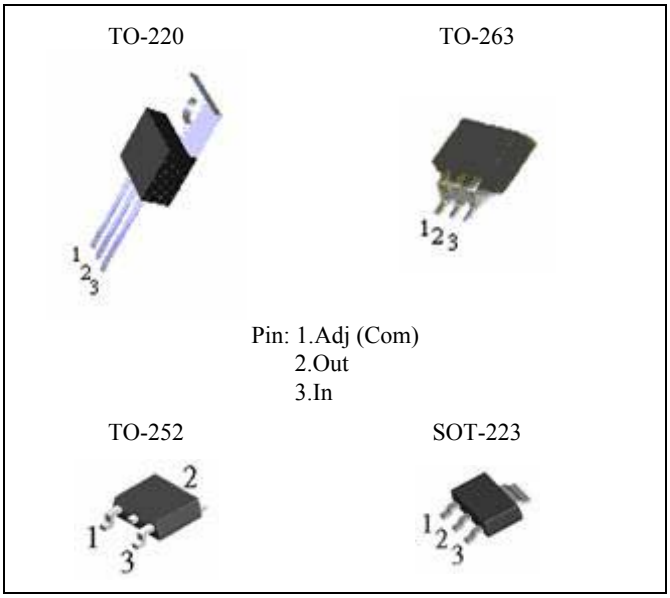
1 Amp Low Dropout Positive Voltage Regulator

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
- 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/1.8V/2.5V/2.85V/3.3V/5.0V
Contact factory for additional voltage option.

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	TO-220	θ_{JC}	2.5	°C / W
	TO-252		5	
	SOT-223		15	
Thermal Resistance Junction to Ambient	TO-220	θ_{JA}	50	
	TO-252		90	
	SOT-223		160	
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	

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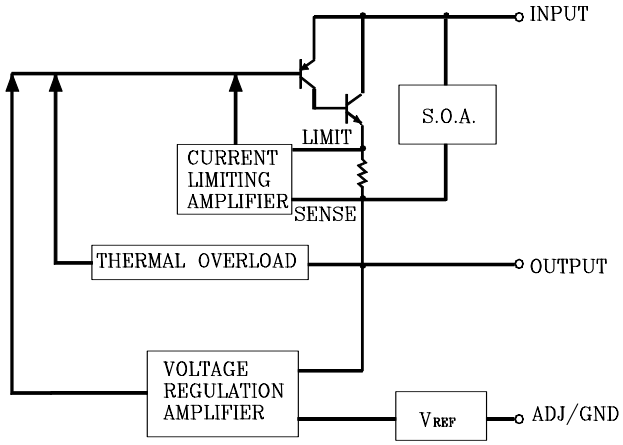
BLOCK DIAGRAM



ELECTRICAL CHARACTERISTICS (Ta=25℃ Cin=10μF, Cout=10μF; unless otherwise specified.)

Parameter	Symbol	Test Conditions	Test Limits			Units
			Min	Typ	Max	
Output Voltage(1) Fixed Voltage	Vo	V_{IN} = 4.75V to 7V, Io = 10mA	0.99|Vo|	Vo	1.01|Vo|	V
		V_{IN} = 4.75V to 7V, Io = 1A	0.98|Vo|		1.02|Vo|	
Reference Voltage(1) Adj Voltage	V_{REF}	V_{IN} = 2.75V to 7V, Io = 10mA	1.238	1.250	1.262	
		V_{IN} = 2.75V to 7V, Io = 1A	1.225		1.275	
Line Regulation(1)	R_{LINE}	V_{IN} = 4.75V to 7V, Io = 10mA	--	1	10	mV
Load Regulation(1)	R_{LOAD}	V_{IN} = 4.75V to 7V, Io = 10mA~1A	--	1	15	mV
Dropout Voltage	V_D	Io = 100mA	--	1	1.10	V
		Io = 500mA	--	1.05	1.15	
		Io = 1A	--	1.15	1.30	
Current Limitx	I_{CL}		1.0	1.1	--	A
Quiescent Current Fixed Model	I_Q	V_{IN} = 4.75V to 7V, Io = 0A	--	12	14	mA
Temperature Coefficient	Tc		--	0.005	--	%/℃
Adjust Pin Current	I_{ADJ}		--	55	120	μA
Adjust Pin Current Change	ΔI_{ADJ}	V_{IN} = 4.75V to 7V, Io = 10mA~1A	--	0.2	5	
Temperature Stability	Ts		--	0.5	--	%
Minimum Load Current Adjust Model	Io	V_{IN} = 2.75V to 7V	--	5	14	mA
RMS Output Noise(2)	V_N	B=10Hz to 10KHz, T_J=25℃	--	100	--	μV
Ripple Rejection Ratio(3)	R_A	Io =40mA, f = 120Hz	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 μ F .

