

November 22, 1999

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

DESCRIPTION

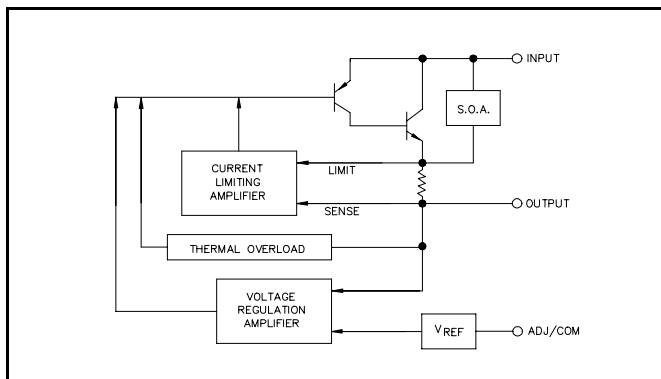
The EZ1585 series of high performance positive voltage regulators are designed for use in applications requiring low dropout performance at full rated current. Additionally, the EZ1585 series provides excellent regulation over variations in line, load and temperature.

Outstanding features include low dropout performance at rated current, fast transient response, internal current limiting and thermal shutdown protection of the output device. The EZ1585 series are three terminal regulators with fixed and adjustable voltage options available in popular packages.

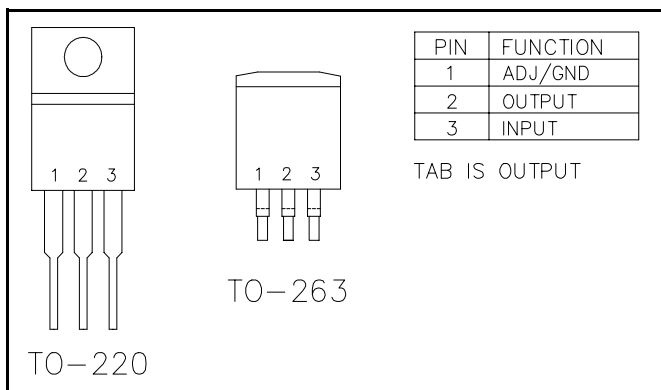
APPLICATIONS

- Pentium® Processor supplies
- PowerPC™ supplies
- Other 2.5V to 3.6V microprocessor supplies
- Low voltage logic supplies
- Battery-powered circuitry
- Post regulator for switching supply

BLOCK DIAGRAM



PIN CONFIGURATIONS



FEATURES

- Low dropout performance, 1.3V max. for EZ1585
- 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 typically 0.015%
- Load regulation typically 0.05%
- TO-220 or TO-263 packages

ORDERING INFORMATION

| DEVICE | PACKAGE | V _{OUT} VOLTS |
|--------------|-----------------------|------------------------|
| EZ1585CM-X.X | TO-263 ⁽²⁾ | See Note (1) |
| EZ1585CT-X.X | TO-220 | See Note (1) |

Notes:

(1) Where X.X denotes voltage options. Available voltages are: 1.5V, 2.5V, 3.3V and 3.45V. Leave blank for adjustable version (1.3 to 5.7V). Contact factory for additional voltage options.

(2) Add suffix 'TR' for tape and reel (TO-263).

ABSOLUTE MAXIMUM RATINGS

| Parameter | Symbol | Maximum | Units |
|--|-------------------|--------------------|-------|
| Input Supply Voltage | V _{IN} | 7 | V |
| Power Dissipation | P _D | Internally Limited | W |
| Thermal Resistance Junction to Case | | | |
| TO-220 | θ_{JC} | 2.5 | °C/W |
| TO-263 | | 2.5 | |
| Thermal Resistance Junction to Ambient | | | |
| TO-220 | θ_{JA} | 50 | °C/W |
| TO-263 | | 60 | |
| 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} | 260 | °C |

