

POWER MANAGEMENT

Description

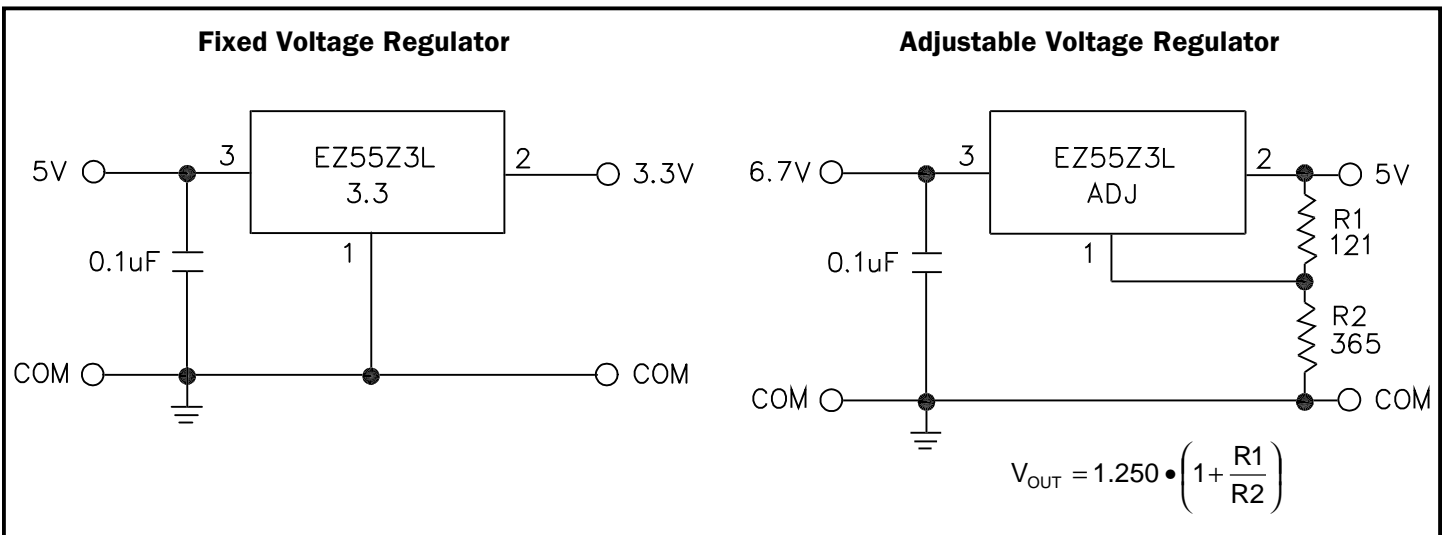
The EZ55Z3L voltage regulators are monolithic integrated circuits designed for use in applications requiring a well regulated positive output voltage with low input-to-output differential voltage requirements.

Outstanding features include full power usage up to 250mA of load current, internal current limiting and thermal shutdown. Safe area protection on the die is also included, providing protection of the series pass transistor under most operating conditions. The SOT-223 package is available for cost effective applications.

Features

- ◆ External capacitor not required for stability
- ◆ Low dropout performance
- ◆ Fixed 3.3V or adjustable (down to 1.25V) options available
- ◆ Line regulation typically 0.015%
- ◆ Load regulation typically 0.1%
- ◆ SOT-223 package

Typical Application Circuits



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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.

| Parameter | Symbol | Maximum | Units |
|--|---------------|----------------|-------|
| Operating Input Voltage | V_{IN} | $V_{OUT} + 10$ | V |
| Power Dissipation ⁽¹⁾ | P_D | 2.5 | W |
| Thermal Resistance Junction to Ambient | θ_{JA} | 62.3 | °C/W |
| Thermal Resistance Junction to Case | θ_{JC} | 15 | °C/W |
| Operating Junction Temperature Range | T_J | 0 to 125 | °C |
| Storage Temperature Range | T_{STG} | -65 to 150 | °C |
| Lead Temperature (Soldering) 10 Sec. | T_{LEAD} | 300 | °C |

Note:

(1) Specifications are applicable for a power dissipation of 2.5W and are only achievable over a limited range of $V_{IN} - V_{OUT}$.

