

June 17, 1999

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

## DESCRIPTION

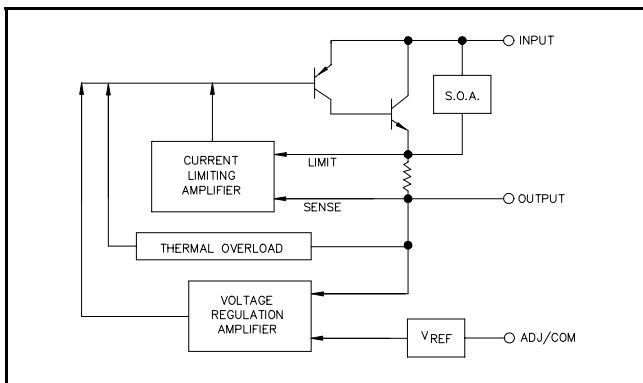
The EZ1085 series of high performance positive voltage regulators are designed for use in applications requiring low dropout performance at full rated current. Additionally, the EZ1085 series provides excellent regulation over variations in line, load and temperature.

Outstanding features include low dropout performance at rated current, fast transient response, internal current limiting and thermal shutdown protection of the output device. The EZ1085 has both fixed and adjustable voltage options, while the EZ1085B is adjustable only for cost sensitive applications. These devices are available in the popular TO-220 and TO-263 packages.

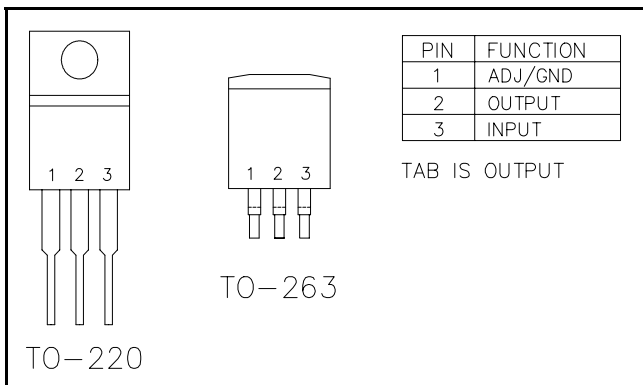
## APPLICATIONS

- Post regulators
- Processor I/O supplies
- Battery chargers

## BLOCK DIAGRAM



## PIN CONFIGURATIONS



## FEATURES

- Low dropout performance, 1.3V max. for EZ1085, 1.45V max. for EZ1085B
- Full current rating over line and temperature
- Fast transient response
- $\pm 2\%$  total output regulation over line, load and temperature ( $\pm 2.4\%$  for EZ1085B)
- Adjust pin current max  $90\mu\text{A}$  over temperature
- Fixed/adjustable output voltage (EZ1085)
- Line regulation typically 0.015%
- Load regulation typically 0.05%
- TO-220 and TO-263 packages

## ORDERING INFORMATION

DEVICE	PACKAGE	V <sub>OUT</sub> VOLTS
EZ1085CM-X.X EZ1085BCM	TO-263 <sup>(2)</sup>	See Note (1) 1.30 to 5.7
EZ1085CT-X.X EZ1085BCT	TO-220	See Note (1) 1.30 to 5.7

Notes:

(1) Where X.X denotes voltage options. Available voltages are: 1.5V, 2.5V and 3.3V. 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 <sub>IN</sub>	7	V
Power Dissipation	P <sub>D</sub>	Internally Limited	W
Thermal Resistance Junction to Case TO-220 TO-263	$\theta_{\text{JC}}$	3 3	$^{\circ}\text{C/W}$
Thermal Resistance Junction to Ambient TO-220 TO-263	$\theta_{\text{JA}}$	50 60	$^{\circ}\text{C/W}$
Operating Junction Temperature Range	T <sub>J</sub>	0 to 125	$^{\circ}\text{C}$
Storage Temperature Range	T <sub>STG</sub>	-65 to 150	$^{\circ}\text{C}$
Lead Temperature (Soldering) 10 Sec	T <sub>LEAD</sub>	260	$^{\circ}\text{C}$

