

April 7, 1998

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## DESCRIPTION

The EZ1585B is a high performance positive voltage regulator designed for use in applications requiring low dropout performance at full rated current. Additionally, the EZ1585B 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 EZ1585B has tight tolerance on reference voltage,  $\pm 1\%$  at 25°C and  $\pm 1.5\%$  over line, load and temperature. The EZ1585B is a three terminal regulator with adjustable output voltage available in the popular TO-220 package.

## FEATURES

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

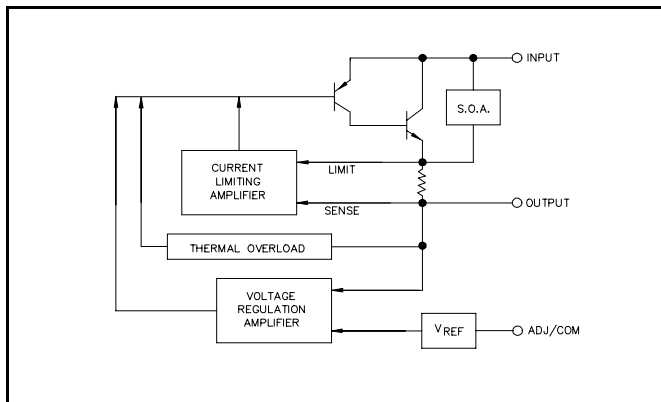
## APPLICATIONS

- Pentium® Processor supplies

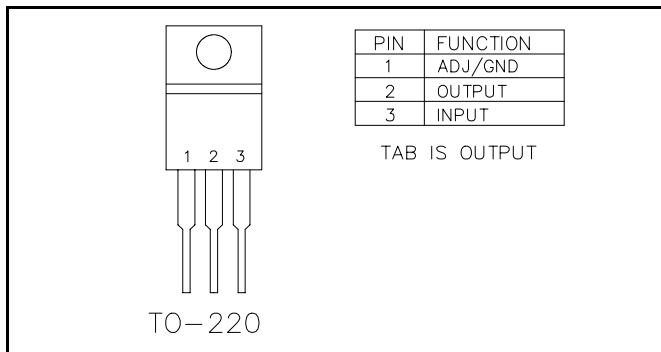
## ORDERING INFORMATION

DEVICE	PACKAGE	V <sub>OUT</sub> VOLTS
EZ1585BCT	TO-220	1.30 to 5.7

## BLOCK DIAGRAM



## PIN CONFIGURATION



## 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 Control Power	$\theta_{JC}$	0.7 3.0	°C/W
Thermal Resistance Junction to Ambient	$\theta_{JA}$	50	°C/W
Operating Junction Temperature Range	T <sub>J</sub>	0 to 125	°C
Storage Temperature Range	T <sub>STG</sub>	-65 to 150	°C
Lead Temperature (Soldering) 10 Sec	T <sub>LEAD</sub>	260	°C

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**ELECTRICAL CHARACTERISTICS**

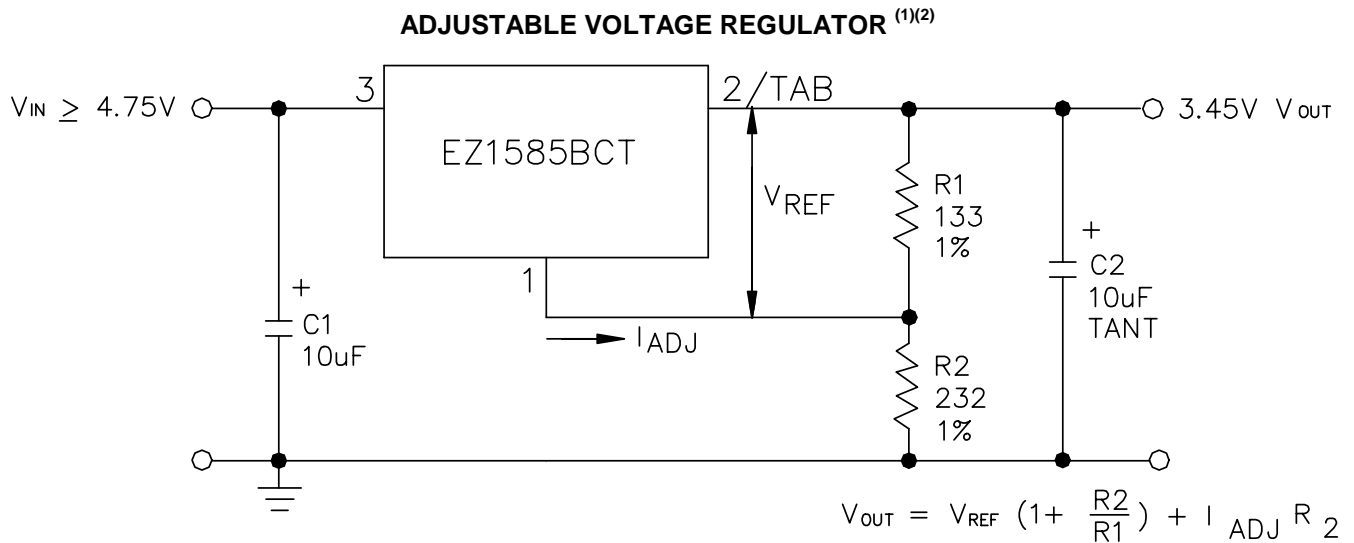
 Unless otherwise specified, Adj  $I_o = 10\text{mA}$  to  $5.0\text{A}$ ;  $1.3\text{V} \leq (V_{IN} - V_{OUT}) \leq 2\text{V}$ 