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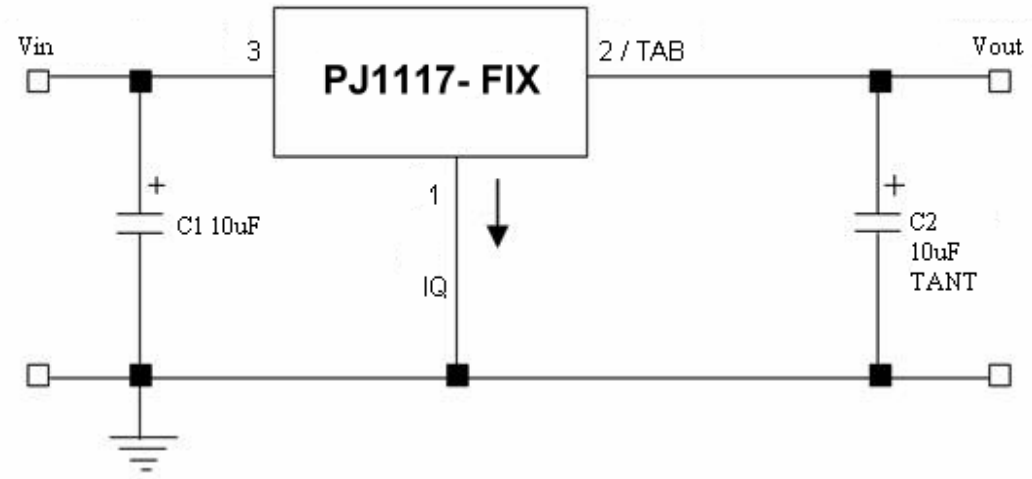
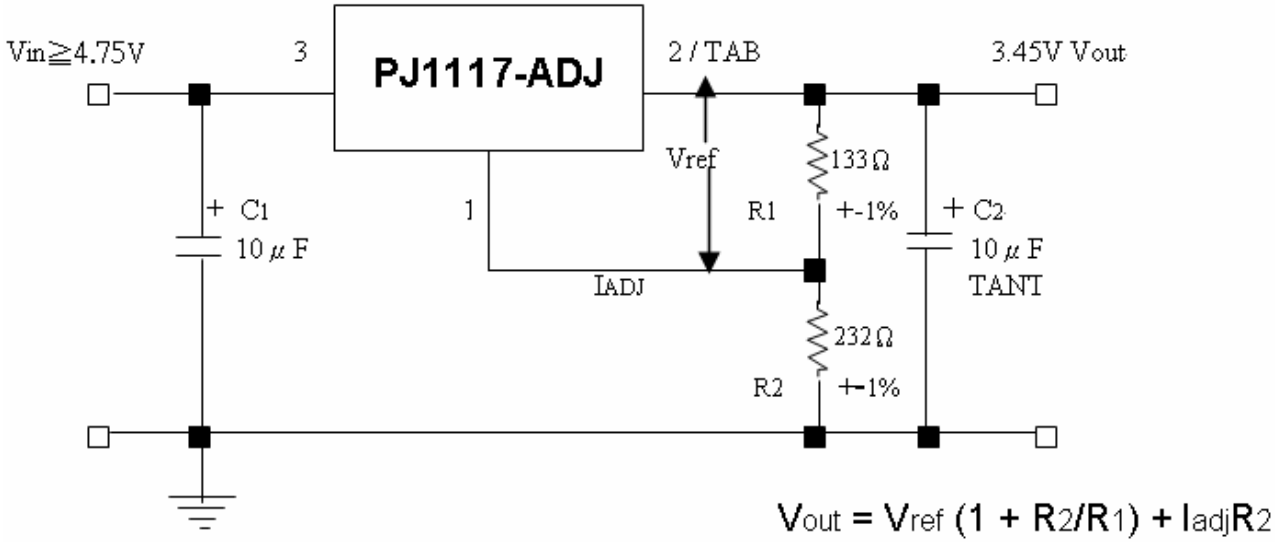
FIXED VOLTAGE REGULATOR(1)(2)



