

## POWER MANAGEMENT

### Description

The EZ1083 is a high performance positive voltage regulator designed for use in applications requiring low dropout performance at 7.5A. Additionally, the EZ1083 series provides excellent regulation over variations in line, load and temperature.

Features include 1.3V dropout at 7.5 amps, fast transient response, internal current limiting and thermal shutdown protection of the output device. The EZ1083 has both fixed and adjustable voltage options, while the EZ1083B is adjustable only for cost sensitive applications. These devices are available in the popular TO-220 package.

The EZ1083 is used in industrial systems to provide power to microprocessors and chipsets. It is also used to power ASICs in control systems for medical applications.

### Features

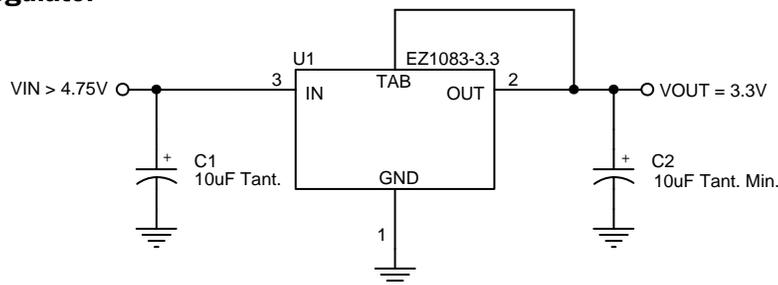
- ◆ Low dropout performance:  
1.3V max. for EZ1083,  
1.45V max. for EZ1083B
- ◆ Full current rating over line and temperature
- ◆ Fast transient response
- ◆ Adjust pin current max 90µA over temperature
- ◆ Fixed/adjustable output voltage (EZ1083)
- ◆ Line regulation typically 0.015%
- ◆ Load regulation typically 0.05%
- ◆ ±2% total output regulation over line, load and temperature (±2.4% for EZ1083B)
- ◆ TO-220 package

### Applications

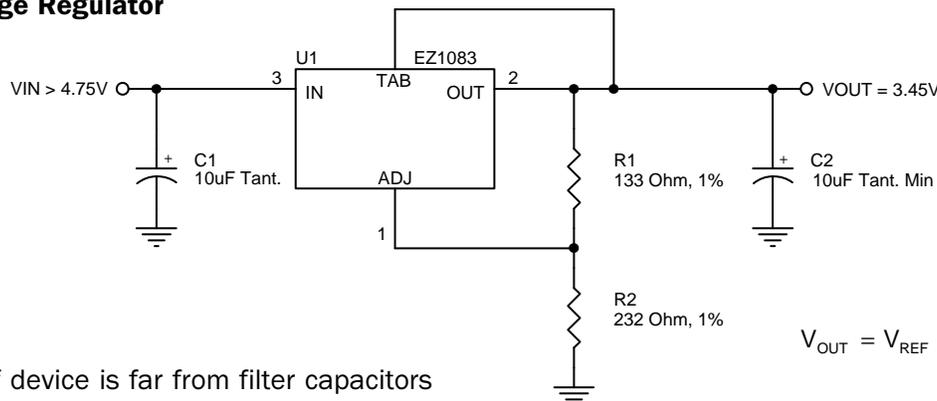
- ◆ PC Motherboards
- ◆ Microcontroller systems
- ◆ Medical equipment
- ◆ Low power microprocessor systems
- ◆ Post regulation for switching power supplies
- ◆ Telecommunication systems

### Typical Application Circuit

#### Fixed Voltage Regulator



#### Adjustable Voltage Regulator



#### Notes:

- (1) C1 needed if device is far from filter capacitors
- (2) C2 minimum value required for stability

$$V_{OUT} = V_{REF} \cdot \left(1 + \frac{R2}{R1}\right) + I_{ADJ} \cdot R2$$

**POWER MANAGEMENT**
**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	$\theta_{JC}$	1.6	°C/W
Thermal Resistance Junction to Ambient	$\theta_{JA}$	50	°C/W
Operating Junction Temperature Range	$T_J$	0 to 125	°C
Storage Temperature Range	$T_{STG}$	-65 to 150	°C
Lead Temperature (Soldering) 10 Sec.	$T_{LEAD}$	300	°C

**Electrical Characteristics**

Unless otherwise specified: Adj.  $V_{IN}$  = 2.75V to 7.0V and Adj.  $I_O$  = 10mA to 7.5A; Fixed  $V_{IN}$  = 4.75 to 7.0V and Fixed  $I_O$  = 0 mA to 7.5A

