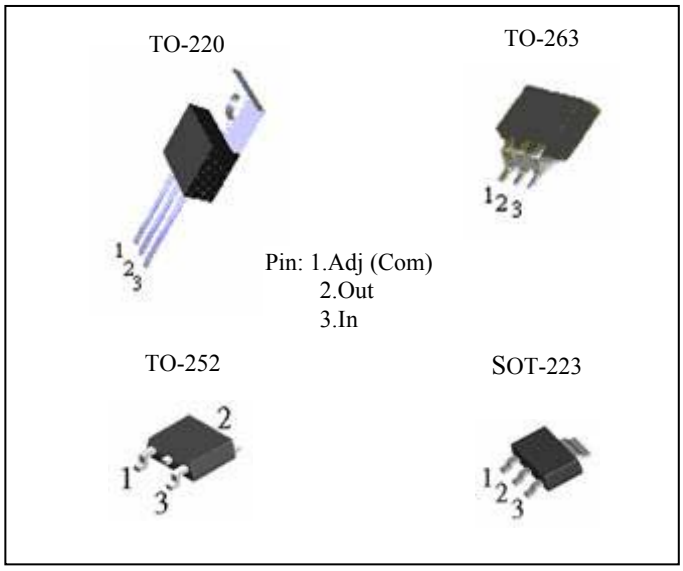
1 Amp Low Dropout Positive Voltage Regulator

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

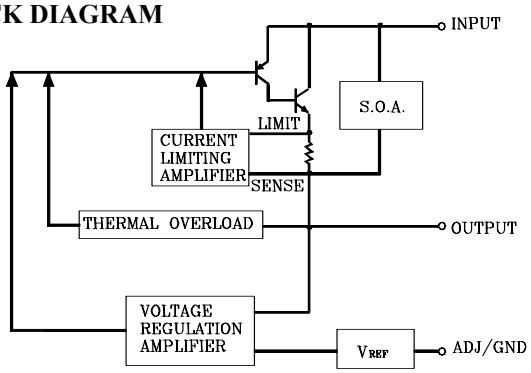
- Low dropout performance 1.1 V(typ.).
- Full current rating over line and temperature
- Fast transient response
- ±2%Total output regulation over line, load and temperature
- Adjust pin current max 120μ A over temperature
- Line regulation typical 0.1%.
- Load regulation typical 0.6%.
- Fixed/adjustable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

ORDERING INFROMATION

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_{IN}	7	V
Power Dissipation	P_D	Internally Limited	W
Thermal Resistance Junction to Case	θ_{JC}	2.5	°C / W
Thermal Resistance Junction to Ambient	θ_{JA}	50	
Operating Junction Temperature Range	T_J	0 to 125	
Storage Temperature Range	T_{STG}	-65 to 150	°C
Lead Temperature (Soldering) 10 Sec.	T_{LEAD}	260	

ELECTRICAL CHARACTERISTICS

Electrical characteristics at I_{OUT}= 10mA, and T_J= +25℃; unless otherwise noted

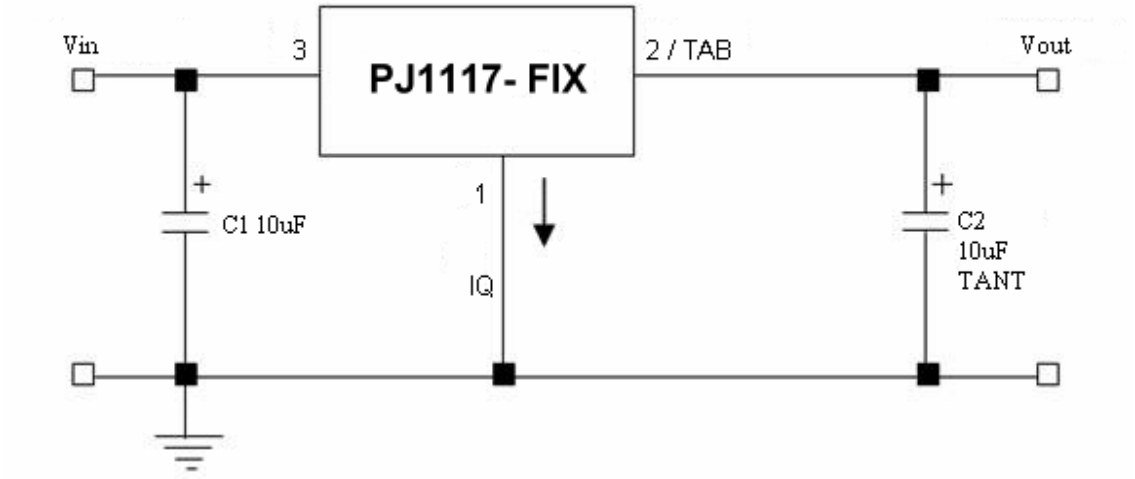
Parameter	Symbol	Test Conditons	Test Limits			Units
			Min	Typ	Max	
Reference Voltage	V_{REF}	I_{OUT}=10mA, V_{IN}=5V	1.238	1.250	1.262	V
Output Voltage	V_O	10mA≤ I_{OUT} ≤1A, 3.2V≤V_{IN} ≤7V	1.764	1.800	1.836	V
		10mA≤ I_{OUT} ≤1A, 4.25V≤V_{IN} ≤7V	2.450	2.500	2.550	V
		10mA≤ I_{OUT} ≤1A, 4.75V≤V_{IN}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