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

ADJUSTABLE VOLTAGE REGULATOR (1)(2)



$V_{out} = V_{ref} (1 + R_2/R_1) + I_{adj}R_2$

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

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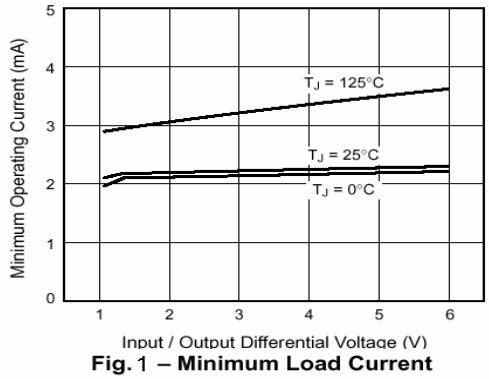


Fig. 1 – Minimum Load Current (Adjustable Version)

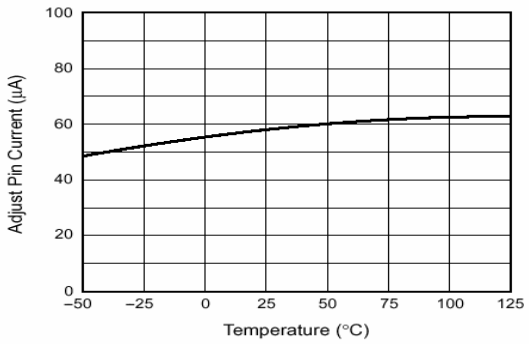


Fig. 2 – Adjust Pin Current

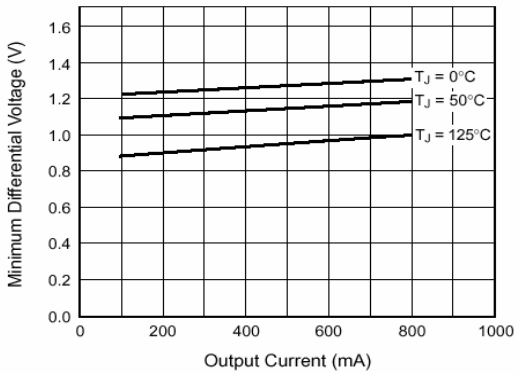


Fig. 3 – Dropout Voltage

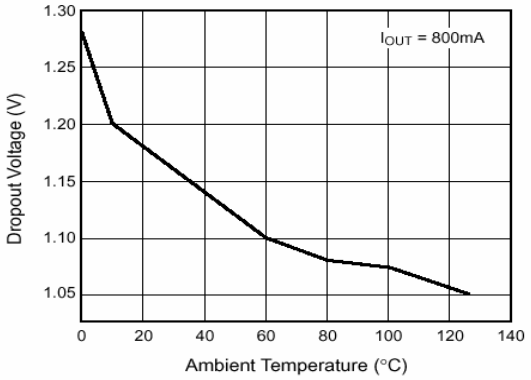


