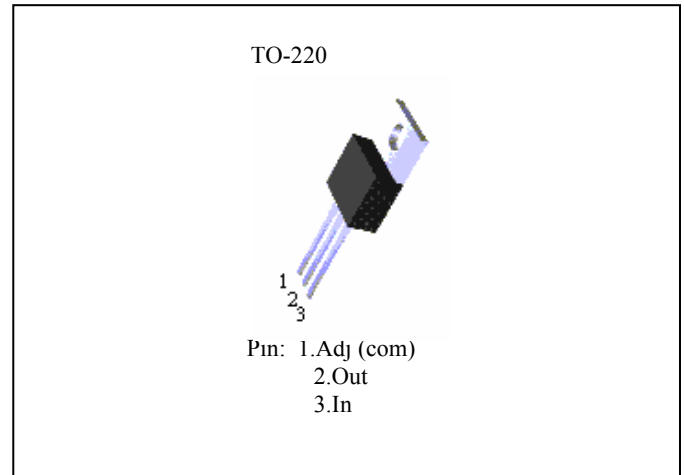


## 7.5 Amp Low Dropout Positive Voltage Regulator

The PJ1083 Series of high performance positive voltage regulators are designed for applications requiring low dropout performance at full rated current. Additionally, the PJ1083 Series provide excellent regulation over variations due to changes 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 PJ1083 Series are three terminal regulators with fixed and adjustable voltage options available in popular packages.



### FEATURES

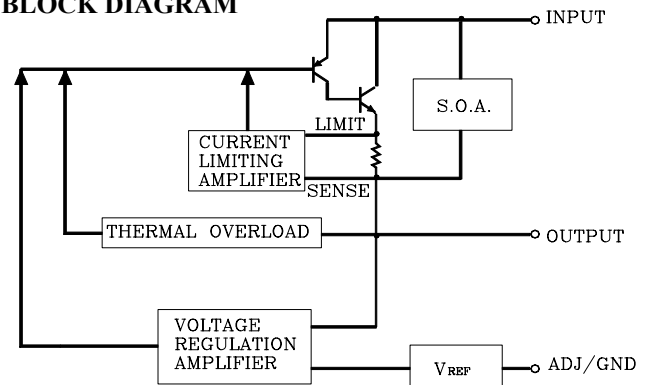
- Full current rating over line and temperature
- Fast transient response
- Total output regulation  $\pm 2\%$  over line, load and temperature
- Adjust pin current max  $120 \mu A$  over temperature
- Line regulation typical 0.015%.
- Load regulation typical 0.05%.
- Fixed/adjustable output voltage
- TO-220 package

### ORDERING INFORMATION

Device	Operating Temperature (Ambient)	Package
PJ1083CZ PJ1083CZ-2.5 PJ1083CZ-3.3	-20°C ~ +85°C	TO-220

NOTE: Contact factory for additional voltage option.

### BLOCK DIAGRAM



### ABSOLUTE MAXIMUM RATING

Parameter	Symbol	Maximum	Units
Input Voltage	$V_{IN}$	7	V
Power Dissipation	$P_D$	Internally Limited	W
Thermal Resistance Junction to Case	$\theta_{JC}$	2	°C/W
Thermal Resistance Junction to Ambient	$\theta_{JA}$	50	
Operating Junction Temperature Range	$T_J$	0 to 125	°C
Operating Ambient Temperature Range	$T_A$	-20 to +85	
Storage Temperature Range	$T_{STG}$	-65 to 150	
Lead Temperature (Soldering) 10 Sec.	$T_{LEAD}$	260	

## 7.5 Amp Low Dropout Positive Voltage Regulator

### ELECTRICAL CHARACTERISTICS

Unless otherwise specified, Adjust  $V_{IN} = 2.75V$  to  $12V$  and Adjust  $I_o = 10mA$  to  $7.5A$