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.

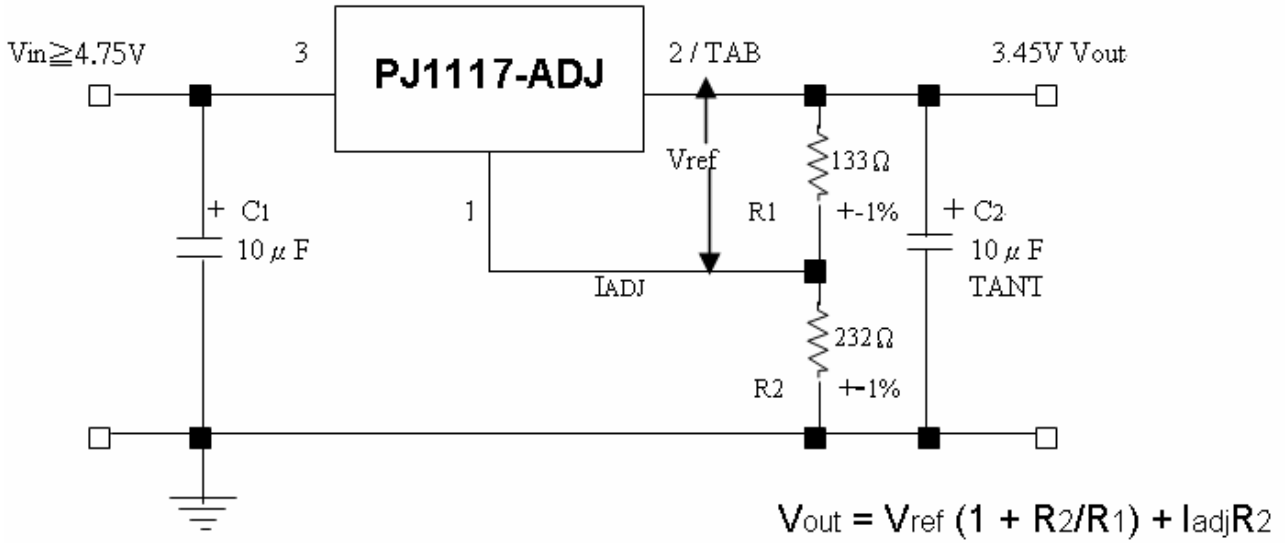
ELECTRICAL CHARACTERISTICS

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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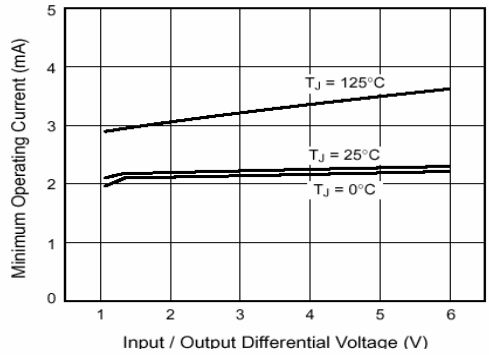


Fig. 1 – Minimum Load Current (Adjustable Version)

