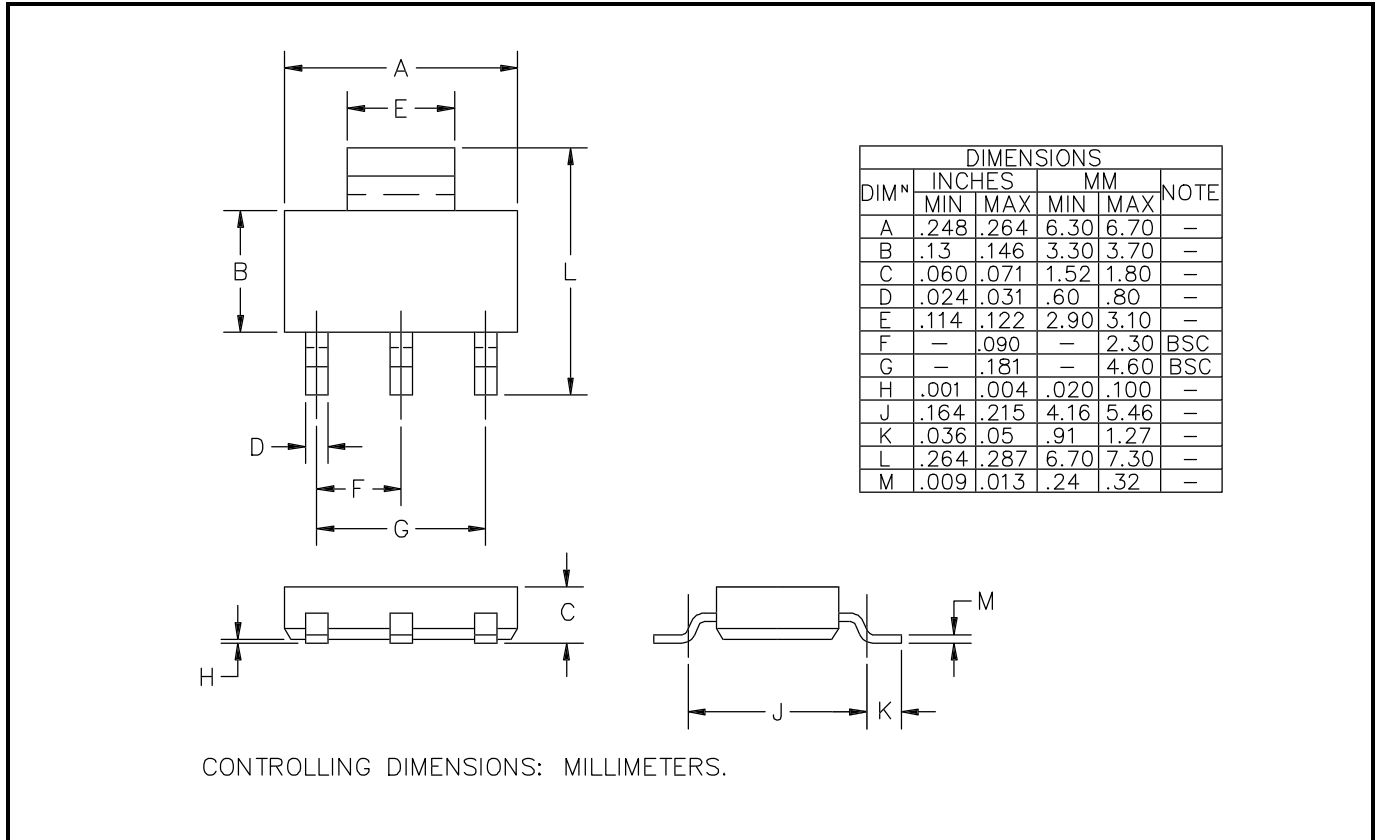
**FIXED VOLTAGE REGULATOR**


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

(2) C2 REQUIRED FOR STABILITY.

**ACTIVE SCSI BUS TERMINATOR**


April 14, 1998

**DEVICE OUTLINE - SOT-223**

**DEVICE OUTLINE - TO-263**
