

High PSRR 1A CMOS Voltage Regulators

CJ6107 Series

■ INTRODUCTION

The CJ6107 Series are a group of positive voltage regulators manufactured by CMOS technology with high ripple rejection, ultra-fast transient response and low dropout voltage, which provide large output currents even when the difference of the input-output voltage is small. Each of the CJ6107 series consists of a high-precision voltage reference, an error correction circuit, and a current limited output driver. Thus the series are very suitable for the battery-powered equipments, wireless communication applications, industry equipments and so on.

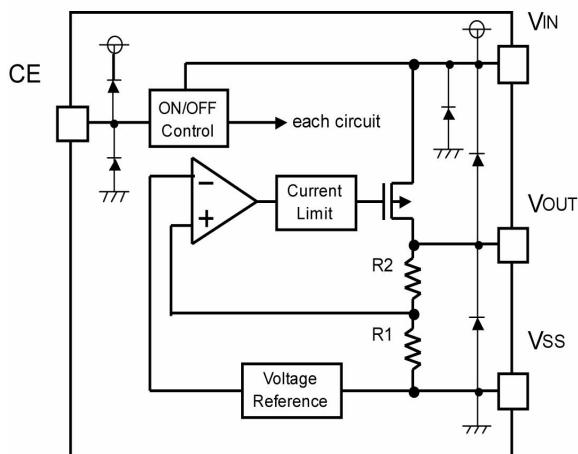
■ FEATURES

- Guaranteed Output Current: 1.0A(Typ.)
- Low Quiescent Current: 70 μ A (Typ.)
- Output Voltage Range: 1.5V~5.0V
- Input Voltage Range: 2.5V~6.0V
- High Accuracy: $\pm 2\%$ (Typ.)
- Dropout Voltage:
500mV@1.0A (3.0V Typ.)
- Excellent Line Regulation: 0.02%/V
- High PSRR : 70dB@1KHz
- Built-in Current Limiter & Thermal Protection
- Short Circuit Current Fold-back
- Output Capacitor: Ceramic Compatible

■ APPLICATIONS

- Battery powered systems
- Portable instrumentations
- GRS Receivers
- Wireless devices

■ BLOCK DIAGRAM



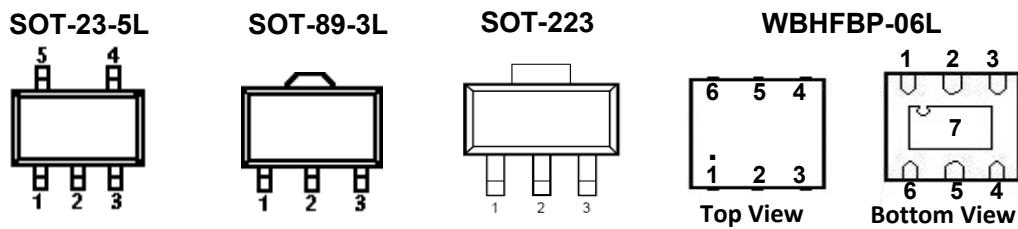
■ ORDER INFORMATION

CJ6107①②③④

DESIGNATOR	SYMBOL	DESCRIPTION
①	A	Standard
	B	With Shutdown Function
②③	Integer	Output Voltage(0.8~5.0V) e.g:3.0V=②:3, ③:0
	M	Package:SOT-23-5L
④	P/PL	Package:SOT-89-3L
	G	Package:SOT-223
	FB	Package:WBHFBP-06L

Pin Configuration

■ PIN CONFIGURATION (Pin output sequence can be ordered by customer)



PIN NUMBER					PIN NAME	FUNCTION
SOT-223			SOT-89-3L			
G	GW	GL	P	PL		
2	1	1	1	2	V _{SS}	Ground
1	3	2	2	1	V _{IN}	Power input
3	2	3	3	3	V _{OUT}	Output

SOT-23-5L/WBHFBP-06L

PIN NUMBER		SYMBOL	FUNCTION
M	FB		
1	3	V _{IN}	Power Input Pin
2	2	V _{SS}	Ground
3	1	CE	Chip Enable Pin
4	5	NC	No Connection
5	4	V _{OUT}	Output Pin
-	6	NC	No Connection
-	7		Thermal Pad