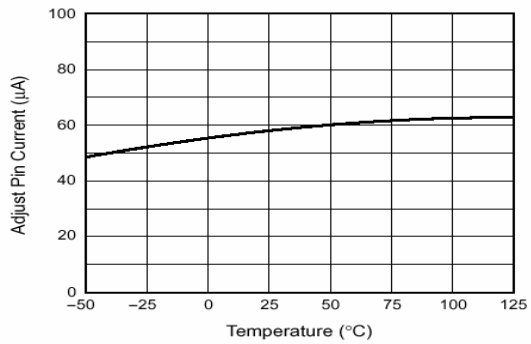


Fig. 2 – Adjust Pin Current

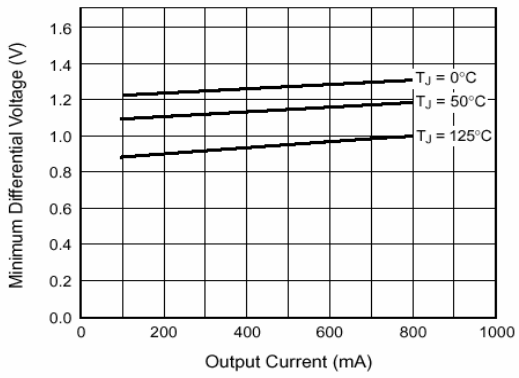


Fig. 3 – Dropout Voltage

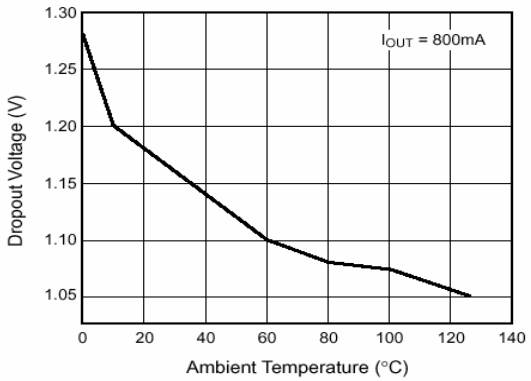


Fig. 4 – Dropout Voltage v.s. Temperature

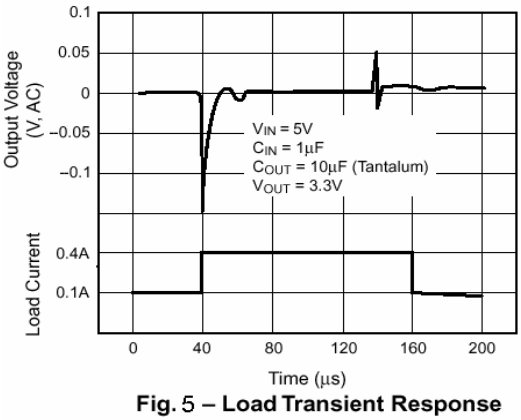


Fig. 5 – Load Transient Response

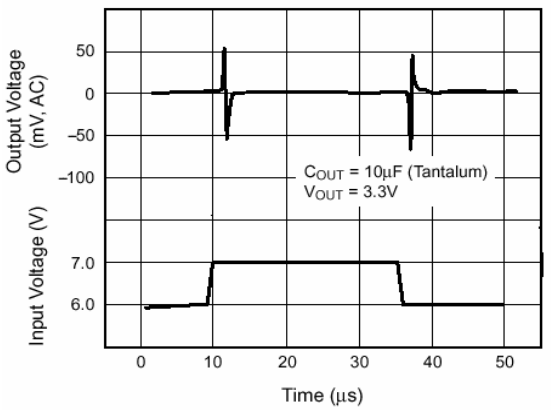


Fig. 6 – Line Transient Response

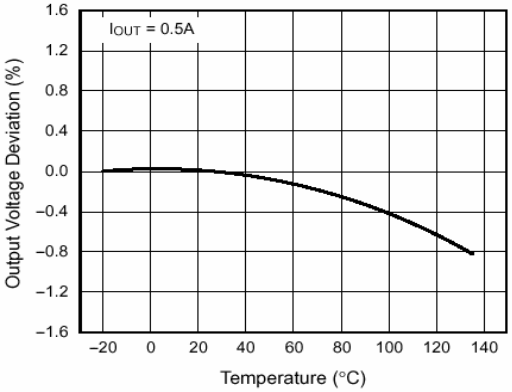


Fig. 7 – Temperature Stability

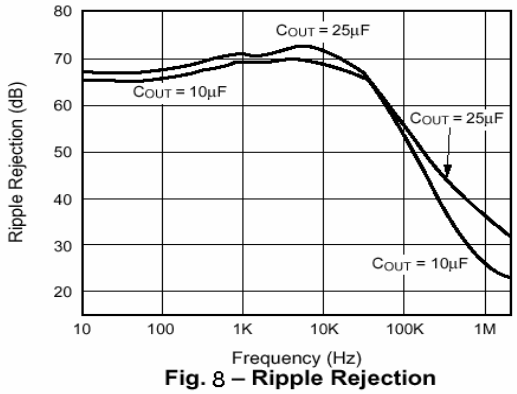
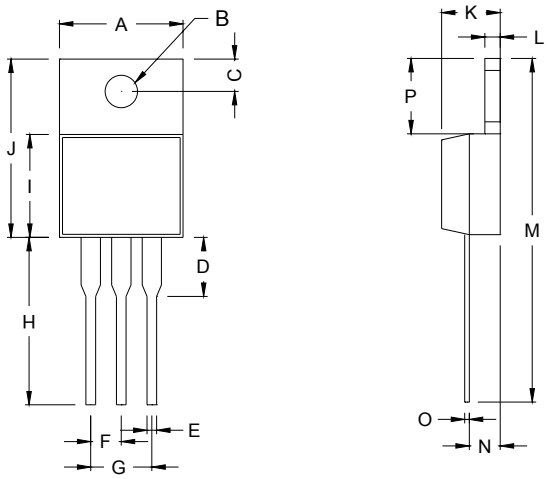


