TEL: 805-498-2111 FAX: 805-498-3804

## FEATURES

- Low dropout performance, 1.3V max.
- Full current rating over line and temperature
- Fast transient response
- ±1.5% total output regulation over line, load, and temperature
- Adjust pin current max. 100µA over temperature
- Adjustable output voltage
- Line regulation typically 0.015%
- Load regulation typically 0.05%
- TO-220 package

## APPLICATIONS

- Pentium® Processor supplies

## DESCRIPTION

The EZ1585 Series are high performance positive voltage regulators designed for use in applications requiring low dropout performance at full rated current. Additionally, the EZ1585 Series provides excellent regulation over variations due to changes 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 EZ1585B has tight tolerance on reference voltage, ±1% at 25°C and ±1.5% over line, load and temperature. The EZ1585 Series are three terminal regulators with adjustable voltage options available in the popular TO-220 package.

## DEVICE SELECTION GUIDE

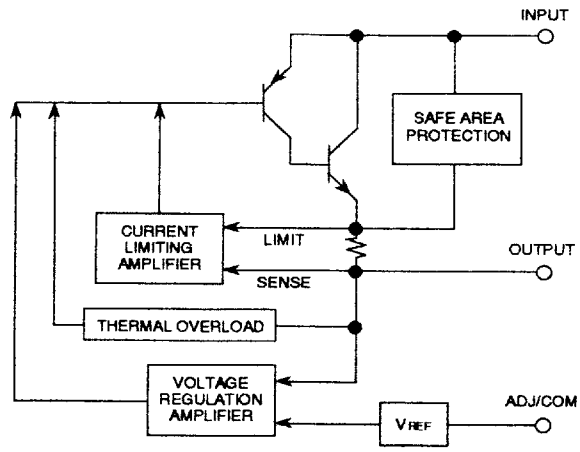
| DEVICE | $V_{OUT}$ VOLTS | PACKAGE |
|---|---|---|
| EZ1585BCT | 1.3 to 4.0 | TO-220 |

NOTE: Contact factory for additional voltage options.

## ABSOLUTE MAXIMUM RATINGS

| Parameter | Symbol | Maximum | Units |
|---|---|---|---|
| Input Voltage | $V_{IN}$ | 7 | V |
| Power Dissipation | $P_D$ | Internally Limited | W |
| Thermal Resistance Junction to Case<br>Control<br>Power | $\theta_{JC}$ | <br>0.7<br>3.0 | °C/W |
| Thermal Resistance Junction to Ambient | $\theta_{JA}$ | 50 | °C/W |
| Operating Junction Temperature Range | $T_J$ | 0 to 125 | °C/W |
| Storage Temperature Range | $T_{STG}$ | -65 to 150 | °C |
| Lead Temperature (Soldering) 10 Sec. | $T_{LEAD}$ | 260 | °C |

## BLOCK DIAGRAM



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# ELECTRICAL CHARACTERISTICS

Unless otherwise specified, Adj $I_O$ = 10mA to 5.0A; 1.3V ≤ ($V_{IN}$ - $V_{OUT}$) ≤ 2V.

| | | Test Conditions | | | Test Limits | | | |
|---|---|---|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | $V_{IN}$ | $I_O$ | $T_J$(4) | **MIN** | **TYP** | **MAX** | **UNITS** |
| Reference Voltage(1) | $V_{REF}$ | | | 25 | 1.238 | 1.250 | 1.262 | V |
| Adj Voltage | | | | Over Temp. | 1.231 | | 1.269 | |
| Line Regulation(1) | $REG_{(LINE)}$ | Note 5 | | 25 | | 0.015 | 0.2 | % |
| Adj Model | | | 10mA | Over Temp. | | 0.035 | | |
| Load Regulation(1) | $REG_{(LOAD)}$ | 5V | | 25 | | 0.05 | 0.3 | |
| | | | | Over Temp. | | 0.2 | 0.4 | |
| Dropout Voltage | $V_D$ | | | 25 | | 1 | | V |
| $\Delta V_{OUT}$, $\Delta V_{REF}$ = 1% | | | | Over Temp. | | 1.1 | 1.3 | |
| Current Limit | $I_{CL}$ | | | | 5.0 | | | A |
| Temperature Coefficient | $T_C$ | Note 5 | | | | 0.005 | | %/°C |
| Adjust Pin Current | $I_{PIN}$ | Note 5 | | 25 | 40 | 55 | 80 | µA |
| | | | | Over Temp. | 20 | | 100 | |
| Adjust Pin Current Change | $\Delta I_{PIN}$ | | | | | 0.2 | 5 | |
| Temperature Stability | $T_S$ | 5V | 0.5A | Over Temp. | | 0.5 | | % |
| Minimum Load Current Adj Model | $I_O$ | 5V | | | | 5 | 10 | mA |
| RMS Output Noise(2) | $V_N$ | Note 5 | | 25 | | 0.003 | | $\%V_O$ |
| Ripple Rejection Ratio(3) | $R_A$ | 5V | 5.0A | Over Temp. | 60 | 72 | | dB |

(1) Low duty cycle pulse testing with Kelvin connections required.
(2) Bandwidth of 10Hz to 10kHz.
(3) 120Hz input ripple, $C_{OUT}$ = 25µF.
(4) Over Temp. = over specified operating junction temperature range.
(5) $V_{IN}$ = 4.75 to 5.25V.