November 22, 1999

ELECTRICAL CHARACTERISTICS

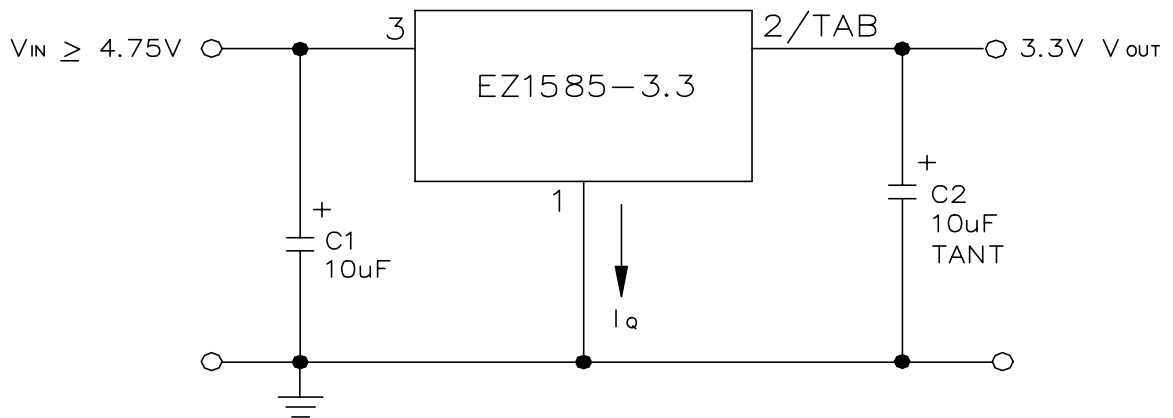
 Unless otherwise specified, Adj $V_{IN} = 2.75V$ to $7.0V$ and Adj $I_O = 10mA$ to $4.6A$;
 Fixed $V_{IN} = 4.75$ to $7.0V$ and Fixed $I_O = 0$ mA to $4.6A$

| Parameter | Symbol | Test Conditions | | | Test Limits | | | Units |
|---|------------------|-----------------|-------|-------------|---------------|-------|---------------|---------|
| | | V_{IN} | I_O | $T_J^{(5)}$ | Min | Typ | Max | |
| Output Voltage ⁽¹⁾ | V_O | 5V | 10mA | 25°C | 0.99 $V_{O }$ | V_O | 1.01 $V_{O }$ | V |
| Fixed Voltage Version | | | | O.T. | 0.98 $V_{O }$ | V_O | 1.02 $V_{O }$ | |
| Reference Voltage ⁽¹⁾ | V_{REF} | 5V | 10mA | 25°C | 1.238 | 1.250 | 1.262 | V |
| Adj Voltage Version | | | | O.T. | 1.225 | 1.250 | 1.275 | |
| Line Regulation ⁽¹⁾ | $REG_{(LINE)}$ | | | 25°C | | 0.015 | 0.2 | % |
| Fixed Voltage Version | | | 0mA | O.T. | | 0.035 | 0.2 | |
| Adj Voltage Version | | | 10mA | O.T. | | 0.035 | 0.2 | |
| Load Regulation ⁽¹⁾ | $REG_{(LOAD)}$ | 5V | | 25°C | | 0.05 | 0.3 | % |
| | | | | O.T. | | 0.2 | 0.4 | |
| Dropout Voltage ⁽²⁾ | V_D | | | 25°C | | 1 | | V |
| EZ1585 | | | | O.T. | | 1.1 | 1.3 | |
| Current Limit | I_{CL} | | | O.T. | 4.7 | 7.5 | | A |
| Quiescent Current 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} | | | 25°C | | 55 | | μA |
| | | | | O.T. | | | 90 | |
| Adjust Pin Current Change | ΔI_{ADJ} | | | O.T. | | 0.2 | 5 | μA |
| Temperature Stability | T_S | 5V | 0.5A | 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 | 4.6A | O.T. | 60 | 72 | | dB |

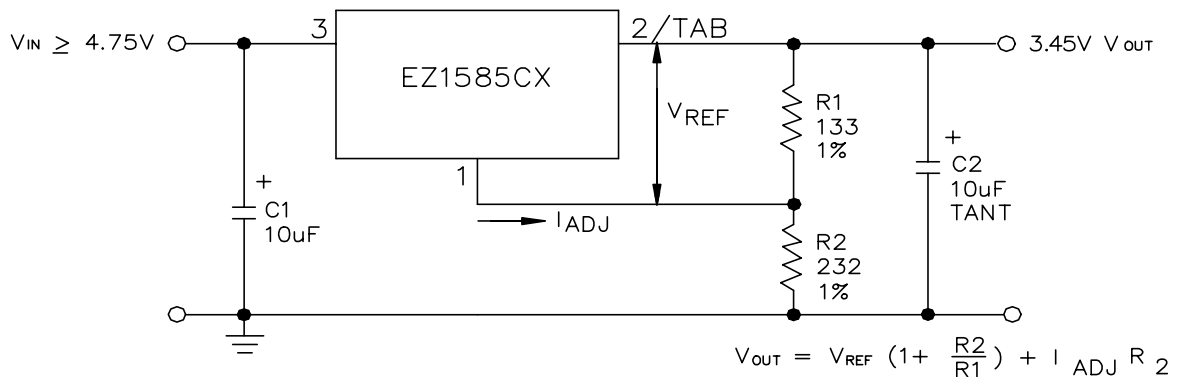
NOTES:

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

November 22, 1999

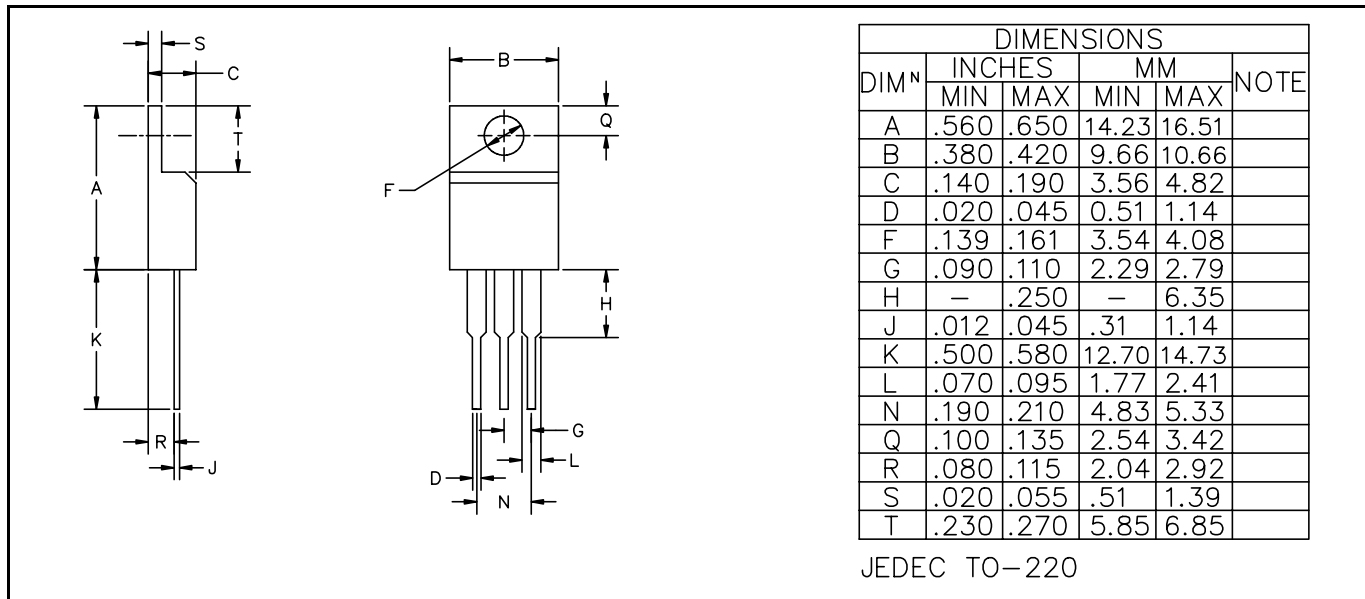
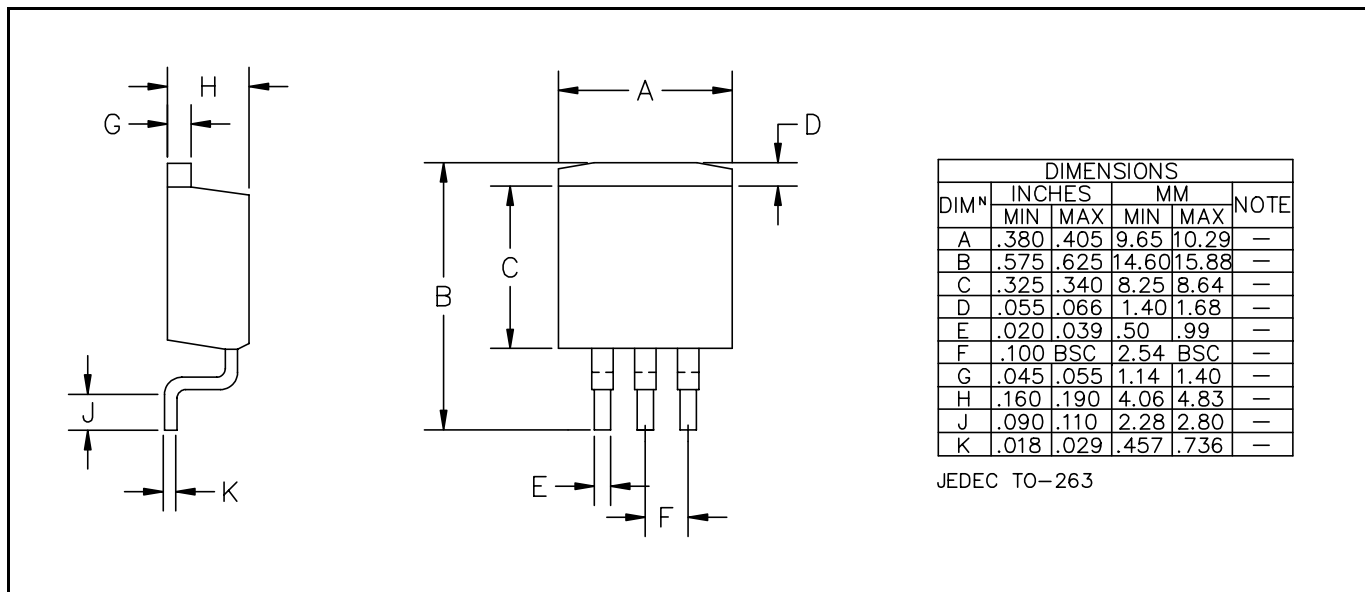
TYPICAL APPLICATIONS
FIXED VOLTAGE REGULATOR ⁽¹⁾⁽²⁾