Fig. 8 – Ripple Rejection (with C_{adj} 25µF)

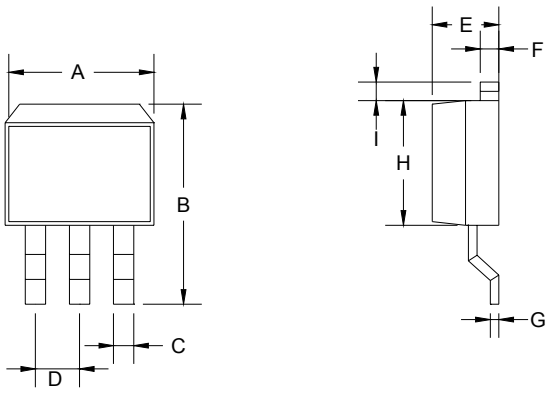
1 Amp Low Dropout Positive Voltage Regulator

TO-220 Unit：mm



TO-220 DIMENSION				
DIM	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



TO-263 DIMENSION				
DIM	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

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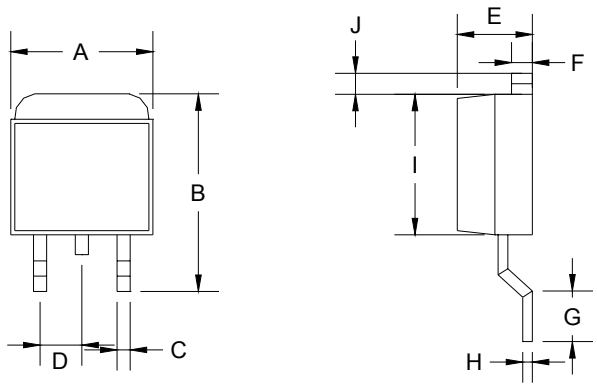
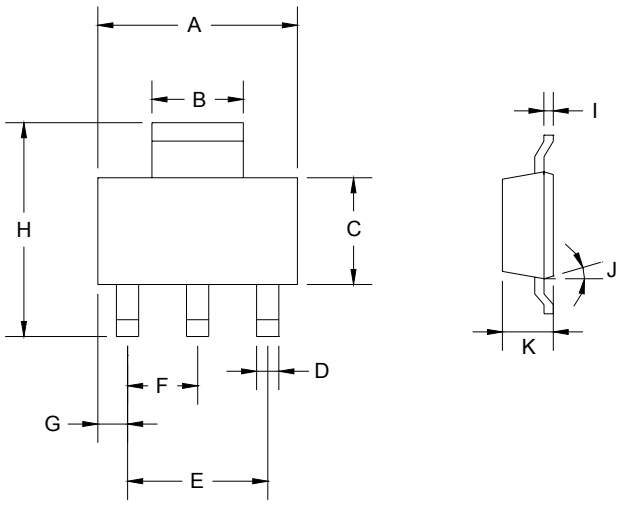
TO-252 Unit：mm



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