■ ABSOLUTE MAXIMUM RATINGS

(Unless otherwise specified, Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNITS
Input Voltage	V _{IN}	V _{SS} -0.3~V _{SS} +7	V
Output Current	I _{OUT}	1100	mA
Output Voltage	V _{OUT}	V _{SS} -0.3~V _{IN} +0.3	V
Power Dissipation	SOT-89-3L	P _d	600
	SOT-23-5L	P _d	400
	WBHFBP-06L	P _d	600
	SOT-223	P _d	800
Operating Ambient Temperature	T _A	-40~+85	°C
Operating Junction Temperature	T _J	-40~+125	°C
Storage Temperature	T _{stg}	-40~+125	°C
Soldering Temperature & Time	T _{solder}	260°C, 10s	

Electrical Characteristics

($V_{IN} = V_{OUT} + 1V$, $C_{IN} = C_{OUT} = 1\mu F$, $T_a = 25^\circ C$, unless otherwise specified)

PARAMETER		SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Output Voltage		$V_{OUT}(E)$ (Note 2)	$I_{OUT} = 100mA$	$V_{OUT} * 0.98$	V_{OUT} (Note 1)	$V_{OUT} * 1.02$	V
Supply Current		I_{SS}			70		μA
Shutdown Current		I_{SHDN}	$V_{CE} = V_{SS}$		0.1	1.0	μA
Output Current		I_{OUT}	—		1000		mA
Dropout Voltage (Note 3)	V_{dif1}		$I_{OUT} = 300mA$		150		mV
	V_{dif2}		$I_{OUT} = 1000mA$		500		mV
Load Regulation		ΔV_{OUT}	$V_{IN} = V_{OUT} + 1V$, $1mA \leq I_{OUT} \leq 1.0A$		30		mV
Line Regulation		$\frac{\Delta V_{OUT}}{\Delta V_{IN} * V_{OUT}}$	$I_{OUT} = 100mA$ $V_{OUT} + 1V \leq V_{IN} \leq 6V$		0.02	0.2	%/V
Output Voltage Temperature Characteristics		$\frac{\Delta V_{OUT}}{\Delta T * V_{OUT}}$	$I_{OUT} = 100mA$ $-40^\circ C \leq T \leq +85^\circ C$		50		ppm/ $^\circ C$
Short Current		I_{Short}	$V_{OUT} = V_{SS}$		200		mA
Input Voltage		V_{IN}	—	2.5		6.0	V
Power Supply Rejection Rate	1KHz	PSRR	$I_{OUT} = 100mA$		70		dB
	10KHz				50		
CE "High" Voltage		$V_{CE}^{H''}$		1.5		V_{IN}	V
CE "Low" Voltage		$V_{CE}^{L''}$				0.3	V
Thermal Shutdown Temperature		T_{SD}			150		$^\circ C$
Thermal Shutdown Temperature Hysteresis		ΔT_{SD}			30		$^\circ C$

NOTE:

1. V_{OUT} : Specified Output Voltage.
2. $V_{OUT}(E)$: Effective Output Voltage (i.e. The Output Voltage When $V_{IN} = (V_{OUT} + 1.0V)$ And Maintain A Certain I_{OUT} Value).
3. V_{diff} : The Difference Of Output Voltage And Input Voltage When Input Voltage Is Decreased Gradually Till Output Voltage Equals To 98% Of $V_{OUT}(E)$; When $V_{OUT} < 2.5V$, $V_{IN} \geq 2.5V$ Should be Guaranteed.

Electrical Characteristics

■ TYPICAL APPLICATION CIRCUITS

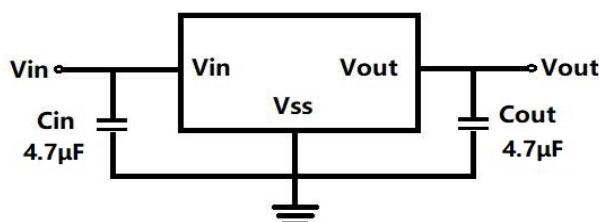


Figure1 CJ6107A Typical Application Circuit

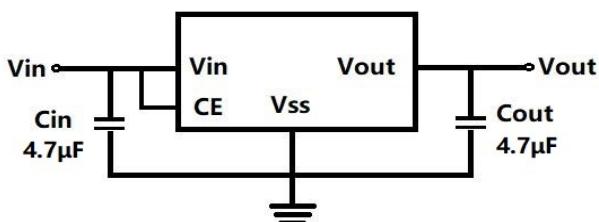


Figure2 CJ6107B Typical Application Circuit

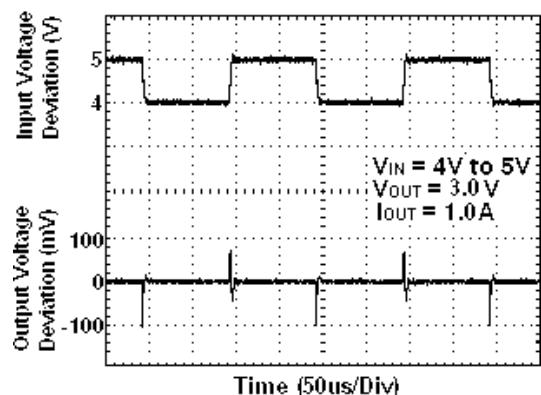
Input capacitor (C_{IN}): 4.7 μ F or more;