Electrical Characteristics

Unless otherwise specified: ($V_{IN} - V_{OUT}$) = 1.45V to 10V and I_{OUT} = 10mA to 250mA. Values in **bold** apply over the full operating temperature range.

| Parameter | Symbol | Conditions ⁽¹⁾ | Min | Typ | Max | Units |
|--|-----------------|---|--------------|--------------|--------------|-------|
| Output Voltage ⁽²⁾ | V_{OUT} | $V_{IN} = V_{OUT} + 3V, I_{OUT} = 10mA$ | 3.201 | 3.300 | 3.399 | V |
| 3.3V Version | | | 3.168 | | 3.432 | |
| Reference Voltage ⁽²⁾ | V_{REF} | $V_{IN} = V_{OUT} + 3V, I_{OUT} = 10mA$ | 1.213 | 1.250 | 1.288 | V |
| Adj. Voltage Version | | | 1.200 | | 1.300 | |
| Line Regulation ⁽²⁾ | $REG_{(LINE)}$ | $I_{OUT} = 10mA$ | | 0.015 | 0.2 | % |
| | | | | 0.035 | 0.2 | |
| Load Regulation ⁽²⁾ | $REG_{(LOAD)}$ | $V_{IN} = 3V$ | | 0.1 | 0.3 | % |
| | | | | 0.2 | 0.4 | |
| Dropout Voltage | V_D | | | 1.3 | 1.5 | V |
| $\Delta V_{OUT}, \Delta V_{REF} = 1\%$ | | | | | | |
| Surge Current Limit | I_S | | | 0.5 | | A |
| Quiescent Current | I_Q | $V_{IN} = 10V$ | | 10 | 15 | mA |
| Thermal Regulation ⁽³⁾ | $REG_{(THERM)}$ | | | 0.002 | 0.01 | %/W |

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Electrical Characteristics (Cont.)

Unless otherwise specified: ($V_{IN} - V_{OUT}$) = 1.45V to 10V and I_{OUT} = 10mA to 250mA. Values in **bold** apply over the full operating temperature range.

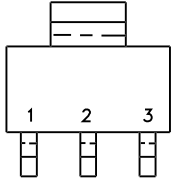
| Parameter | Symbol | Conditions ⁽¹⁾ | Min | Typ | Max | Units |
|---------------------------------------|------------------|--------------------------------|-----------|------------|------------|-------------|
| Adjust Pin Current | I_{ADJ} | | | 55 | | μ A |
| | | | | | 120 | |
| Adjust Pin Current Change | ΔI_{ADJ} | | | 0.2 | 5 | μ A |
| Temperature Stability | T_S | $V_{IN} = 5V, I_{OUT} = 250mA$ | | 0.5 | | % |
| Minimum Load Current | I_{OUT} | $V_{IN} = 10V$ | | 5 | 10 | mA |
| RMS Output Noise ⁽⁴⁾ | V_N | | | 0.003 | | % V_{OUT} |
| Ripple Rejection Ratio ⁽⁵⁾ | R_A | $V_{IN} = 5V, I_{OUT} = 250mA$ | 60 | 72 | | dB |

Notes:

- (1) Specifications are applicable for a power dissipation of 2.5W and are only achievable over a limited range of $V_{IN} - V_{OUT}$.
- (2) Low duty cycle pulse testing with Kelvin connections required. Changes in output voltage due to heating effects are covered under the specification for thermal regulation.
- (3) 30ms pulse.
- (4) Bandwidth of 10Hz to 10kHz
- (5) 120Hz input ripple, 1 dB less for each volt increase above 3.3V Min.; C_{OUT} & C_{ADJ} (for ADJ) = 25 μ F.
- (6) This device is ESD sensitive. Use of standard ESD handling precautions is required.

