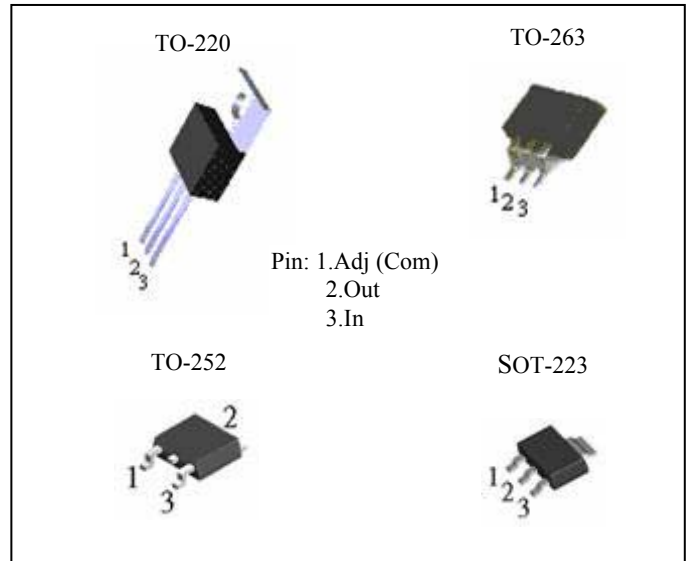


# 1 Amp Low Dropout Positive Voltage Regulator

The PJ1117 Series are high performance positive voltage regulators designed for use in applications requiring low dropout performance at full rated current. Additionally, the PJ1117 Series provides excellent regulation over variations due to changes in line, load and temperature. Outstanding features include low dropout performance at rated current, fast transient response. The PJ1117 Series are three terminal regulators with fixed and adjustable voltage options available in popular packages.

## FEATURES

- Low dropout performance 1.1 V(typ.).
- Full current rating over line and temperature
- Fast transient response
- $\pm 2\%$  Total output regulation over line, load and temperature
- Adjust pin current max 120 $\mu$  A over temperature
- Line regulation typical 0.1%.
- Load regulation typical 0.6%.
- Fixed/adjustable output voltage
- TO-220, TO-263, TO-252& SOT-223 package

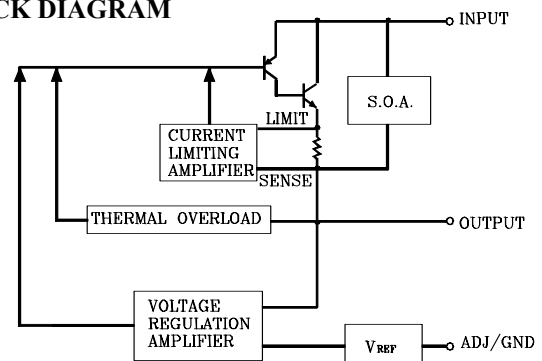


## ORDERING INFORMATION

Device	Operating Temperature	Package
PJ1117CZ-xx	-20 to +85°C	TO-220
PJ1117CM-xx		TO-263
PJ1117CW-xx		SOT-223
PJ1117CP-xx		TO-252

Note: xx is output voltage available for Adj/1.5V/1.8V/2.5V/2.85V/3.3V/5.0V  
Contact factory for additional voltage option.

## BLOCK DIAGRAM



## ABSOLUTE MAXIMUM RATING

Parameter	Symbol	Maximum	Units
Input Voltage	V <sub>IN</sub>	7	V
Power Dissipation	P <sub>D</sub>	Internally Limited	W
Thermal Resistance Junction to Case	$\theta_{JC}$	2.5	°C / W
Thermal Resistance Junction to Ambient	$\theta_{JA}$	50	
Operating Junction Temperature Range	T <sub>J</sub>	0 to 125	
Storage Temperature Range	T <sub>STG</sub>	-65 to 150	°C
Lead Temperature (Soldering) 10 Sec.	T <sub>LEAD</sub>	260	