Output capacitor (C_{OUT}): 4.7 μ F or more;

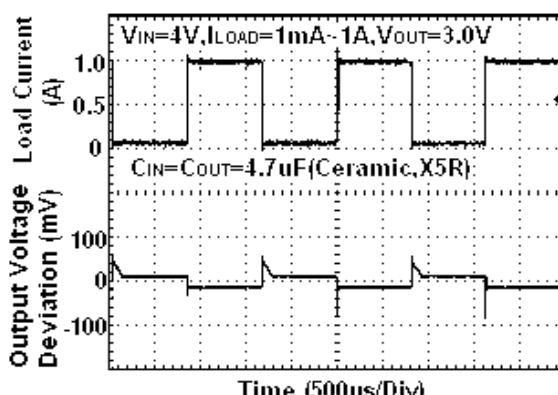
Caution: A general series regulator may oscillate, depending on the external components selected. Check that no oscillation occurs with the application using the above capacitor.

■ TYPICAL PERFORMANCE CHARACTERISTICS

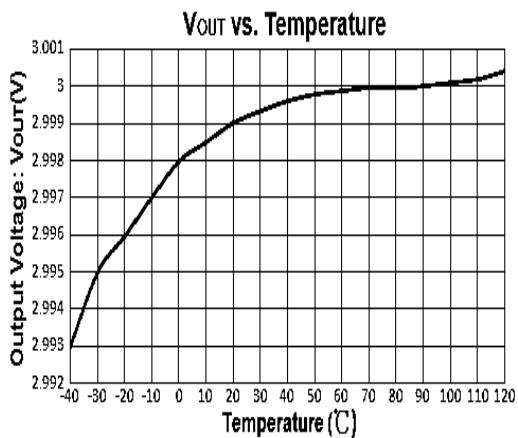
(1) Input Transient Response



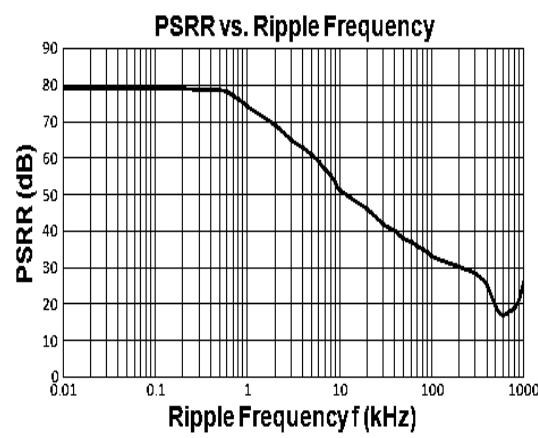
(2) Load Transient Response



(3) Output Voltage vs. Temperature

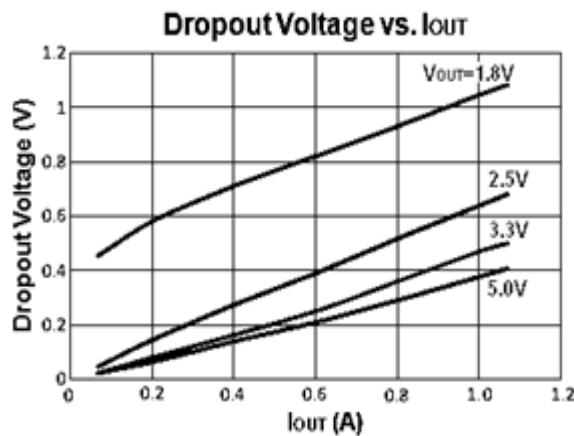


(4) Power Supply Rejection Ratio

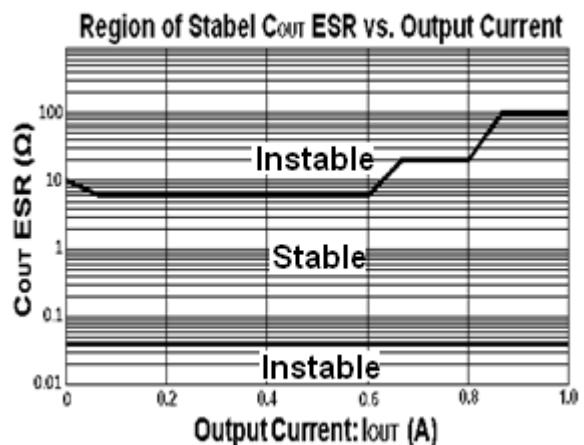


Typical Characteristics

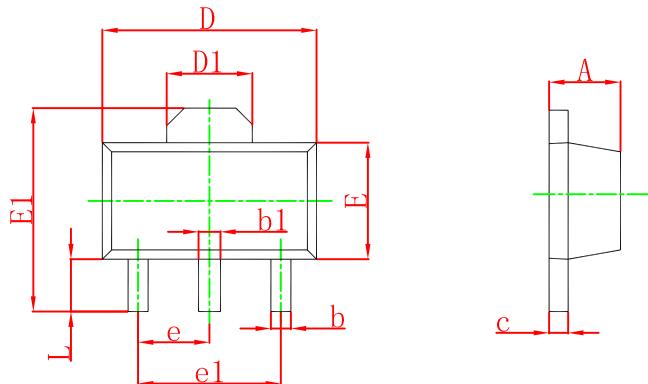
(3) Dropout Voltage vs. Output Current



(4) Region of Stable C_{OUT} ESR vs. Load

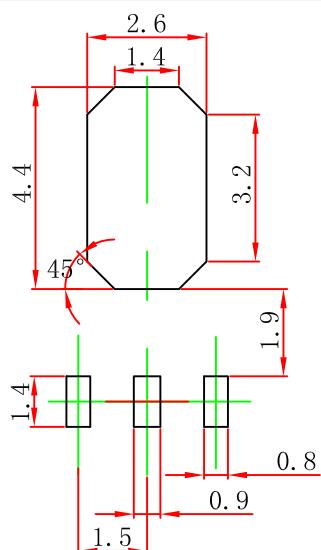


SOT-89-3L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.197
