

POWER MANAGEMENT

Description

The EZ1117 series of high performance positive voltage regulators are designed for use in applications requiring low dropout performance at up to 0.8A.

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.

Features

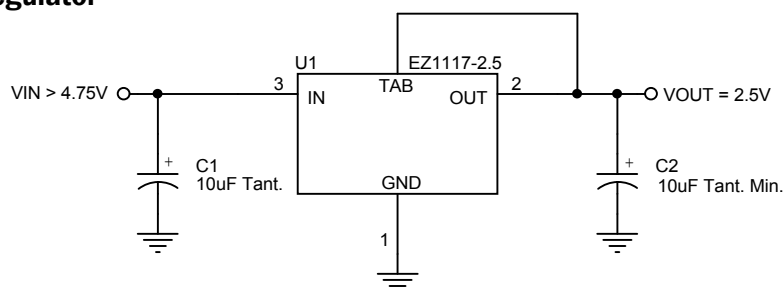
- ◆ Low dropout performance: 1.2V max.
- ◆ Full current rating over line and temperature
- ◆ Fast transient response
- ◆ $\pm 2\%$ total output regulation over line, load and temperature
- ◆ Adjust pin current max 90 μ A over temperature
- ◆ Fixed/adjustable output voltage
- ◆ Line regulation 0.2% max.
- ◆ Load regulation 0.4% max.
- ◆ SOT-223 and TO-263 packages

Applications

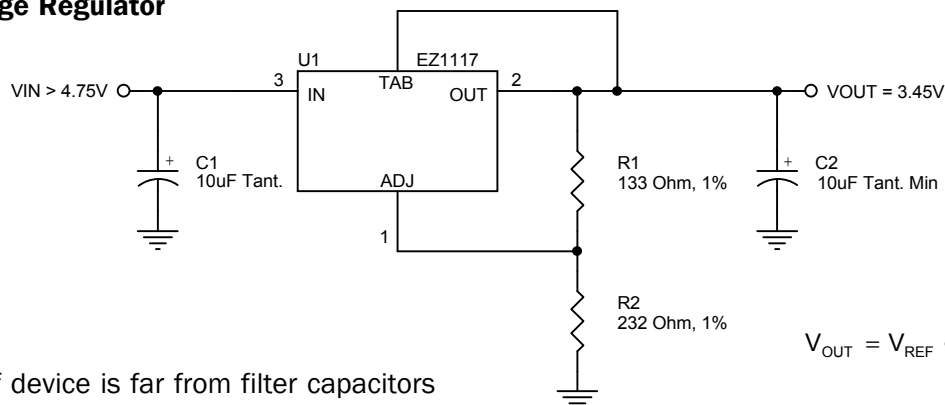
- ◆ Low voltage microcontrollers
- ◆ Switching power supply post-regulation

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

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. Exposure to Absolute Maximum rated conditions for extended periods of time may affect device reliability.

Parameter	Symbol	Maximum	Units
Input Supply Voltage	V_{IN}	7	V
Power Dissipation	P_D	Internally Limited	W
Thermal Resistance Junction to Case SOT-223 TO-263	θ_{JC}	15 3	°C/W
Thermal Resistance Junction to Ambient SOT-223 TO-263	θ_{JA}	156 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
ESD Rating (Human Body Model)	ESD	2	kV

Electrical Characteristics⁽⁶⁾

Unless otherwise specified: Adj. Option: $V_{IN} = 2.65V$ to $7.0V$ and $I_O = 10mA$ to I_{RATED} . Fixed Options: $I_O = 0mA$ to I_{RATED} , $V_{IN} (2.5V) = 3.9V$ to $7.0V$.

Parameter	Symbol	V_{IN}	I_O	$T_J^{(5)}$	Min	Typ	Max	Units
Output Voltage ⁽¹⁾ (Fixed Voltage Versions)	V_O	5V	0mA	25°C	-1.5%	V_O	+1.5%	V
				O.T.	-2%		+2%	
Reference Voltage ⁽¹⁾ (Adj Voltage Version)	V_{REF}	5V	10mA	25°C	1.231	1.250	1.269	V
				O.T.	1.225		1.275	
Line Regulation ⁽¹⁾	$REG_{(LINE)}$		10mA	O.T.		0.035	0.2	%
Load Regulation ⁽¹⁾	$REG_{(LOAD)}$	5V		O.T.		0.2	0.4	%
Dropout Voltage ⁽¹⁾⁽²⁾	V_D		100mA	O.T.		1.00	1.10	V
			500mA			1.05	1.15	
			800mA			1.10	1.20	
Current Limit	I_{CL}			O.T.	0.8			A
Quiescent Current Fixed Voltage Version	I_Q	5V		O.T.		10	13	mA
Temperature Coefficient	T_C			O.T.		0.005		%/°C