# 1 Amp Low Dropout Positive Voltage Regulator

## ELECTRICAL CHARACTERISTICS

Electrical characteristics at  $I_{OUT}=10\text{mA}$ , and  $T_J=+25^\circ\text{C}$ ; unless otherwise noted

Parameter	Symbol	Test Conditions	Test Limits			Units
			Min	Typ	Max	
Reference Voltage	$V_{REF}$	$I_{OUT}=10\text{mA}, V_{IN}=5\text{V}$	1.238	1.250	1.262	V
Output Voltage	$V_O$	$10\text{mA} \leq I_{OUT} \leq 1\text{A}, 3.2\text{V} \leq V_{IN} \leq 7\text{V}$	1.764	1.800	1.836	V
		$10\text{mA} \leq I_{OUT} \leq 1\text{A}, 4.25\text{V} \leq V_{IN} \leq 7\text{V}$	2.450	2.500	2.550	V
		$10\text{mA} \leq I_{OUT} \leq 1\text{A}, 4.75\text{V} \leq V_{IN} \leq 7\text{V}$	3.234	3.300	3.366	V
		$10\text{mA} \leq I_{OUT} \leq 1\text{A}, 6.50\text{V} \leq V_{IN} \leq 7\text{V}$	4.900	5.000	5.100	V
Line Regulation	$REG_{(LINE)}$	$I_{OUT}=10\text{mA}, 1.5\text{V} \leq V_{IN} \leq 7\text{V}$		0.04	0.20	%
		$I_{OUT}=10\text{mA}, 1.5\text{V} \leq V_{IN} \leq 7\text{V}$		1.0	6.0	mV
Load Regulation	$REG_{(LOAD)}$	$10\text{mA} \leq I_{OUT} \leq 1\text{A}, V_{IN} - V_{OUT}=3\text{V}$		0.10	0.30	%
		$10\text{mA} \leq I_{OUT} \leq 1\text{A}, V_{IN} = V_{OUT} + 1.5\text{V}$		1.0	10.0	mV
Dropout Voltage ( $V_{IN} - V_{OUT}$ )	$V_D$	$I_{OUT}=10\text{mA}$		1		V
		$I_{OUT}=1\text{A}$		1.1	1.30	
Current Limit	$I_{CL}$	$(V_{IN} - V_{OUT})=3\text{V}$	1	1.1		A
Minimum Load Current (Note 1)	$I_O$	$V_{IN} \leq 7\text{V}$		5	14	mA
Quiescent Current	$I_Q$	$V_{IN} \leq 7\text{V}$		12	14	mA
Ripple Rejection (Note 2)	$R_A$	$f_o = 120\text{Hz}, 1V_{RMS}, I_{OUT}=400\text{mA},$ $(V_{IN} - V_{OUT})=3\text{V}$	60	75		dB
Thermal Regulation (Note 2)	-	$T_A=25^\circ\text{C}, 30\text{ms pulse}$		0.01	0.1	%W
Adjust Pin Current	$I_{ADJ}$	$I_{OUT}=10\text{mA}, V_{IN} - V_{OUT}=2\text{V}$		50	20	$\mu\text{A}$