Fixed  $V_{IN} = 4.75V$  to  $12V$  and Fixed  $I_o = 10mA$  to  $7.5A$

Parameter	Symbol	Test Conditions			Test Limits			Units
		$V_{IN} - V_{OUT}$	$I_o$	$T_J^{(4)}$	Min	Typ	Max	
Output Voltage <sup>(1)</sup>	$V_o$	5V	10mA	25	0.99 V <sub>o</sub>	$V_o$	1.01 V <sub>o</sub>	V
Fixed Voltage				Over Temp.	0.98 V <sub>o</sub>		1.02 V <sub>o</sub>	
Reference Voltage <sup>(1)</sup>	$V_{REF}$	5V	10mA	25	1.238	1.250	1.262	V
Adj Voltage				Over Temp.	1.225		1.275	
Line Regulation <sup>(1)</sup> ( $V_{in} - V_{out} = 3V$ )	$REG_{(LINE)}$		10mA	25		0.015	0.2	%
				Over Temp.				
Load Regulation <sup>(1)</sup> ( $V_{in} - V_{out} = 3V$ )	$REG_{(LOAD)}$			25		0.05	0.3	%
				Over Temp.				
Dropout Voltage $\Delta V_{REF} = 1\%$	$V_D$			25		1	1.3	V
				Over Temp.				
Current Limit ( $V_{in} - V_{out} = 5V$ )	$I_{CL}$				8.5	9.5		A
Quiescent Current Fixed Model	$I_Q$	5V				12	14	mA
Temperature Coefficient	$T_c$					0.005		%/°C
Adjust Pin Current	$I_{ADJ}$			25		55	120	$\mu A$
Adjust Pin Current Change				$\Delta I_{ADJ}$				
Temperature Stability	$T_s$	5V	500mA	Over Temp.		0.5		%
Minimum Load Current Adjust Model	$I_o$	5V				5	10	mA
RMS Output Noise <sup>(2)</sup>	$V_N$			25		0.003		%V <sub>o</sub>
Ripple Rejection Ratio <sup>(3)</sup>	$R_A$	5V	7.5A	Over Temp.	60	72		dB

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

(2)Bandwidth of 10Hz to 10KHz.

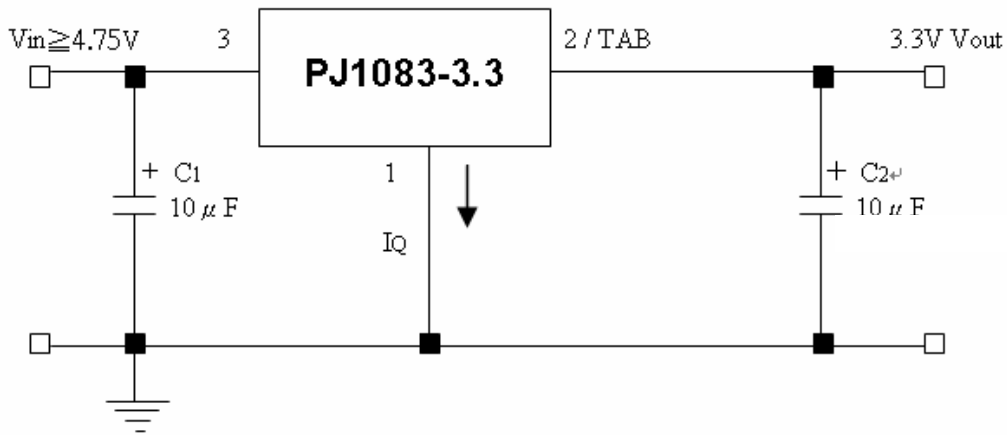
(3)120Hz input ripple ( $C_{ADJ}$  for ADJ)=25  $\mu F$  .

(4)Over Temp.-over specified operating junction temperature range.

7.5 Amp Low Dropout Positive Voltage Regulator

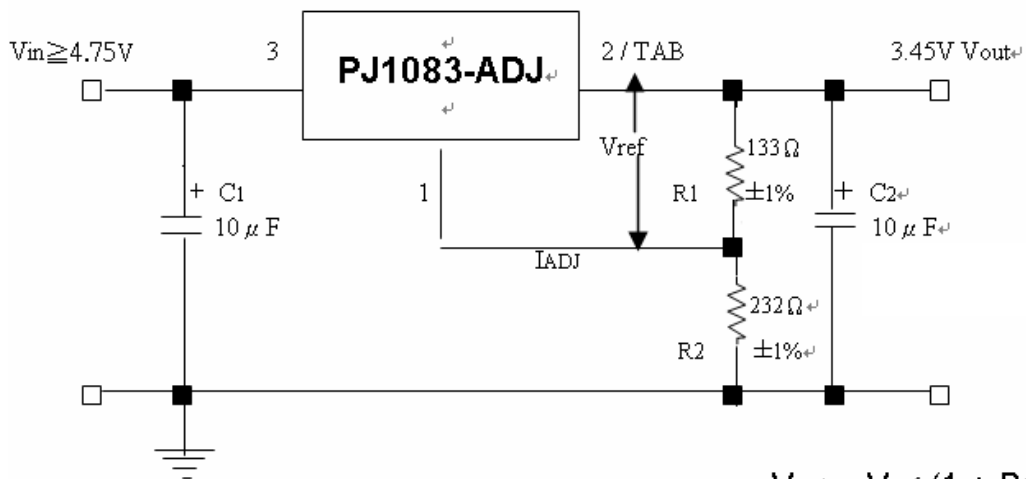
Typical Application Circuit

FIXED VOLTAGE REGULATOR (1)(2)