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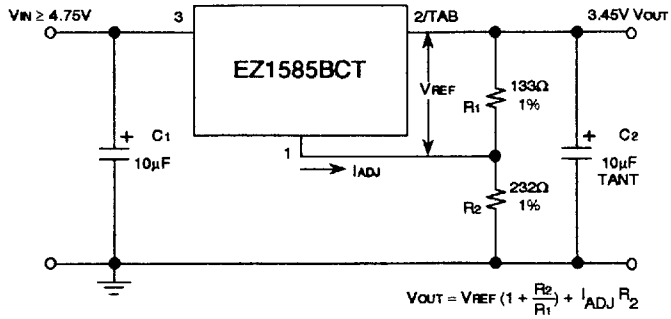
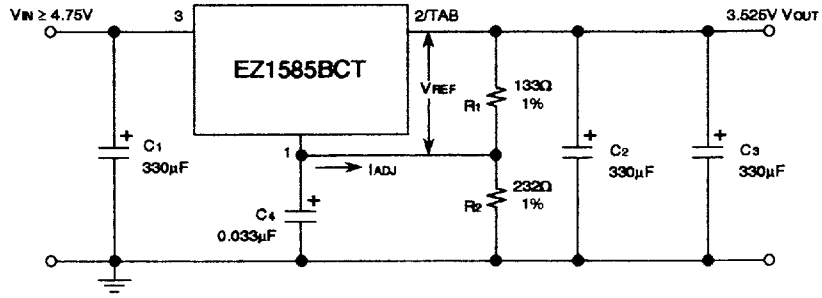
# TYPICAL APPLICATIONS

ADJUSTABLE VOLTAGE REGULATOR (1)(2)




(1) $C_1$ NEEDED IF DEVICE IS FAR FROM FILTER CAPACITORS
(2) $C_2$ REQUIRED FOR STABILITY

RECOMMENDED CIRCUIT FOR THE INTEL PENTIUM® PROCESSOR - P54C-VRE




(1) $C_1$ NEEDED IF DEVICE IS FAR FROM FILTER CAPACITORS
(2) $C_2$ AND $C_3$ REQUIRED FOR STABILITY
(3) $C_1 = C_2 = C_3 = 330\mu F$, 200mΩ ESR (e.g., Panasonic HFQ)

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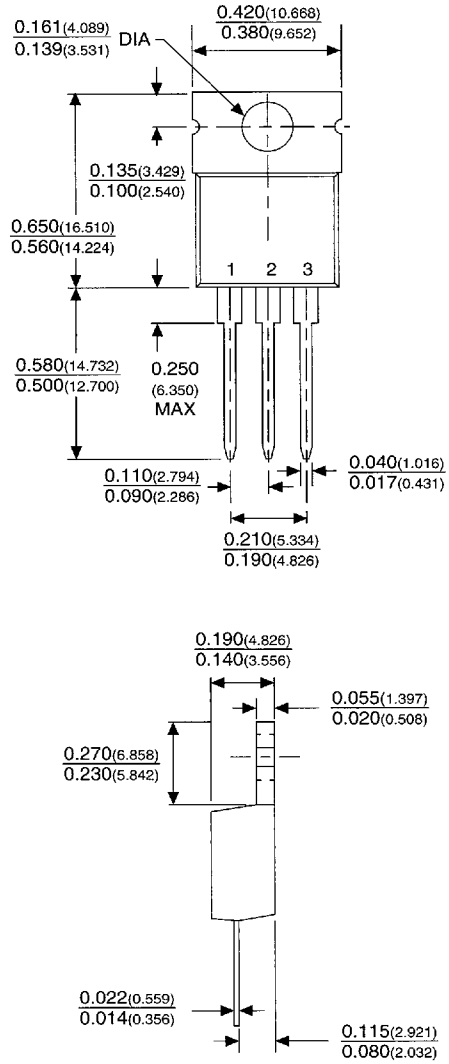
## DEVICE OUTLINE

TO-220




UNIT: Inches (mm)

| ADJUSTABLE | |
|---|---|
| PIN | FUNCTION |
| 1 | ADJUST |
| 2 | OUTPUT |
| 3 | INPUT |