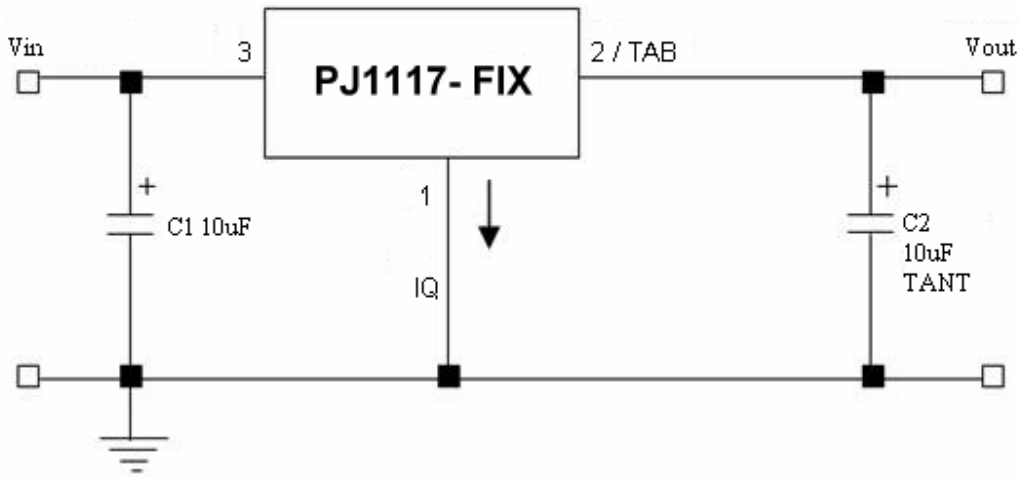
**Note 1 :** For the adjustable device, the minimum load current is the minimum current required to maintain regulation. Normally the current in the resistor divider used to set the output voltage is selected to meet the minimum load current requirement.

**Note 2 :** These parameters, although guaranteed, are not tested in production.

# 1 Amp Low Dropout Positive Voltage Regulator

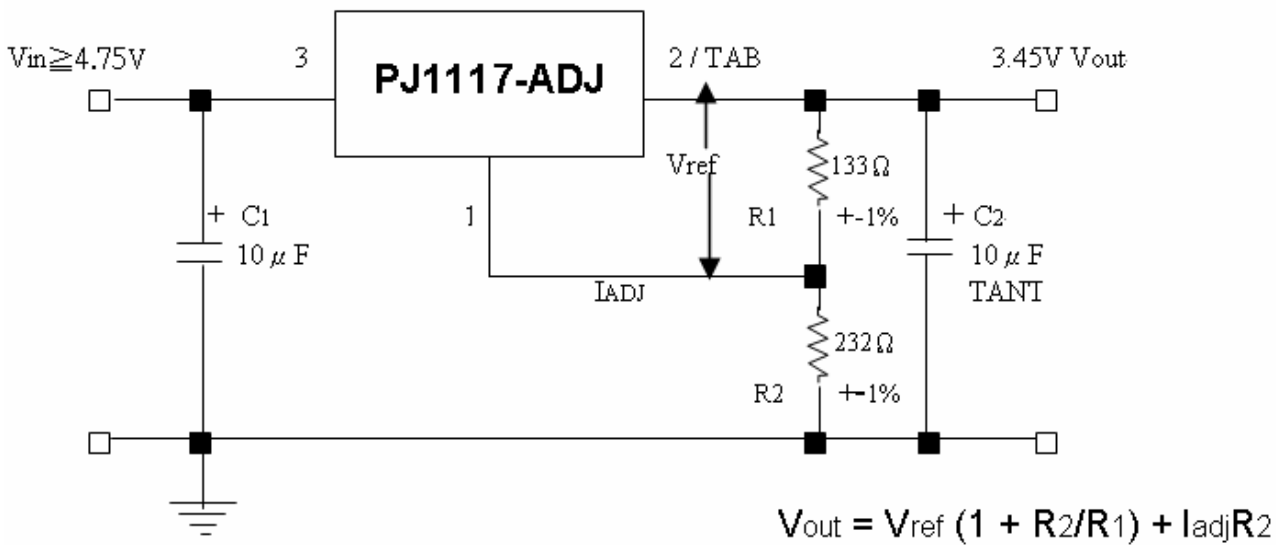
**ELECTRICAL CHARACTERISTICS**

## FIXED VOLTAGE REGULATOR<sup>(1)(2)</sup>



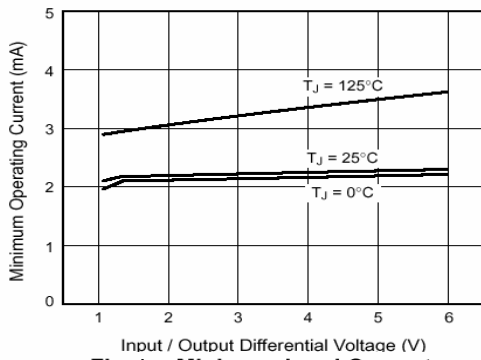
- (1) C1 NEEDED IF DEVICE IS FAR FROM FILTER CAPACITORS
- (2) C2 REQUIRED FOR STABILITY