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

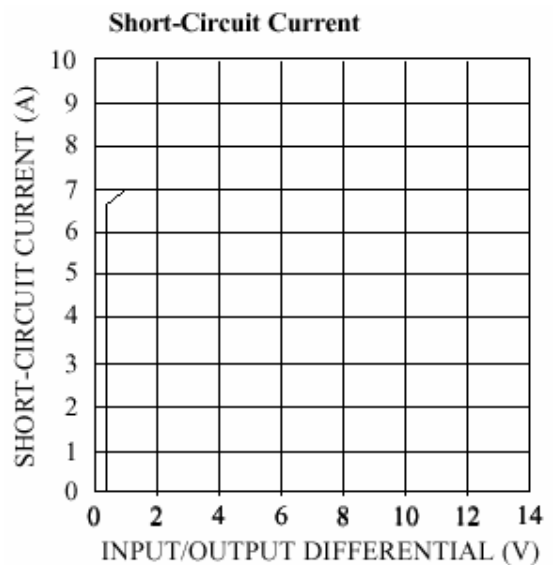
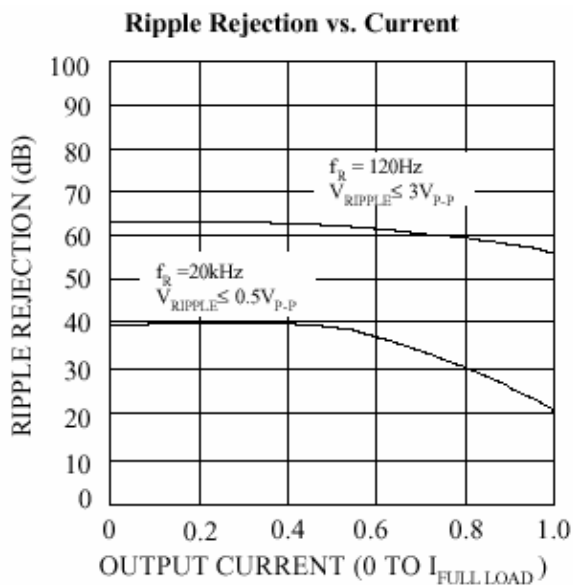
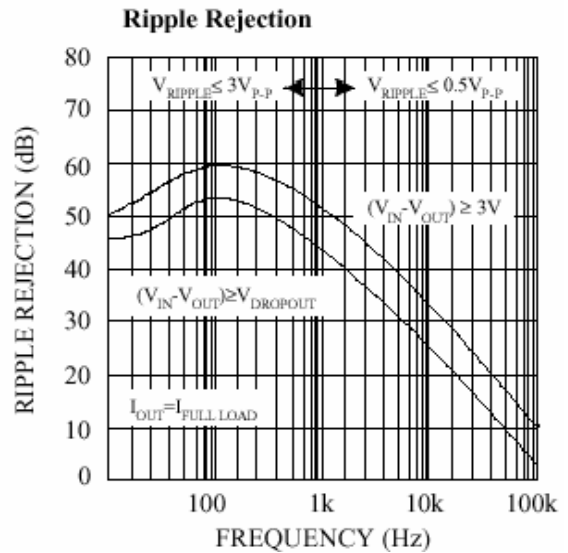
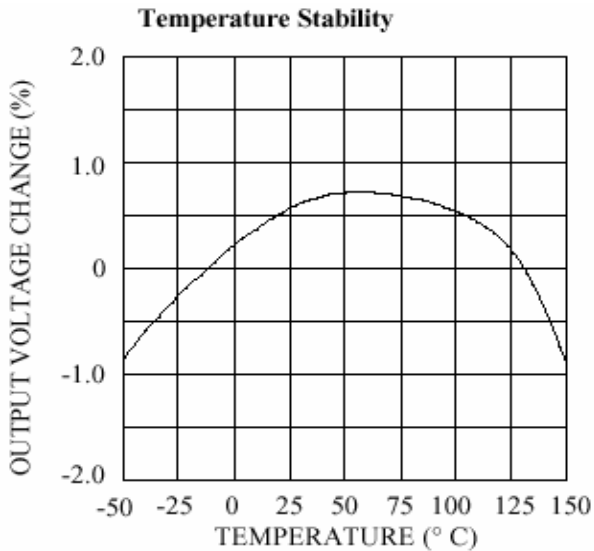
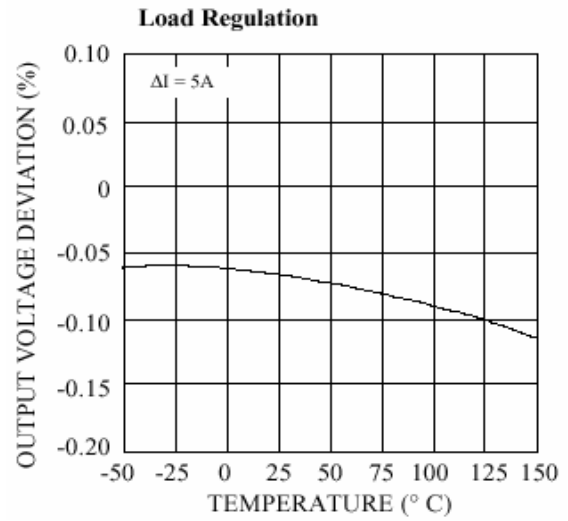
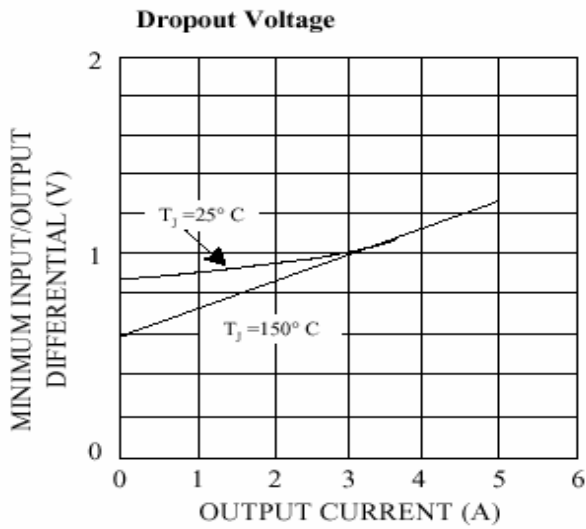
ADJUSTABLE VOLTAGE REGULATOR (1)(2)



