

June 17, 1999

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

DESCRIPTION

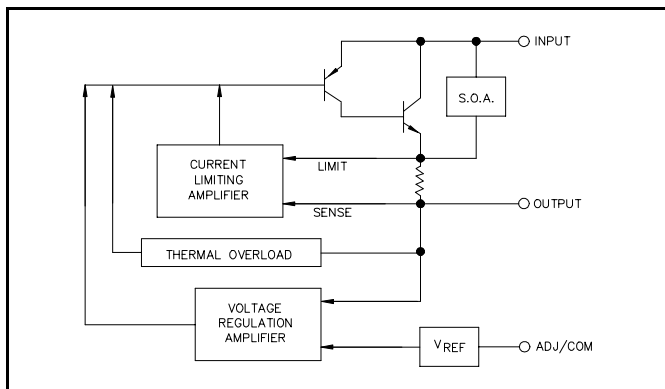
The EZ1085 series of high performance positive voltage regulators are designed for use in applications requiring low dropout performance at full rated current. Additionally, the EZ1085 series provides excellent regulation over variations in line, load and temperature.

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.

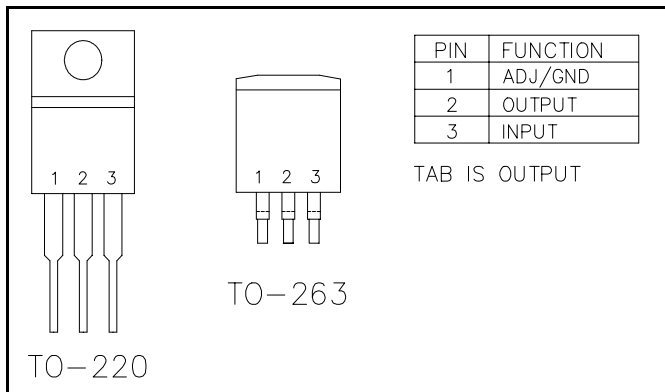
APPLICATIONS

- 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 μ 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 _{OUT} VOLTS
EZ1085CM-X.X EZ1085BCM	TO-263 ⁽²⁾	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 _{IN}	7	V
Power Dissipation	P _D	Internally Limited	W
Thermal Resistance Junction to Case TO-220 TO-263	θ_{JC}	3 3	$^{\circ}\text{C/W}$
Thermal Resistance Junction to Ambient TO-220 TO-263	θ_{JA}	50 60	$^{\circ}\text{C/W}$
Operating Junction Temperature Range	T _J	0 to 125	$^{\circ}\text{C}$
Storage Temperature Range	T _{STG}	-65 to 150	$^{\circ}\text{C}$
Lead Temperature (Soldering) 10 Sec	T _{LEAD}	260	$^{\circ}\text{C}$

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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 ⁽¹⁾ 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 ⁽¹⁾ EZ1085	V_{REF}	5V	10mA	25°C	1.238	1.250	1.262	V
				O.T.	1.225	1.250	1.275	
Reference Voltage ⁽¹⁾ EZ1085B	V_{REF}	5V	10mA	25°C	1.233	1.250	1.267	V
				O.T.	1.220	1.250	1.280	
Line Regulation ⁽¹⁾	$REG_{(LINE)}$		10mA	25°C		0.015	0.2	%
				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⁾ 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	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	3.0A	O.T.	60	72		dB

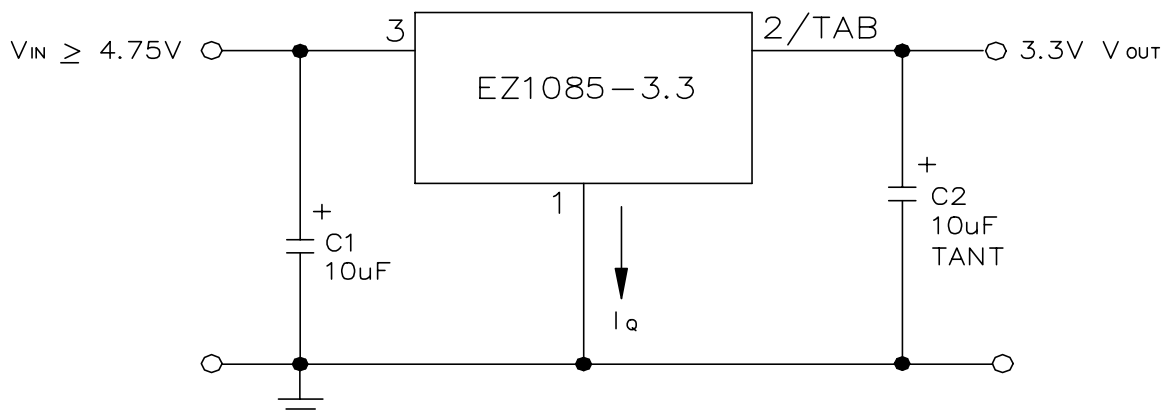
NOTES:

- (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 = 25μF).
- (5) Over Temp. (O.T.) = over specified operating junction temperature range.