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

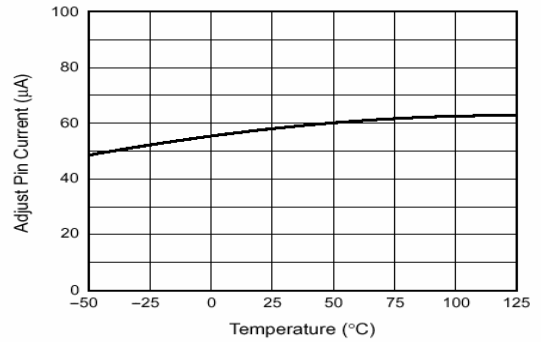


- (1) C1 NEEDED IF DEVICE IS FAR FROM FILTER CAPACITORS
- (2) C2 REQUIRED FOR STABILITY

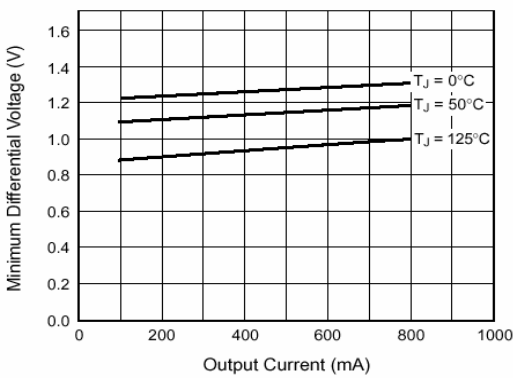
# 1 Amp Low Dropout Positive Voltage Regulator



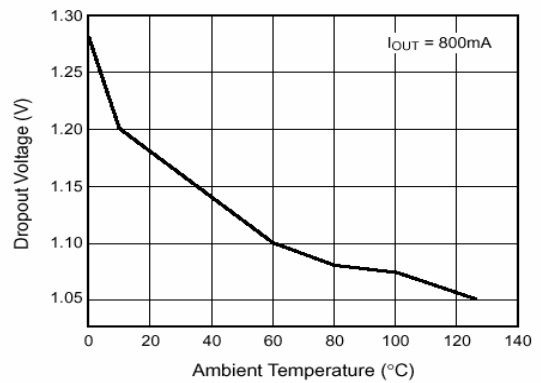
**Fig. 1 – Minimum Load Current (Adjustable Version)**