- (1) C1 NEEDED IF DEVICE IS FAR FROM FILTER CAPACITORS.
 (2) C2 REQUIRED FOR STABILITY.

ADJUSTABLE VOLTAGE REGULATOR ⁽¹⁾⁽²⁾


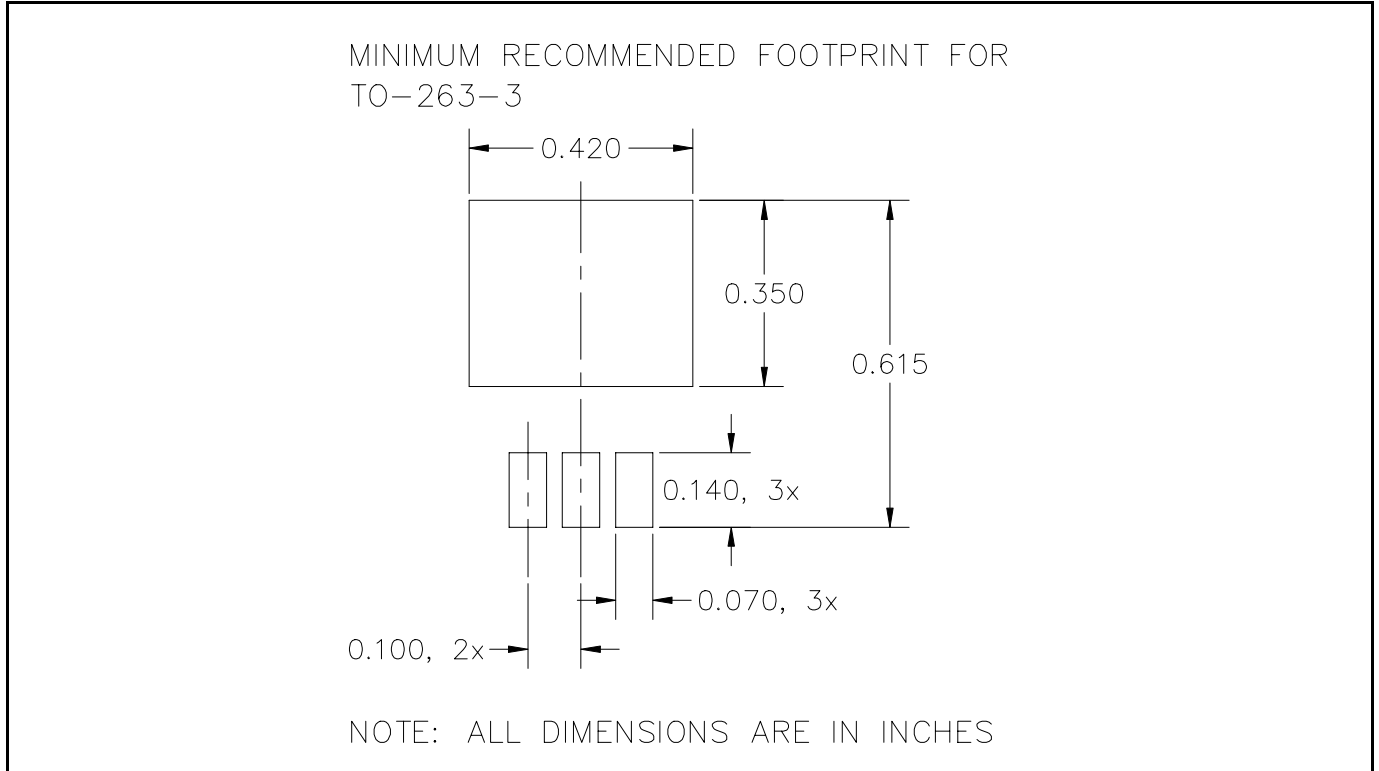
- (1) C1 NEEDED IF DEVICE IS FAR FROM FILTER CAPACITORS.
 (2) C2 REQUIRED FOR STABILITY.

November 22, 1999

DEVICE OUTLINE - TO-220

DEVICE OUTLINE - TO-263


November 22, 1999

LAND PATTERN - TO-263



ECN99-734