

CJ6107 Series

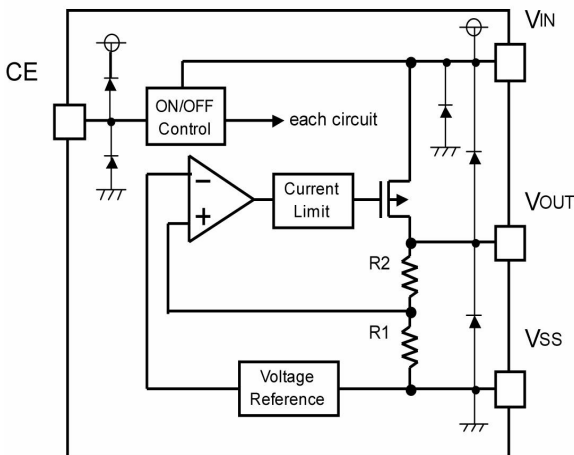
■ INTRODUCTION

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.

■ APPLICATIONS

- Battery powered systems
- Portable instrumentations

■ BLOCK DIAGRAM



■ FEATURES

- Guaranteed Output Current: 1.0A(Typ.)
- Low Quiescent Current: 70μA (Typ.)
- Output Voltage Range: 1.5V~5.0V
- Input Voltage Range: 2.5V~6.0V
- High Accuracy: ±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

- GRS Receivers
- Wireless devices

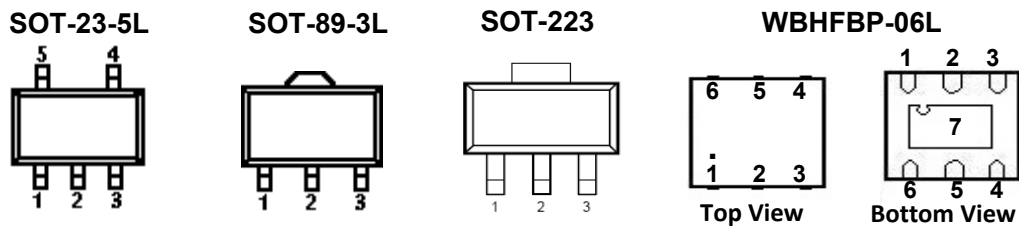
■ ORDER INFORMATION

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
④	M	Package:SOT-23-5L
	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, $T_a=25^{\circ}\text{C}$)

PARAMETER		SYMBOL	RATINGS	UNITS
Input Voltage		V_{IN}	$V_{SS}-0.3\sim V_{SS}+7$	V
Output Current		I_{OUT}	1100	mA
Output Voltage		V_{OUT}	$V_{SS}-0.3\sim V_{IN}+0.3$	V
Power Dissipation	SOT-89-3L	P_d	600	mW
	SOT-23-5L	P_d	400	mW
	WBHFBP-06L	P_d	600	mW
	SOT-223	P_d	800	mW
Operating Ambient Temperature		T_A	-40~+85	$^{\circ}\text{C}$
Operating Junction Temperature		T_J	-40~+125	$^{\circ}\text{C}$
Storage Temperature		T_{stg}	-40~+125	$^{\circ}\text{C}$
Soldering Temperature & Time		T_{solder}	260 $^{\circ}\text{C}$, 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.

■ TYPICAL APPLICATION CIRCUITS

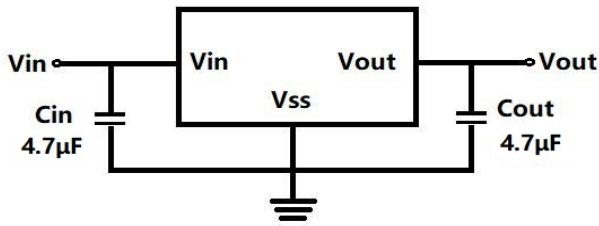


Figure1 CJ6107A Typical Application Circuit

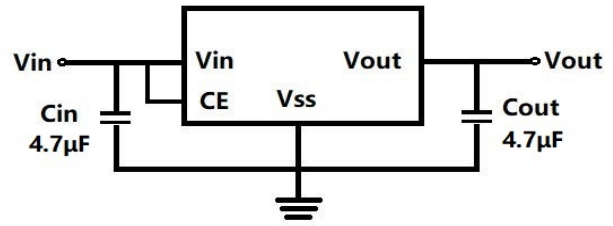


Figure2 CJ6107B Typical Application Circuit

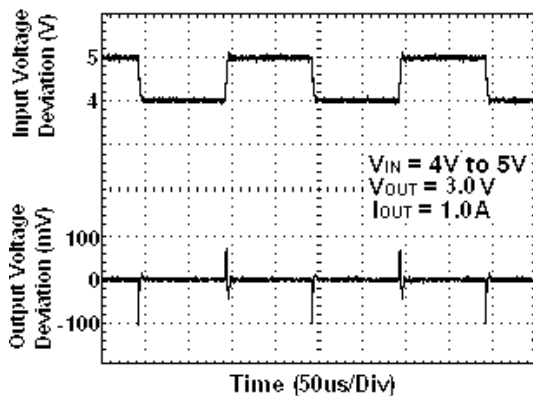
Input capacitor (C_{IN}): 4.7 μ F or more;

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

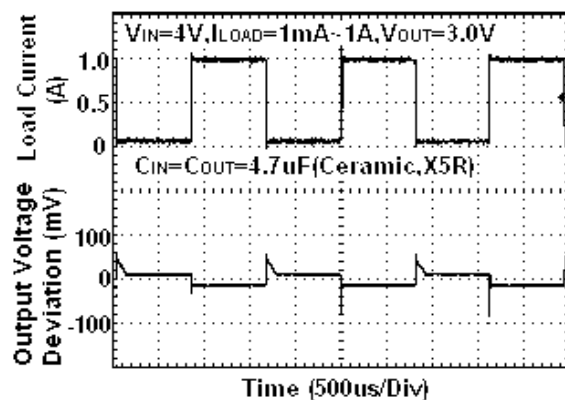
Caution: A general series regulator may oscillate, depending on the external components selected. Check that no oscillation occurs with the application using the above capacitor.