Fig. 4 – Dropout Voltage v.s. Temperature

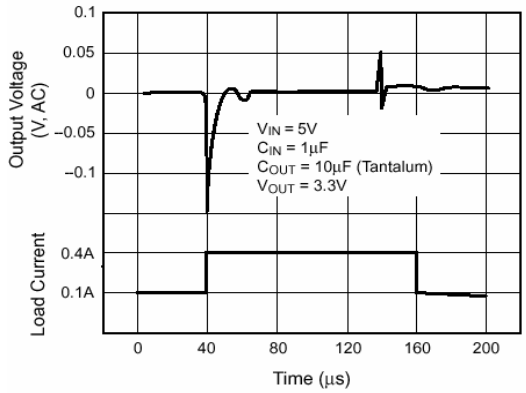


Fig. 5 – Load Transient Response

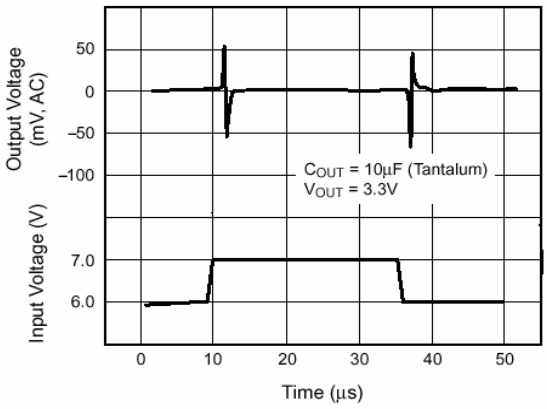


Fig. 6 – Line Transient Response

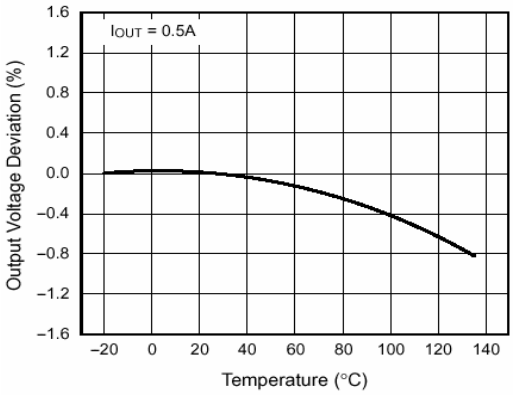


Fig. 7 – Temperature Stability

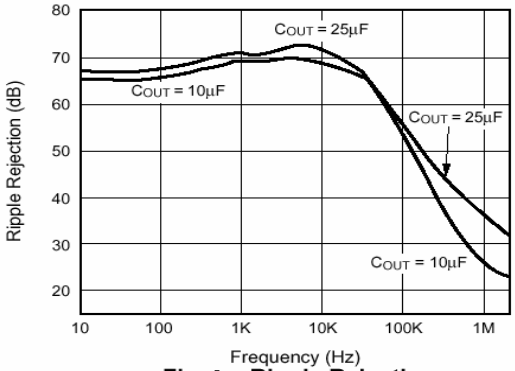
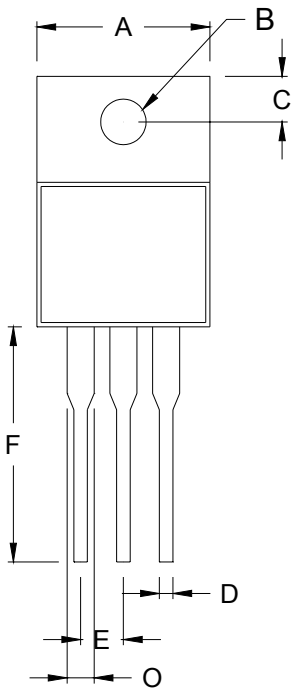


Fig. 8 – Ripple Rejection (with C_{adj} 25µF)

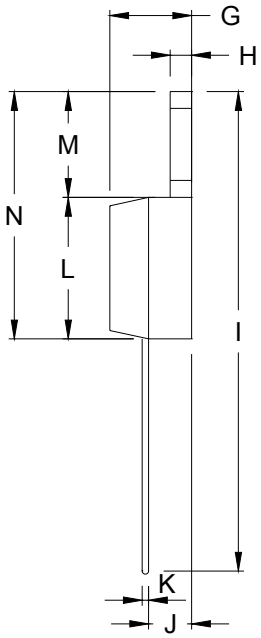
1 Amp Low Dropout Positive Voltage Regulator