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF		0.061 REF	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP		0.060 TYP	
e1	3.000 TYP		0.118 TYP	
L	0.900	1.200	0.035	0.047

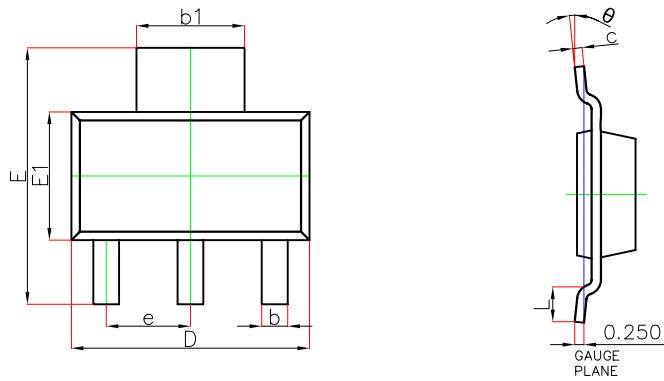
SOT-89-3L Suggested Pad Layout



Note:

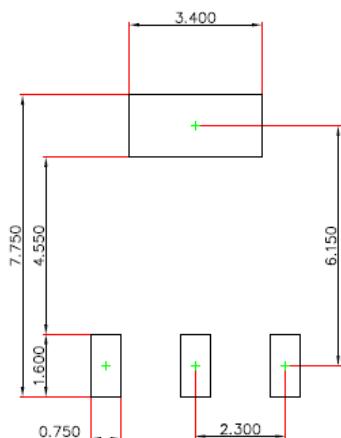
1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.

SOT-223 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	—	1.800	—	0.071
A1	0.020	0.100	0.001	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.840	0.026	0.033
b1	2.900	3.100	0.114	0.122
c	0.230	0.350	0.009	0.014
D	6.300	6.700	0.248	0.264
E	6.700	7.300	0.264	0.287
E1	3.300	3.700	0.130	0.146
e	2.300(BSC)		0.091(BSC)	
L	0.750	—	0.030	—
θ	0°	10°	0°	10°

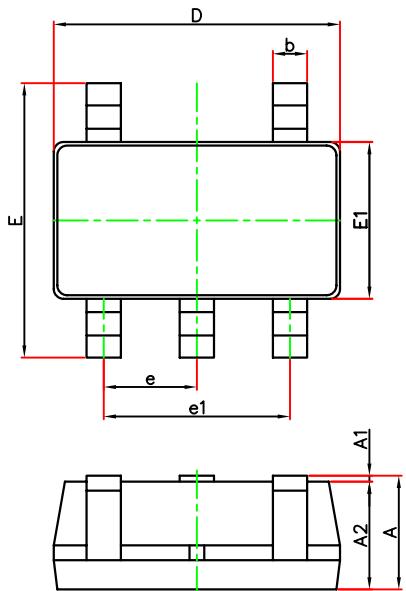
SOT-223 Suggested Pad Layout



Note:

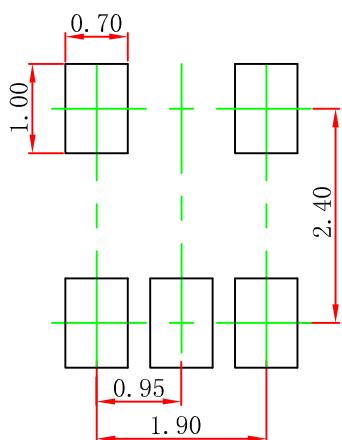
1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.050\text{mm}$.
3. The pad layout is for reference purposes only.

SOT-23-5L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	2.650	2.950	0.104	0.116
E1	1.500	1.700	0.059	0.067
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

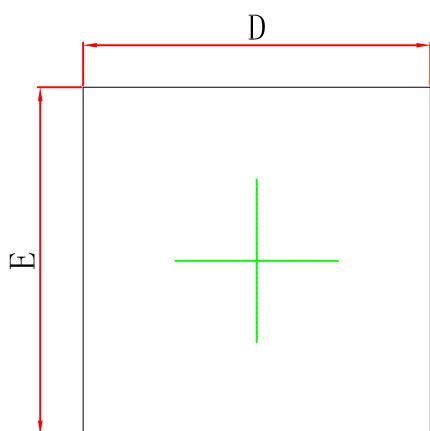
SOT-23-5L Suggested Pad Layout



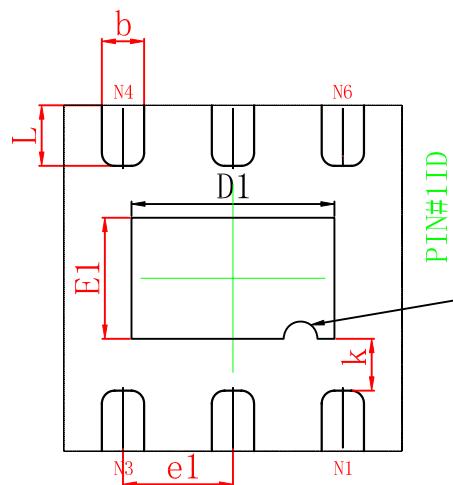
Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.

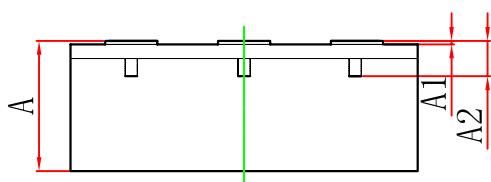
WBHFBP-06L Package Outline Dimensions



Top View



Bottom View



Side View

Symbol	Dimensions In Millimeters		Dimension In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A2	0.203REF		0.008REF	
D	1.950	2.050	0.077	0.081
E	1.950	2.050	0.077	0.081
D1	1.150	1.250	0.045	0.049
E1	0.650	0.750	0.026	0.030
b	0.200	0.300	0.008	0.012
e1	0.650TYP		0.026TYP	
k	0.200MIN		0.008MIN	
L	0.300	0.400	0.012	0.016

DISCLAIMER

IMPORTANT NOTICE, PLEASE READ CAREFULLY

The information in this data sheet is intended to describe the operation and characteristics of our products. JSCJ has the right to make any modification, enhancement, improvement, correction or other changes to any content in this data sheet, including but not limited to specification parameters, circuit design and application information, without prior notice.

Any person who purchases or uses JSCJ products for design shall: 1. Select products suitable for circuit application and design; 2. Design, verify and test the rationality of circuit design; 3. Procedures to ensure that the design complies with relevant laws and regulations and the requirements of such laws and regulations. JSCJ makes no warranty or representation as to the accuracy or completeness of the information contained in this data sheet and assumes no responsibility for the application or use of any of the products described in this data sheet.

Without the written consent of JSCJ, this product shall not be used in occasions requiring high quality or high reliability, including but not limited to the following occasions: medical equipment, automotive electronics, military facilities and aerospace. JSCJ shall not be responsible for casualties or property losses caused by abnormal use or application of this product.

Official Website: www.jscj-elec.com

Copyright © JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.