EZ1588
2.0A Low Dropout Positive Voltage Regulators

Description

The EZ1588 is a high performance positive voltage regulator designed for use in applications requiring low dropout performance at 2A. Additionally, the EZ1588 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 EZ1588 series are three terminal regulators with fixed and adjustable voltage options available in popular packages.

Features

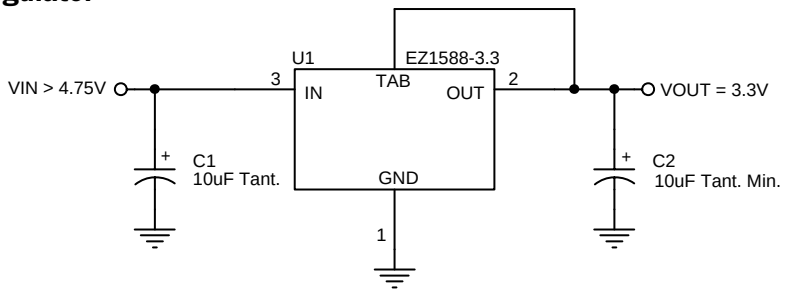
- Low dropout performance: 1.3V max.
- Full current rating over line and temperature
- Fast transient response
- ±2% total output regulation over line, load and temperature
- Adjust pin current max. 90µA over temperature
- Fixed/adjustable output voltage
- Line regulation typically 0.005%
- Load regulation typically 0.05%
- TO-220 or TO-263 packages

Applications

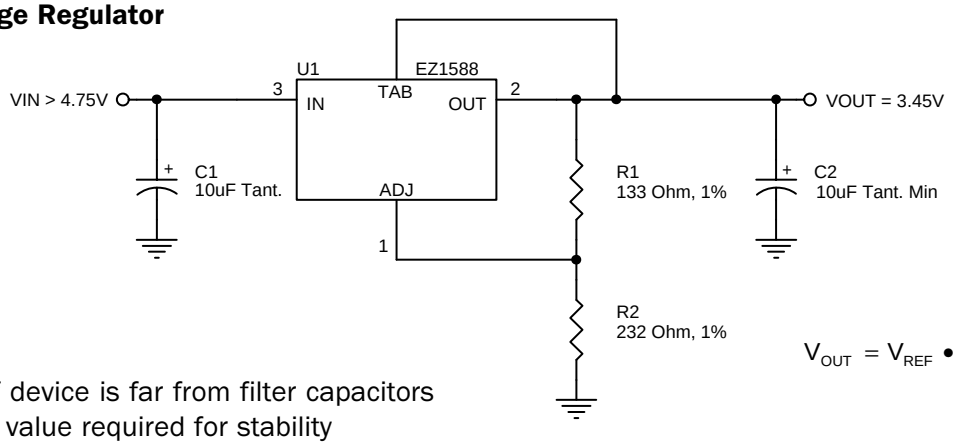
- Memory supplies
- Graphics core supplies
- 2.5V to 3.6V microprocessor supplies
- Low voltage logic supplies
- Battery-powered circuitry
- Post regulator for switching supply

Typical Application Circuit

Fixed Voltage Regulator



Adjustable Voltage Regulator



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

Notes:

(1) C1 needed if device is far from filter capacitors

(2) C2 minimum value required for stability

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	°C/W
Thermal Resistance Junction to Ambient TO-220 TO-263	θ_{JA}	 50 60	°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
ESD Rating (Human Body Model)	V_{ESD}	2	kV

Electrical Characteristics

Unless otherwise specified: Adj. V_{IN} = 2.75 to 7.0V and Adj. I_O = 10mA to 2.0A; Fixed V_{IN} = 4.75 to 7.0V and Fixed I_O = 0mA to 2.0A