Parameter	Symbol	$V_{IN}$	$I_O$	$T_J^{(4)}$	Min	Typ	Max	Units
Output Voltage <sup>(1)</sup> EZ1083-X.X	$V_O$	5V	0mA	25°C	$0.99V_O$	$V_O$	$1.01V_O$	V
				O.T.	$0.98V_O$	$V_O$	$1.02V_O$	
Reference Voltage <sup>(1)</sup> EZ1083	$V_{REF}$	5V	10mA	25°C	1.238	1.250	1.262	V
				O.T.	1.225	1.250	1.275	
Reference Voltage <sup>(1)</sup> EZ1083B	$V_{REF}$	5V	10mA	25°C	1.233	1.250	1.267	V
				O.T.	1.220	1.250	1.280	
Line Regulation	$REG_{(LINE)}$		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> EZ1083, EZ1083-X.X EZ1083B	$V_D$			25°C		1		V
				O.T.		1.10	1.30	
						1.20	1.45	
Current Limit	$I_{CL}$			O.T.	7.5	9.5		A
Quiescent Current Fixed Voltage Version	$I_Q$	5V		O.T.		12	14	mA
Temperature Coefficient	$T_C$			O.T.		0.005		%/°C

**POWER MANAGEMENT**
**Electrical Characteristics (Cont.)**

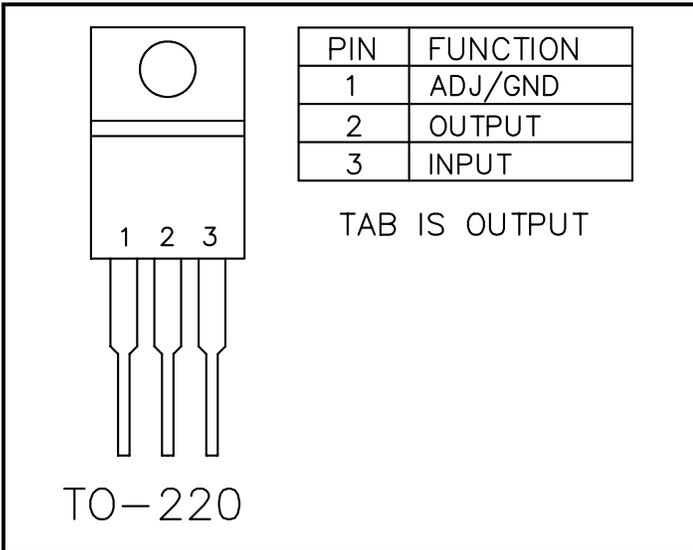
Parameter	Symbol	V <sub>IN</sub>	I <sub>O</sub>	T <sub>J</sub> <sup>(4)</sup>	Min	Typ	Max	Units
Adjust Pin Current	I <sub>ADJ</sub>			25°C		55		μA
				O.T.			90	
Adjust Pin Current Change	ΔI <sub>ADJ</sub>			O.T.		0.2	5	μA
Temperature Stability	T <sub>S</sub>	5V	0.5A	O.T.		0.5		%
Minimum Load Current Adj Voltage Version	I <sub>O</sub>	5V		O.T.		5	10	mA
RMS Output Noise <sup>(3)</sup>	V <sub>N</sub>			25°C		0.003		%V <sub>O</sub>
Ripple Rejection Ratio <sup>(4)</sup>	R <sub>A</sub>	5V	7.5A	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<sub>ADJ</sub> for ADJ = 25μF).
- (5) Over Temp. (O.T.) = over specified operating junction temperature range.