$$V_{out} = V_{ref} (1 + R2/R1) + I_{adj}R2$$

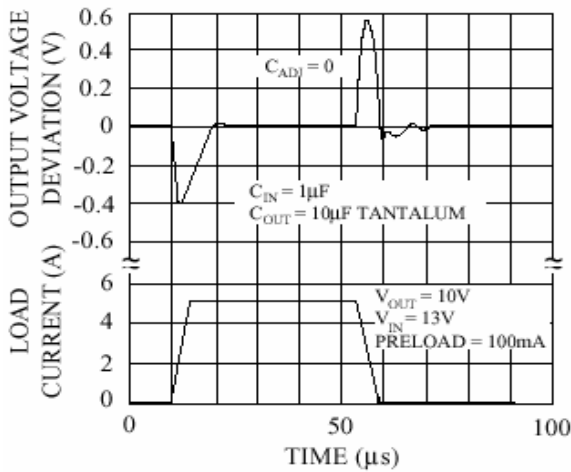
- (1) C1 NEEDED IF DEVICE IS FAR FROM FILTER CAPACITORS
- (2) C2 REQUIRED FOR STABILITY

## 7.5 Amp Low Dropout Positive Voltage Regulator

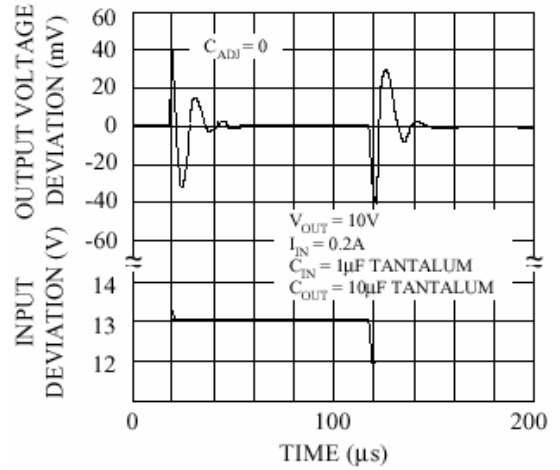


## 7.5 Amp Low Dropout Positive Voltage Regulator

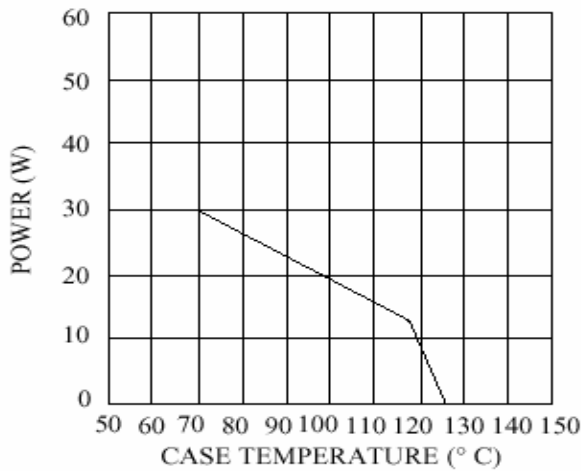
**Load Transient Response**



**Line Transient Response**

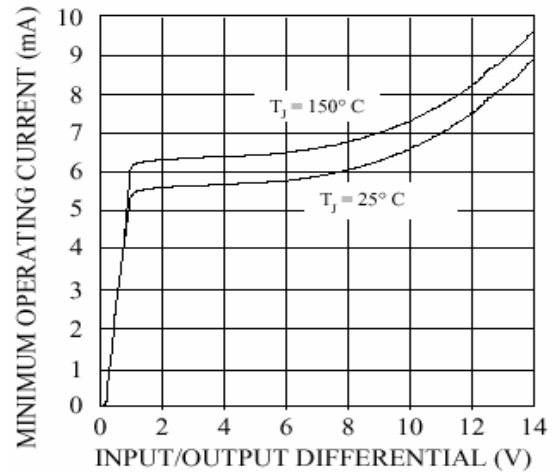


**Maximum Power Dissipation\***

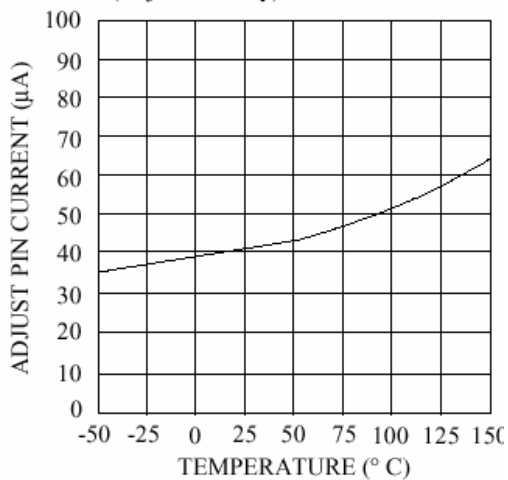


\*AS LIMITED BY MAXIMUM JUNCTION TEMPERATURE

**Minimum Operating Current (Adjustable only)**



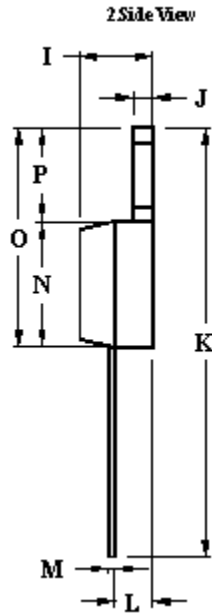