TO-220 Mechanical drawing

1.Top View



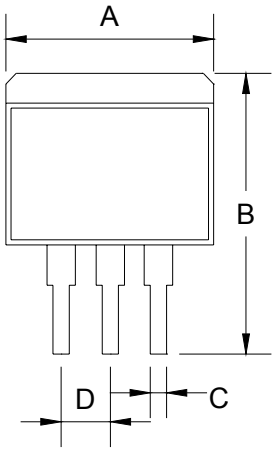
2.Side View



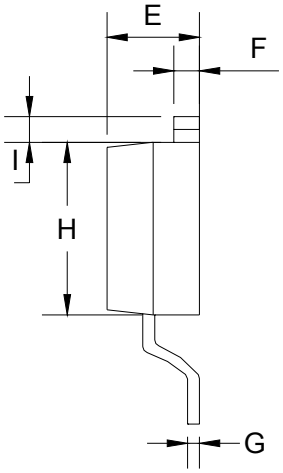
TO-220-3L DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	10.00	10.45	0.393	0.411
B	3.70	3.90	0.145	0.154
C	2.65	2.80	0.104	0.110
D	0.80	0.90	0.031	0.035
E	2.50	2.60	0.098	0.102
F	13.80	14.00	0.543	0.551
G	4.40	4.80	0.177	0.189
H	1.24	1.28	0.048	0.050
I	28.60	28.80	1.125	1.134
J	2.20	2.90	0.086	0.114
K	0.36	0.40	0.014	0.016
L	8.40	8.70	0.330	0.343
M	6.10	6.40	0.240	0.252
N	14.70	14.90	0.578	0.587
O	1.10	1.40	0.043	0.055

TO-263 Mechanical drawing

1.Top View



2.Side View

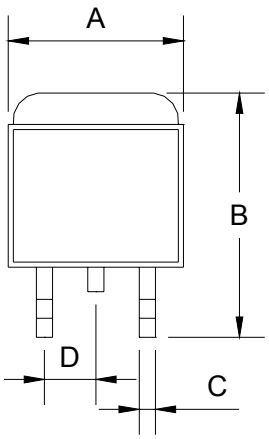


TO-263-3L DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	10.00	10.50	0.393	0.413
B	14.60	15.87	0.574	0.625
C	0.75	0.90	0.029	0.035
D	2.40	2.60	0.094	0.102
E	4.40	4.65	0.173	0.183
F	1.10	1.40	0.043	0.055
G	0.30	0.50	0.011	0.020
H	8.50	8.70	0.334	0.343
I	1.14	1.40	0.044	0.055

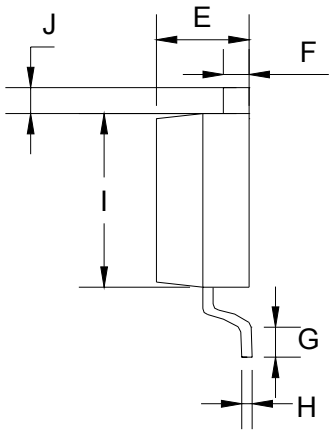
1 Amp Low Dropout Positive Voltage Regulator

TO-252 Mechanical drawing

1.Top View



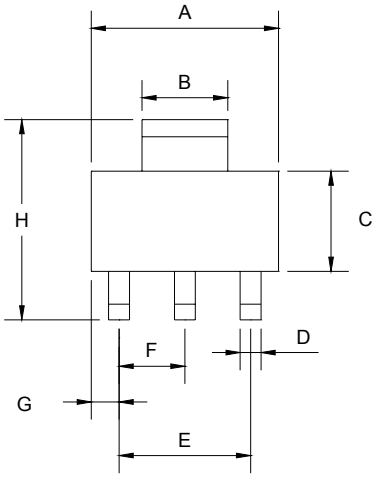
2.Side View



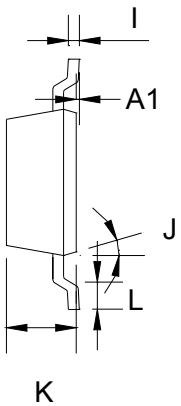
TO-252 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	6.50	6.70	0.255	0.264
B	9.30	9.80	0.366	0.386
C	0.55	0.65	0.021	0.026
D	2.28BSC		0.090BSC	
E	2.18	2.38	0.085	0.094
F	0.45	0.65	0.017	0.026
G	1.20	1.40	0.047	0.055
H	0.40	0.60	0.015	0.024
I	5.40	5.55	0.212	0.219
J	1.55	1.75	0.061	0.069

SOT-223 Mechanical drawing

1.Top View



2.Side View



SOT-223 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	6.35	6.85	0.250	0.270
A1	0.02	0.10	-	0.004
B	2.90	3.10	0.114	0.122
C	3.45	3.75	0.136	0.148
D	0.60	0.80	0.023	0.031
E	4.55	4.65	0.179	0.183
F	2.25	2.35	0.088	0.093
G	0.83	1.04	0.032	0.041
H	6.70	7.30	0.263	0.287
I	0.25	0.36	0.010	0.014
J	10°	16°	10°	16°
K	1.55	1.80	0.061	0.071
L	0.90	-	0.035	-