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Electrical Characteristics (Cont.)⁽⁶⁾

Unless otherwise specified: Adj. Option: $V_{IN} = 2.65V$ to $7.0V$ and $I_O = 10mA$ to I_{RATED} . Fixed Options: $I_O = 0mA$ to I_{RATED} , $V_{IN} (2.5V) = 3.9V$ to $7.0V$.

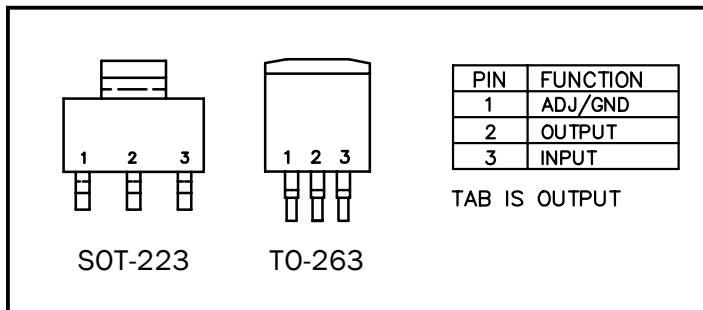
Parameter	Symbol	V_{IN}	I_O	$T_J^{(5)}$	Min	Typ	Max	Units
Adjust Pin Current	I_{ADJ}			O.T.		55	90	μA
Adjust Pin Current Change	ΔI_{ADJ}			O.T.		0.2	5	μA
Temperature Stability	T_S			O.T.		0.5		%
Minimum Load Current Adj Voltage Version	I_O	5V		O.T.		5	10	mA
RMS Output Noise ⁽³⁾	V_N			25°C		0.003		% V_O
Ripple Rejection Ratio ⁽⁴⁾	R_A	5V	I_{RATED}	O.T.	60	72		dB

NOTES:

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

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Pin Configuration



Ordering Information

Device	Package
EZ1117CST-X.X.TR ⁽²⁾	SOT-223 ⁽³⁾
EZ1117CST-XX.TRT ⁽²⁾⁽⁴⁾	
EZ1117CM-X.X.TR ⁽¹⁾	TO-263 ⁽³⁾
EZ1117CM-XX.TRT ⁽¹⁾⁽⁴⁾	

Notes:

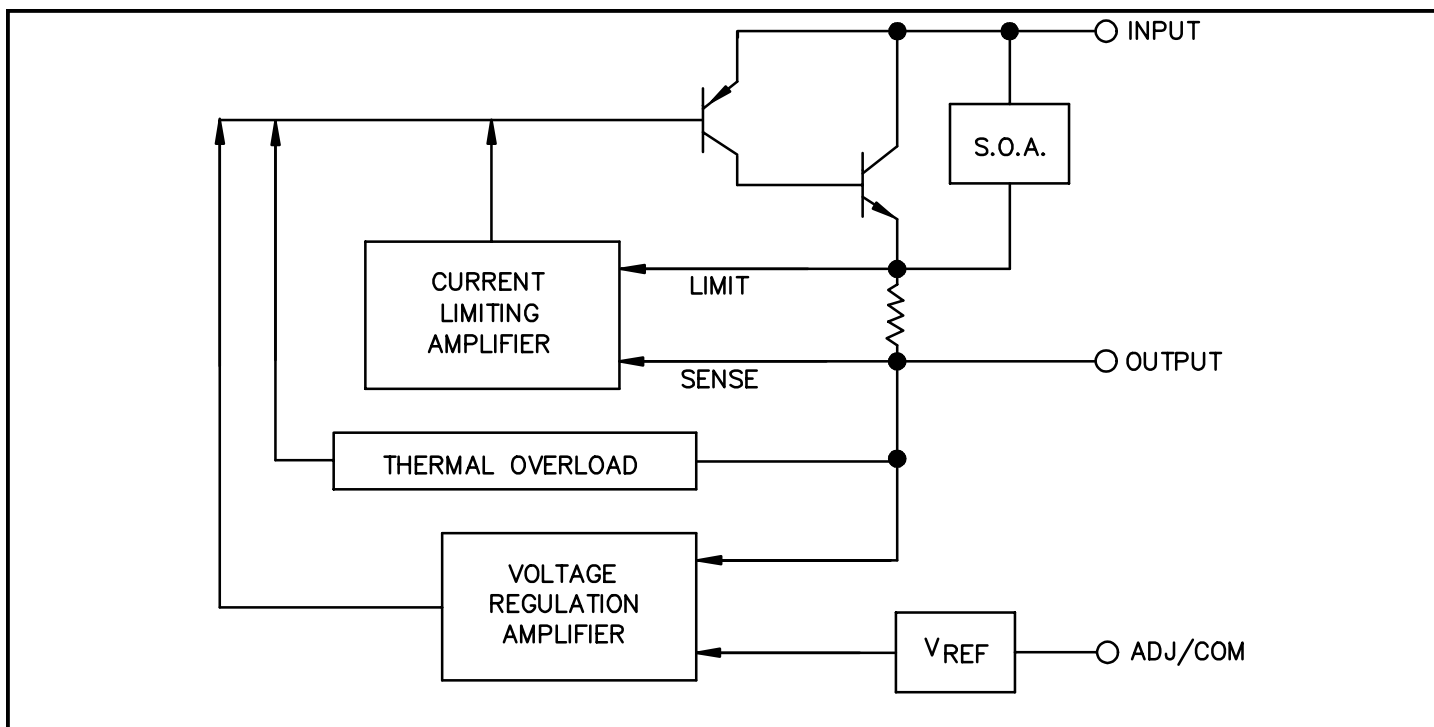
(1) Where X.X (XX) denotes voltage options. Available voltage is: 2.5V (25). Leave blank for adjustable version (1.3 to 5.7V). Contact factory for additional voltage options.

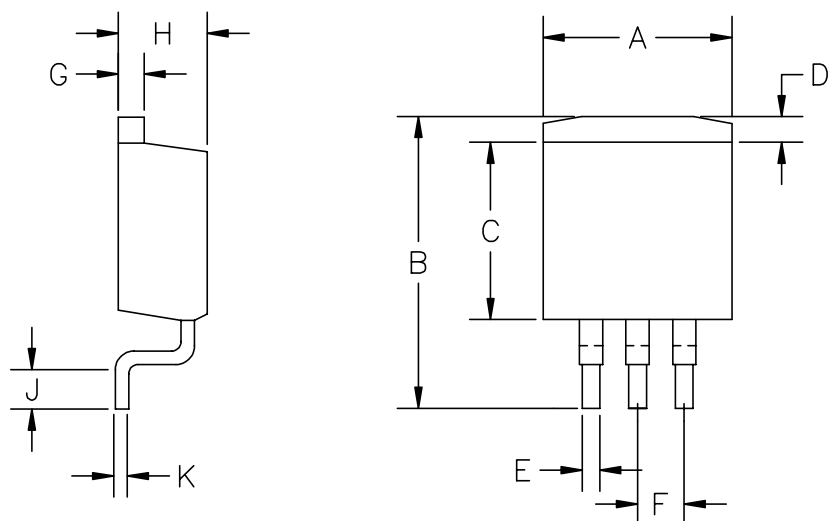
(2) Where X.X (XX) denotes voltage options. Available voltages are: 2.5V (25), 2.85(285), and 3.3V(33). Leave blank for adjustable version (1.3 to 5.7V). Contact factory for additional voltage options.

(3) Only available in tape and reel packaging. A reel contains 2500 (SOT-223) or 800 (TO-263) devices.

(4) Lead free product. This product is fully WEEE and RoHS compliant.