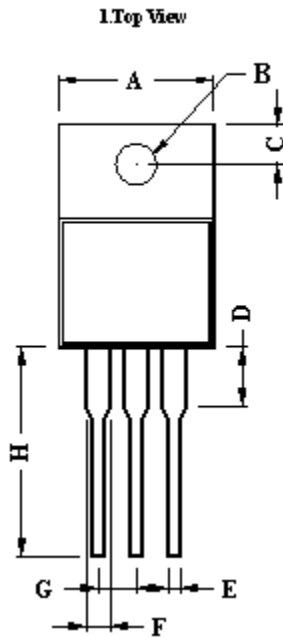
**Adjust Pin Current (Adjustable only)**



7.5 Amp Low Dropout Positive Voltage Regulator

TO-220 Mechanical drawing

TO-220 Unit:mm



TO-220 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	10.00	10.50	0.394	0.413
B	3.24	4.44	0.128	0.175
C	2.44	2.94	0.096	0.116
D	3.565	4.315	0.140	0.170
E	0.68	0.92	0.027	0.036
F	1.115	1.485	0.044	0.058
G	2.345	2.715	0.092	0.107
H	13.49	14.31	0.531	0.563
I	4.475	5.225	0.176	0.206
J	1.15	1.39	0.045	0.055
K	27.78	29.62	1.094	1.166
L	2.175	2.925	0.086	0.115
M	0.297	0.477	0.012	0.019
N	8.28	8.80	0.326	0.346
O	14.29	15.31	0.563	0.603
P	6.01	6.51	0.237	0.256