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Pin Configurations



| PIN | FUNCTION |
|-----|----------|
| 1 | ADJ/GND |
| 2 | OUT |
| 3 | IN |

SOT-223 Tab is OUT

SOT-223

Ordering Information

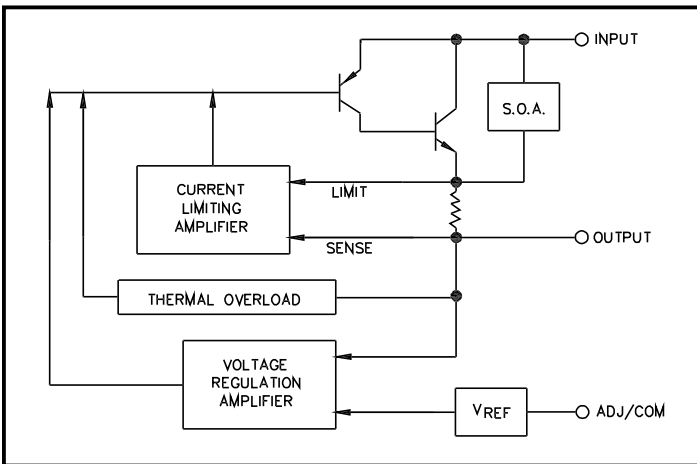
| Device | Package |
|---------------------------------|---------|
| EZ55Z3L-SX.TR ⁽¹⁾⁽²⁾ | SOT-223 |

Notes:

(1) Where X denotes voltage options. Available voltage is: 3.3V. Replace X with "ADJ" for adjustable version (1.25 to 24V).

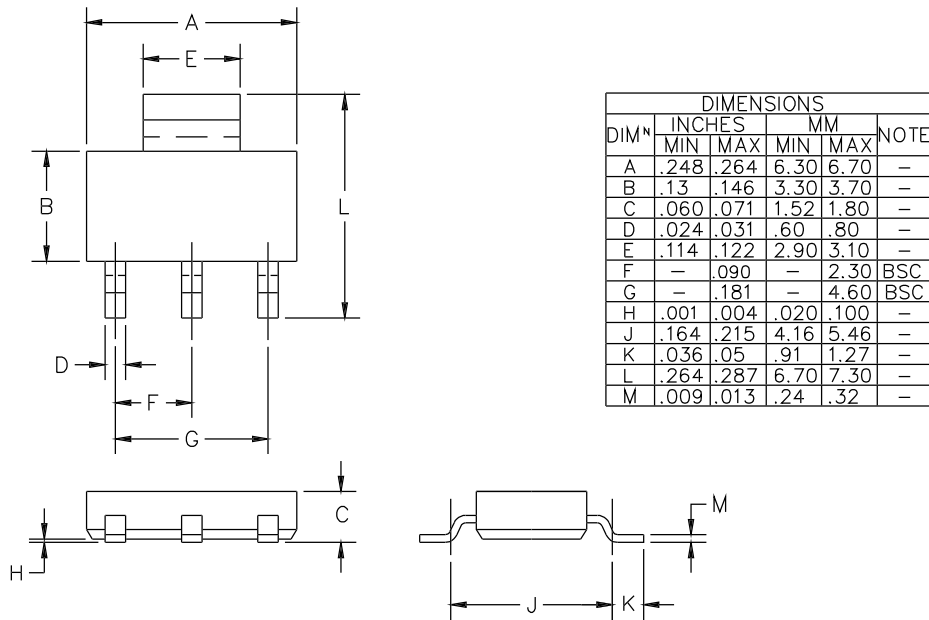
(2) Only available in tape and reel packaging. A reel contains 2500 devices.

Block Diagram



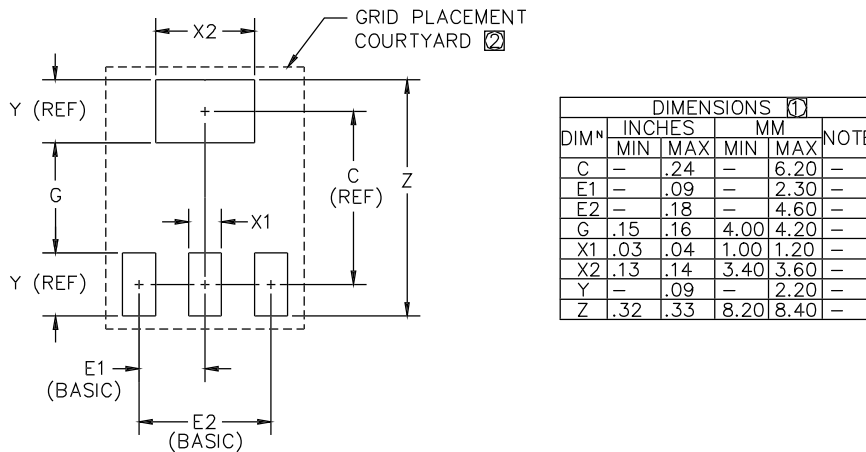
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Outline Drawing - SOT-223



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

Contact Information

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