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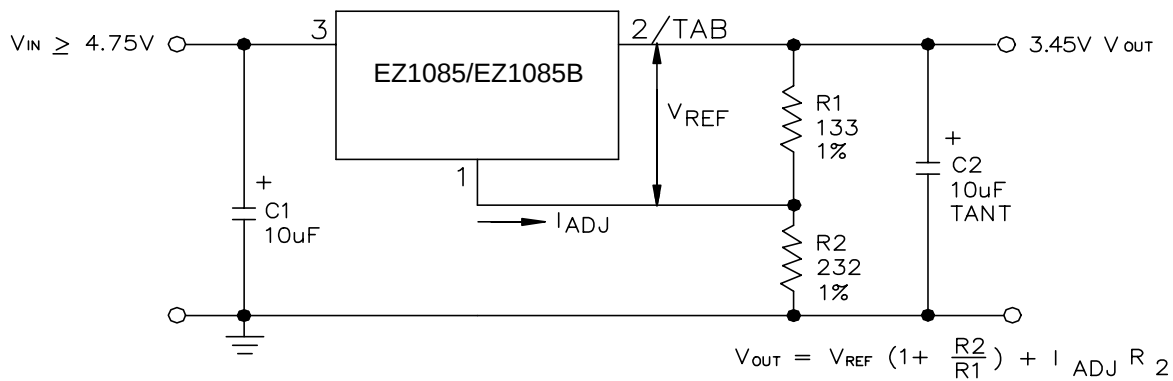
TYPICAL APPLICATIONS

FIXED VOLTAGE REGULATOR ⁽¹⁾⁽²⁾



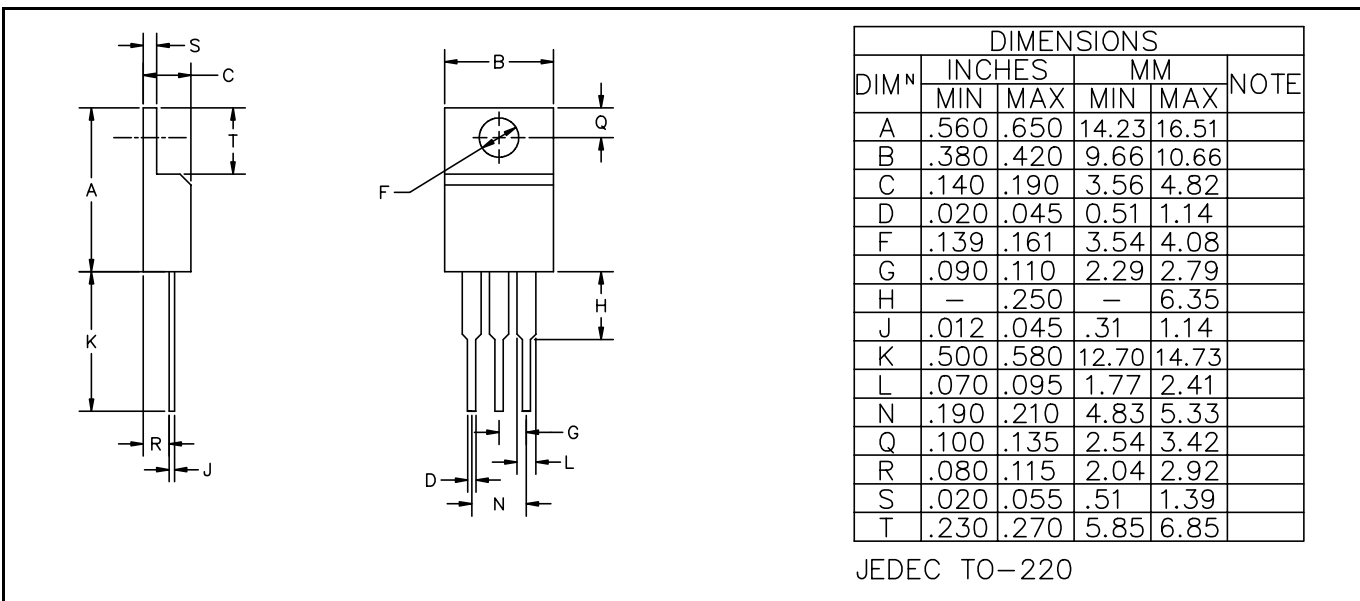
- (1) C1 NEEDED IF DEVICE IS FAR FROM FILTER CAPACITORS.
 (2) C2 REQUIRED FOR STABILITY.

ADJUSTABLE VOLTAGE REGULATOR ⁽¹⁾⁽²⁾



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

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DEVICE OUTLINE - TO-220

DEVICE OUTLINE - TO-263