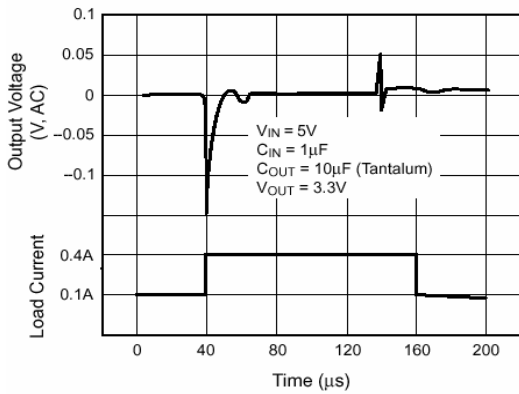
**Fig. 2 – Adjust Pin Current**



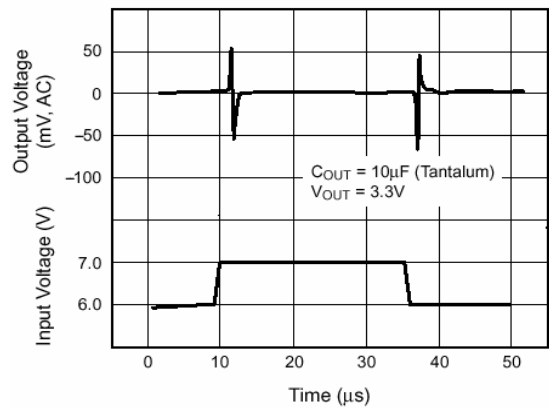
**Fig. 3 – Dropout Voltage**



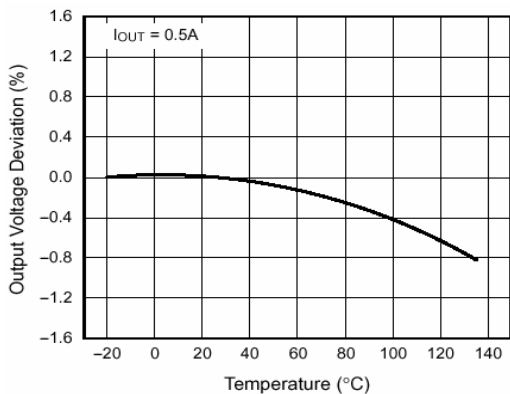
**Fig. 4 – Dropout Voltage v.s. Temperature**



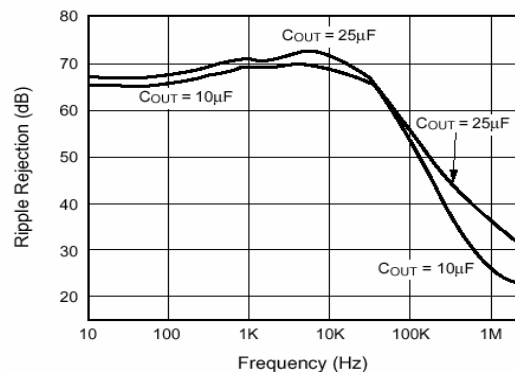
**Fig. 5 – Load Transient Response**



**Fig. 6 – Line Transient Response**



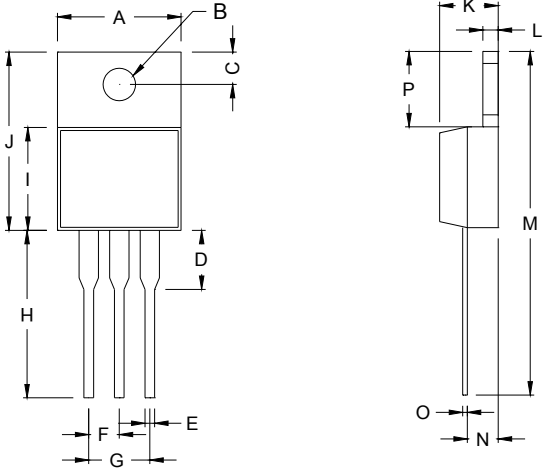
**Fig. 7 – Temperature Stability**



**Fig. 8 – Ripple Rejection (with  $C_{adj}$  25µF)**

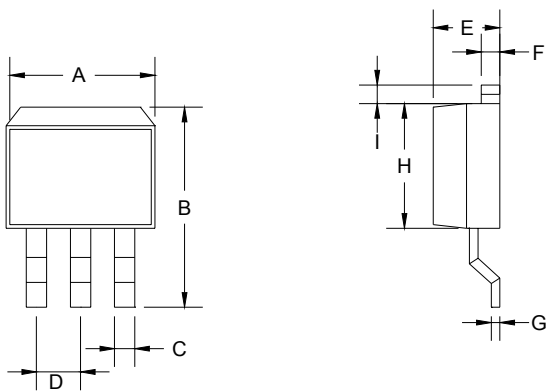
# 1 Amp Low Dropout Positive Voltage Regulator