June 17, 1999

**ELECTRICAL CHARACTERISTICS**

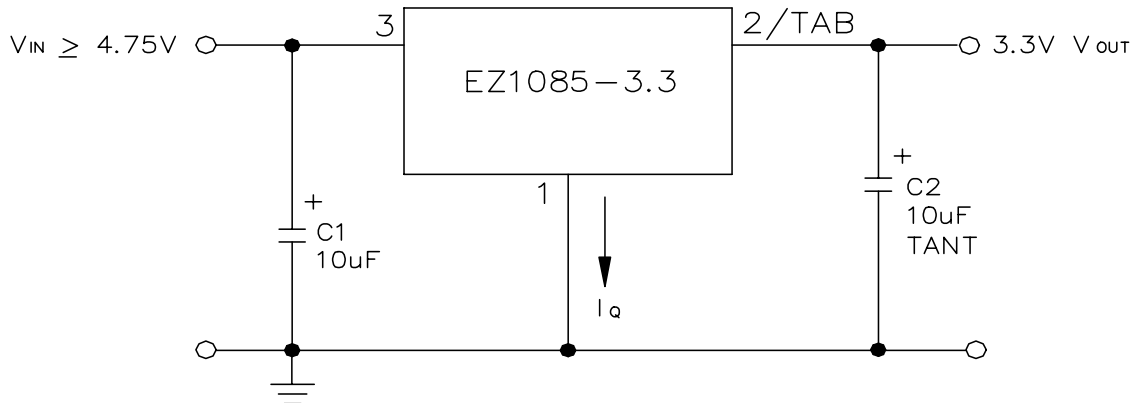
 Unless otherwise specified, Adj  $V_{IN} = 2.75V$  to  $7.0V$  and Adj  $I_O = 10mA$  to  $3.0A$ ;  
 Fixed  $V_{IN} = 4.75$  to  $7.0V$  and Fixed  $I_O = 0$  mA to  $3.0A$ 

Parameter	Symbol	Test Conditions			Test Limits			Units
		$V_{IN}$	$I_O$	$T_J^{(5)}$	Min	Typ	Max	
Output Voltage <sup>(1)</sup> EZ1085-X.X	$V_O$	5V	0mA	25°C	$0.99 V_O $	$V_O$	$1.01 V_O $	V
				O.T.	$0.98 V_O $	$V_O$	$1.02 V_O $	
Reference Voltage <sup>(1)</sup> EZ1085	$V_{REF}$	5V	10mA	25°C	1.238	1.250	1.262	V
				O.T.	1.225	1.250	1.275	
Reference Voltage <sup>(1)</sup> EZ1085B	$V_{REF}$	5V	10mA	25°C	1.233	1.250	1.267	V
				O.T.	1.220	1.250	1.280	
Line Regulation <sup>(1)</sup>	$REG_{(LINE)}$		10mA	25°C		0.015	0.2	%
				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> EZ1085, EZ1085-X.X EZ1085B	$V_D$			25°C		1		V
				O.T.		1.10	1.30	
						1.20	1.45	
Current Limit	$I_{CL}$			O.T.	3.0	4.5		A
Quiescent Current Fixed Voltage Version	$I_Q$	5V		O.T.		12	14	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	$\Delta I_{ADJ}$			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>	$V_N$			25°C		0.003		% $V_O$
Ripple Rejection Ratio <sup>(4)</sup>	$R_A$	5V	3.0A	O.T.	60	72		dB