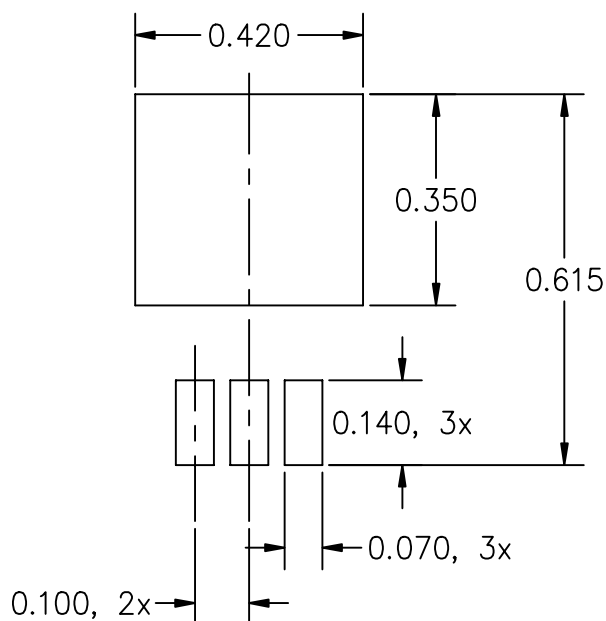
Block Diagram



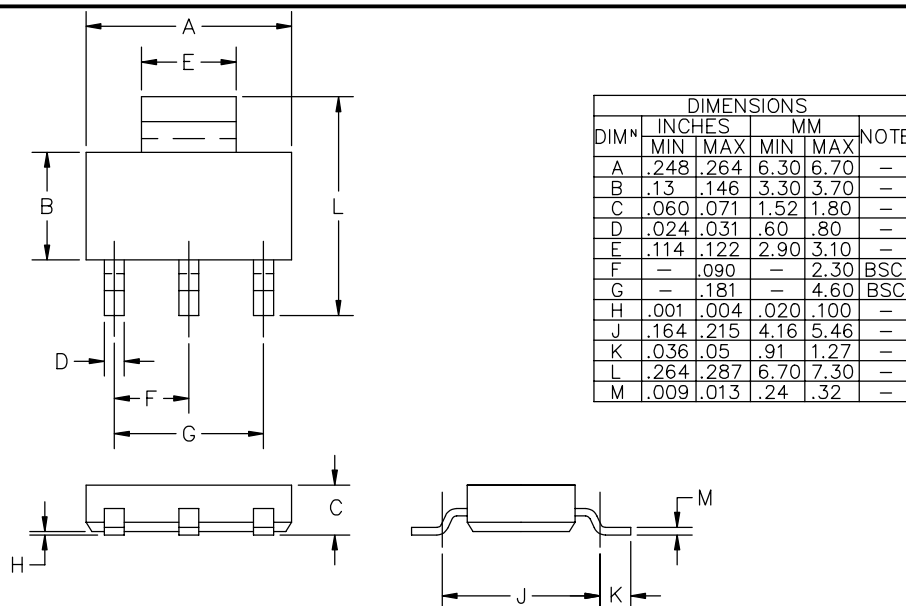
POWER MANAGEMENT
Outline Drawing - TO-263


DIMENSIONS					
DIM ^N	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	—

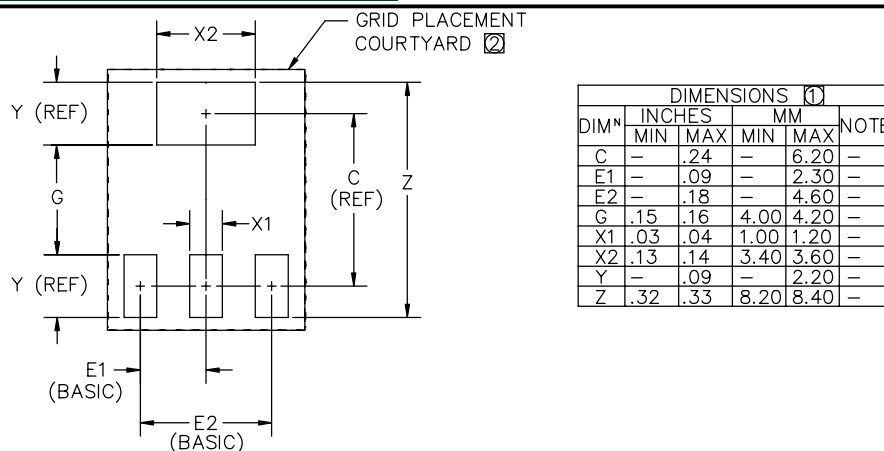
JEDEC TO-263

Land Pattern - TO-263


NOTE: ALL DIMENSIONS ARE IN INCHES

POWER MANAGEMENT
Outline Drawing - SOT-223


CONTROLLING DIMENSIONS: MILLIMETERS.

Land Pattern - SOT-223


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

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