**POWER MANAGEMENT**

**Pin Configuration**



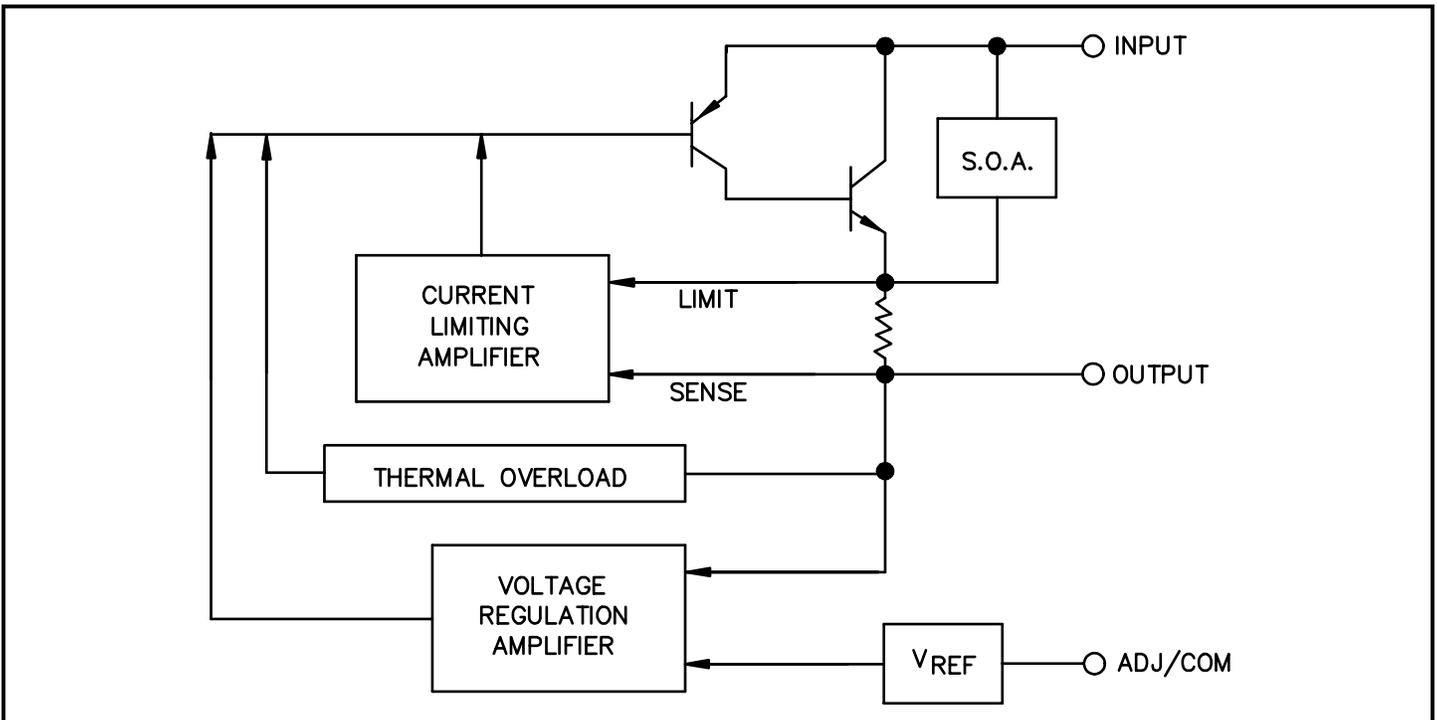
**Ordering Information**

Device	Package <sup>(3)</sup>	V <sub>OUT</sub> Volts <sup>(2)</sup>
EZ1083CT-X.X <sup>(1)</sup>	TO-220	Fixed and Adjustable
EZ1083BCT	TO-220	Adjustable Only

**Note:**

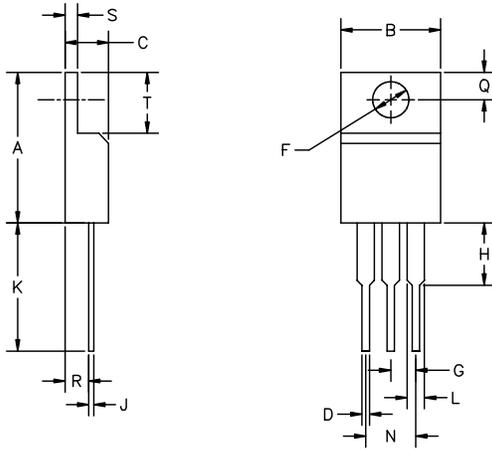
- (1) Where X.X denotes voltage options. Available voltages are: 1.5V, 2.5V and 3.3V. Leave blank for adjustable version. Contact factory for additional voltage options.
- (2) Adjustable versions: output adjusts from 1.3V to 5.7V.
- (3) Only available in tube packaging. A tube contains 50 devices.

**Block Diagram**



**POWER MANAGEMENT**

**Outline Drawing - TO-220**



DIM <sup>N</sup>	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	.560	.650	14.23	16.51	
B	.380	.420	9.66	10.66	
C	.140	.190	3.56	4.82	
D	.020	.045	0.51	1.14	
F	.139	.161	3.54	4.08	
G	.090	.110	2.29	2.79	
H	—	.250	—	6.35	
J	.012	.045	.31	1.14	
K	.500	.580	12.70	14.73	
L	.045	.070	1.15	1.77	
N	.190	.210	4.83	5.33	
Q	.100	.135	2.54	3.42	
R	.080	.115	2.04	2.92	
S	.020	.055	.51	1.39	
T	.230	.270	5.85	6.85	

JEDEC TO-220

**Contact Information**

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