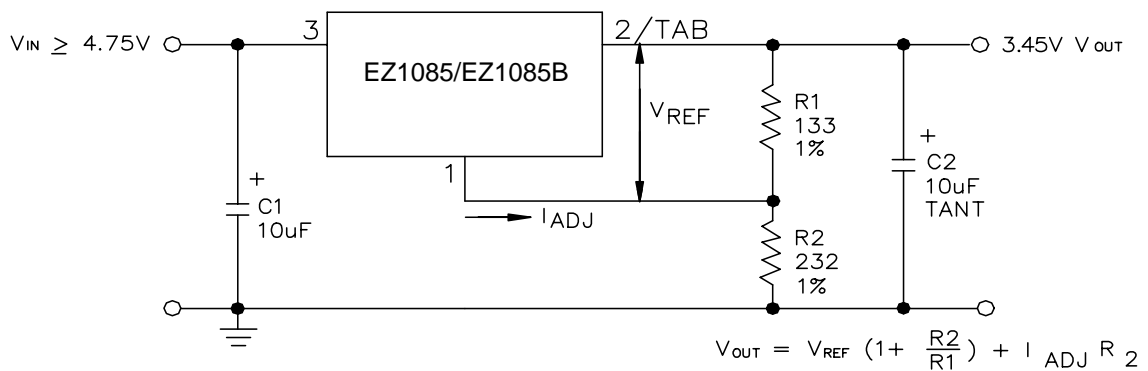
**NOTES:**

- (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 ( $C_{ADJ}$  for ADJ =  $25\mu F$ ).
- (5) Over Temp. (O.T.) = over specified operating junction temperature range.

June 17, 1999

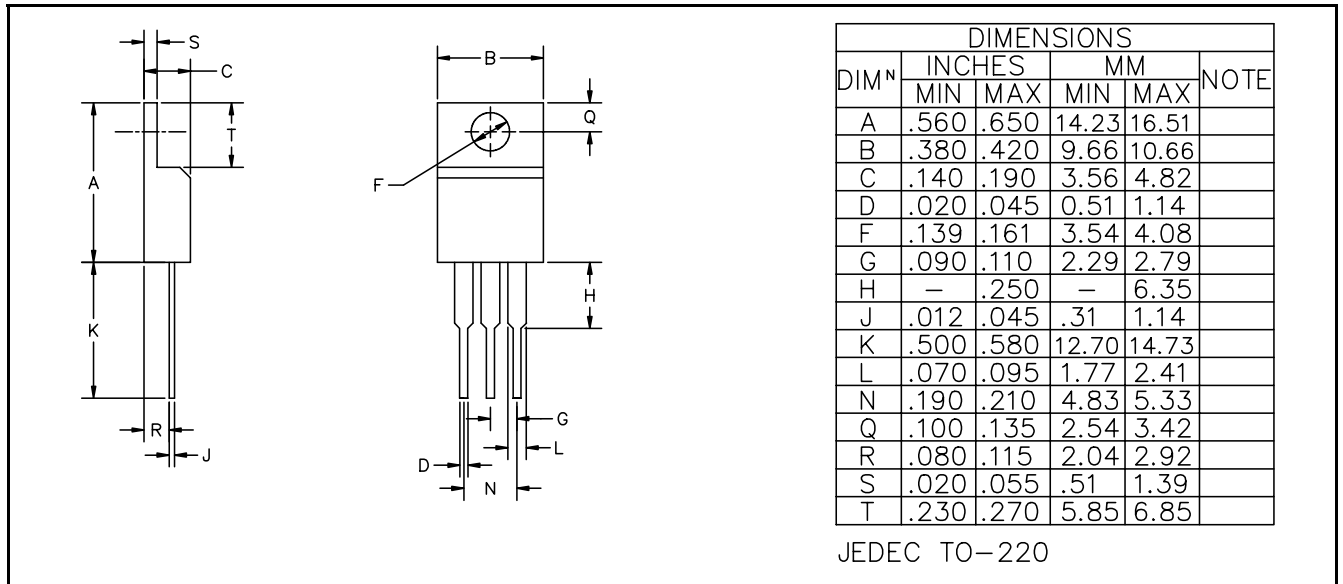
**TYPICAL APPLICATIONS**
**FIXED VOLTAGE REGULATOR <sup>(1)(2)</sup>**


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

**ADJUSTABLE VOLTAGE REGULATOR <sup>(1)(2)</sup>**


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

June 17, 1999

**DEVICE OUTLINE - TO-220**

**DEVICE OUTLINE - TO-263**