Parameter	Symbol	V_{IN}	I_O	T_J (4)	Min	Typ	Max	Units
Output Voltage (1)	V_O	5V	0mA	25°C	0.99V_O	V_O	1.01V_O	V
Fixed Voltage Version				O.T.	0.98V_O	V_O	1.02V_O	
Reference Voltage (1)	V_{REF}	5V	10mA	25°C	1.238	1.250	1.262	V
Adj. Voltage Version				O.T.	1.225	1.250	1.275	
Line Regulation (1)	$REG_{(LINE)}$			25°C		0.005	0.2	%
Fixed Voltage Version			0mA	O.T.		0.035	0.2	
Adj. Voltage Version			10mA					
Load Regulation (1)	$REG_{(LOAD)}$	5V		25°C		0.05	0.3	%
				O.T.		0.2	0.4	
Dropout Voltage (2)	V_D			25°C		1		V
				O.T.		1.1	1.3	
Current Limit	I_{CL}			O.T.	2.0	2.5		A
Quiescent Current Fixed Voltage Version	I_Q	5V		O.T.		10	13	mA
Termperature Coefficient	T_C			O.T.		0.004	0.02	%/°C

Electrical Characteristics (Cont.)

Unless otherwise specified: Adj. V_{IN} = 2.75 to 7.0V and Adj. I_O = 10mA to 2.0A; Fixed V_{IN} = 4.75 to 7.0V and Fixed I_O = 0mA to 2.0A

Parameter	Symbol	V_{IN}	I_O	T_J(4)	Min	Typ	Max	Units
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	2.0A	O.T.	60	72		dB

Notes:

(1) Low duty cycle pulse testing with Kelvin connections required.

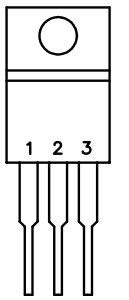
(2) ΔV_{OUT}, ΔV_{REF} = 1%

(3) Bandwidth of 10 Hz to 10 kHz.

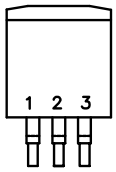
(4) 120 Hz input ripple, (C_{ADJ} for ADJ = 25µF).

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

Pin Configuration



TO–220



TO–263

PIN	FUNCTION
1	ADJ/GND
2	OUTPUT
3	INPUT

TAB IS OUTPUT

Ordering Information

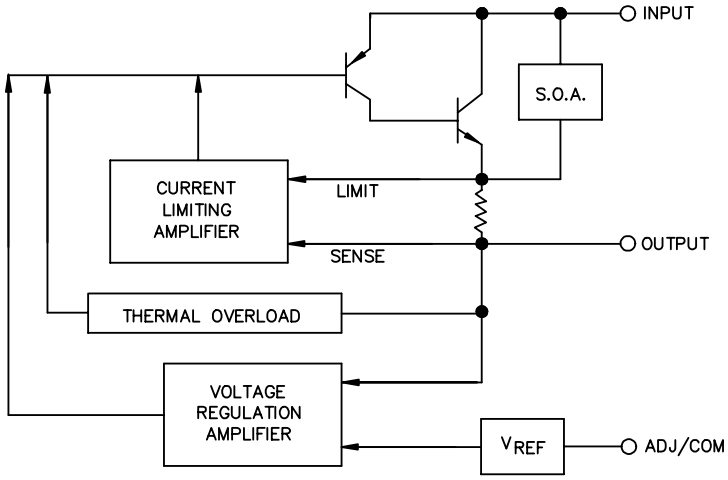
Device(1)	Package
EZ1588CT-X.X	TO-220
EZ1588CM-X.X.TR	TO-263(2)

Notes:

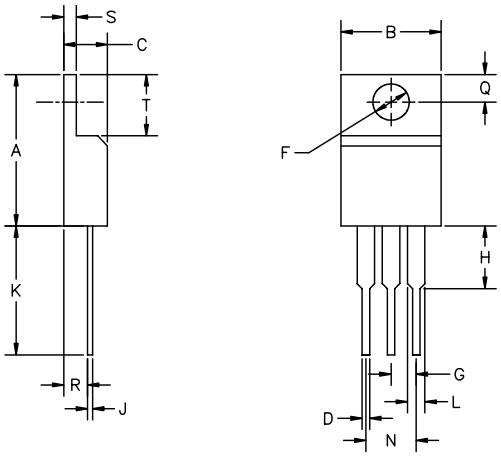
(1) Where X.X denotes voltage options. Available voltages are: 3.3V. Leave blank for adjustable version (1.3 to 5.7V). Contact factory for additional voltage options.