Parameter	Symbol	Test Conditions			Test Limits			Units
		$V_{IN}$	$I_o$	$T_J^{(5)}$	Min	Typ	Max	
Reference Voltage <sup>(1)</sup>	$V_{REF}$			25°C	1.238	1.250	1.262	V
Adj Voltage Version				O.T.	1.231	1.250	1.269	
Line Regulation <sup>(1)</sup>	$REG_{(LINE)}$	Note 6		25°C		0.015	0.2	%
Adj Voltage Version			10mA	O.T.		0.035	0.2	
Load Regulation <sup>(1)</sup>	$REG_{(LOAD)}$	5V		25°C		0.05	0.3	%
				O.T.		0.2	0.4	
Dropout Voltage <sup>(2)</sup>	$V_D$			25°C		1		V
			O.T.			1.1	1.3	
Current Limit	$I_{CL}$			O.T.	5.0			A
Temperature Coefficient	$T_C$	Note 6				0.005		%/°C
Adjust Pin Current	$I_{ADJ}$	Note 6		25°C	40	55	80	μA
				O.T.		20		
Adjust Pin Current Change	$\Delta I_{ADJ}$			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 <sup>(3)</sup>	$V_N$	Note 6		25°C		0.003		% $V_o$
Ripple Rejection Ratio <sup>(4)</sup>	$R_A$	5V	5.0A	O.T.	60	72		dB

**NOTES:**

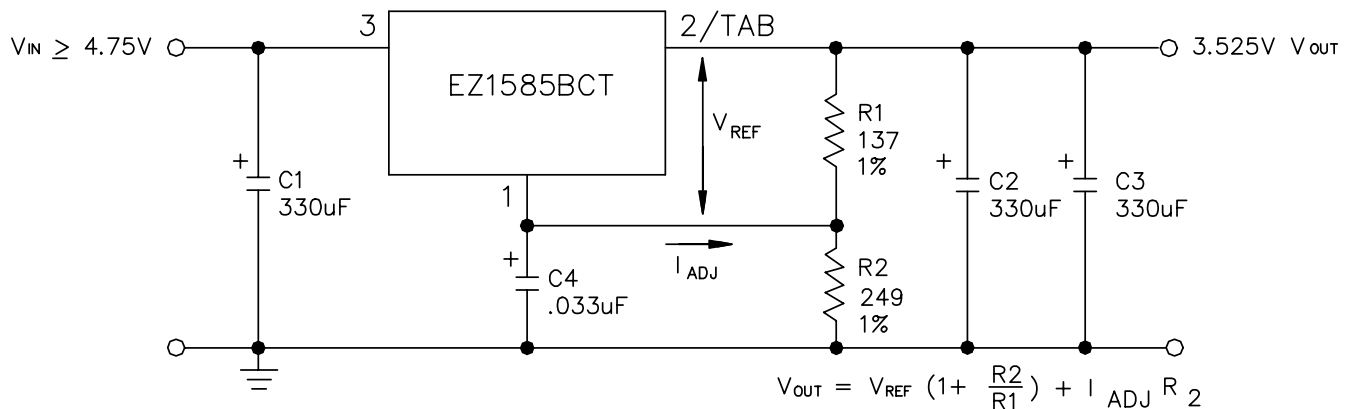
- (1) Low duty cycle pulse testing with Kelvin connections required.
- (2)  $\Delta V_{OUT}, \Delta V_{REF} = 1\%$
- (3) Bandwidth of 10 Hz to 10 kHz.
- (4) 120 Hz input ripple,  $C_{OUT} = 25\mu\text{F}$ .
- (5) Over Temp. (O.T.) = over specified operating junction temperature range.
- (6)  $V_{IN} = 4.75$  to  $5.25\text{V}$ .

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**TYPICAL APPLICATIONS**


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

(2) C2 REQUIRED FOR STABILITY.

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


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

(2) C2 AND C3 REQUIRED FOR STABILITY.

(3) C1 = C2 = C3 = 330uF, 200m OHM ESR

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**DEVICE OUTLINE - TO-220**