TO-220 Unit : mm



DIM	TO-220 DIMENSION			
	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	10.000	10.500	0.394	0.413
B	3.240	4.440	0.128	0.175
C	2.440	2.940	0.096	0.116
D	-	6.350	-	0.250
E	0.381	1.106	0.015	0.040
F	2.345	2.715	0.092	0.058
G	4.690	5.430	0.092	0.107
H	12.700	14.732	0.500	0.581
I	8.382	9.017	0.330	0.355
J	14.224	16.510	0.560	0.650
K	3.556	4.826	0.140	0.190
L	0.508	1.397	0.020	0.055
M	27.700	29.620	1.060	1.230
N	2.032	2.921	0.080	0.115
O	0.255	0.610	0.010	0.024
P	5.842	6.858	0.230	0.270

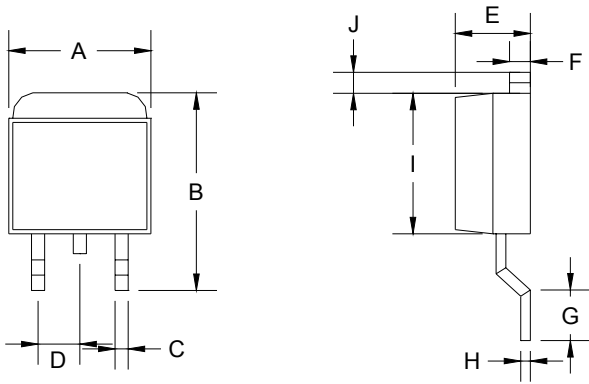
TO-263 Unit : mm



DIM	TO-263 DIMENSION			
	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	10.000	10.500	0.394	0.413
B	14.605	15.875	0.575	0.625
C	0.508	0.991	0.020	0.039
D	2.420	2.660	0.095	0.105
E	4.064	4.830	0.160	0.190
F	1.118	1.400	0.045	0.055
G	0.450	0.730	0.018	0.029
H	8.280	8.800	0.325	0.346
I	1.140	1.400	0.044	0.055
J	1.480	1.520	0.058	0.060

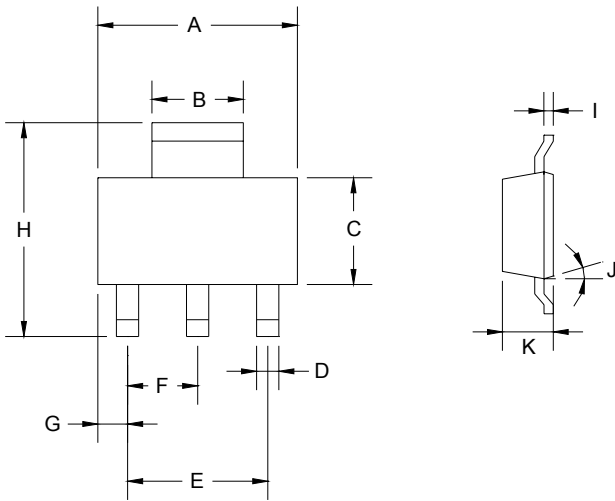
# 1 Amp Low Dropout Positive Voltage Regulator

TO-252 Unit : mm



TO-252 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	6.570	6.840	0.259	0.269
B	9.250	10.400	0.364	0.409
C	0.550	0.700	0.022	0.028
D	2.560	2.670	0.101	0.105
E	2.300	2.390	0.090	0.094
F	0.490	0.570	0.019	0.022
G	1.460	1.580	0.057	0.062
H	0.520	0.570	0.020	0.022
I	5.340	5.550	0.210	0.219
J	1.460	1.640	0.057	0.065

SOT-223 Unit : mm



SOT-223 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	6.350	6.850	0.250	0.270
B	2.900	3.100	0.114	0.122
C	3.450	3.750	0.136	0.148
D	0.595	0.635	0.023	0.025
E	4.550	4.650	0.179	0.183
F	2.250	2.350	0.088	0.093
G	0.835	1.035	0.032	0.041
H	6.700	7.300	0.263	0.287
I	0.250	0.355	0.010	0.014
J	10°	16°	10°	16°
K	1.550	1.800	0.061	0.071