(2) Only available in tape and reel packaging. A reel contains 800 devices.

Block Diagram



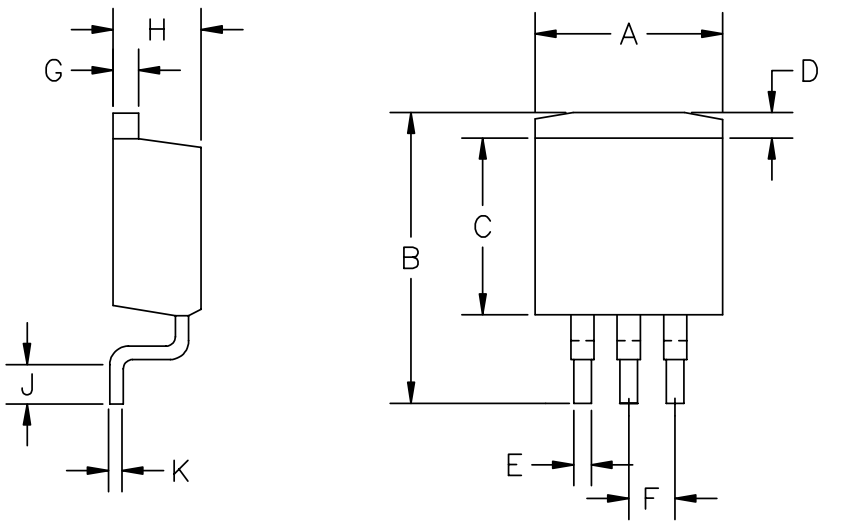
Outline Drawing - TO-220



DIMENSIONS					
DIM	INCHES		MM		NOTE
	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

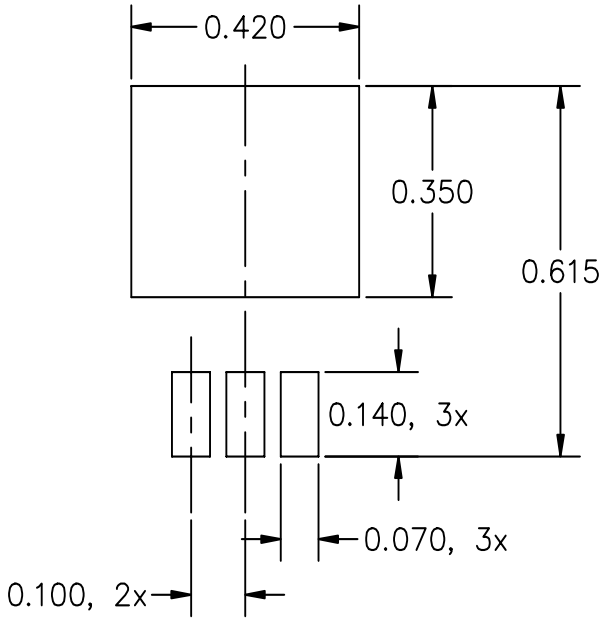
Outline Drawing - TO-263



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.380	.405	9.65	10.29	—
B	.575	.625	14.60	15.88	—
C	.325	.340	8.25	8.64	—
D	.055	.066	1.40	1.68	—
E	.020	.039	.50	.99	—
F	.100 BSC		2.54 BSC		—
G	.045	.055	1.14	1.40	—
H	.160	.190	4.06	4.83	—
J	.090	.110	2.28	2.80	—
K	.018	.029	.457	.736	—

JEDEC TO-263

Land Pattern - TO-263



NOTE: ALL DIMENSIONS ARE IN INCHES

Contact Information

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