■ TYPICAL PERFORMANCE CHARACTERISTICS

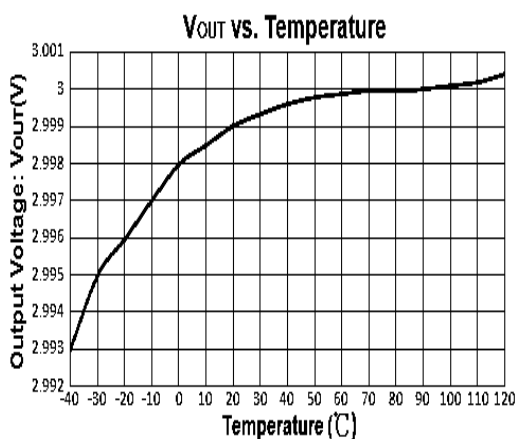
(1) Input Transient Response



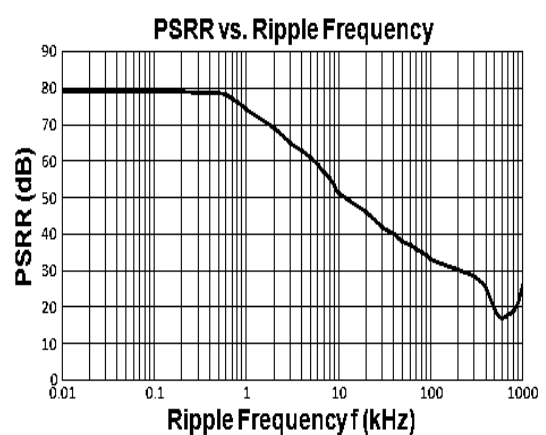
(2) Load Transient Response



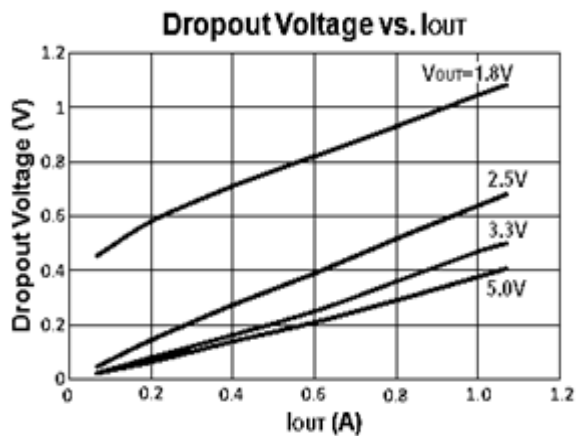
(3) Output Voltage vs. Temperature



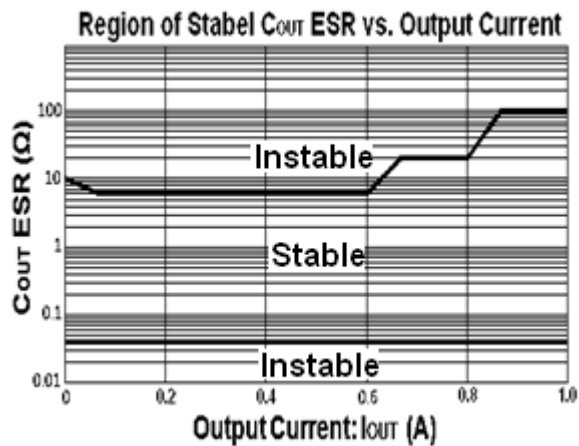
(4) Power Supply Rejection Ratio



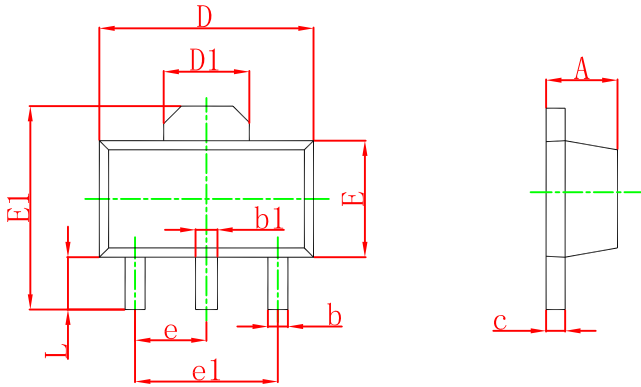
(3) Dropout Voltage vs. Output Current



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

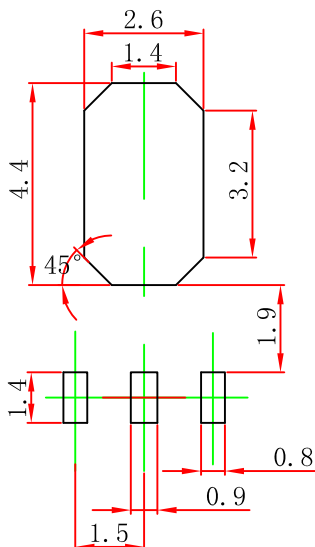


SOT-89-3L Package Outline Dimensions



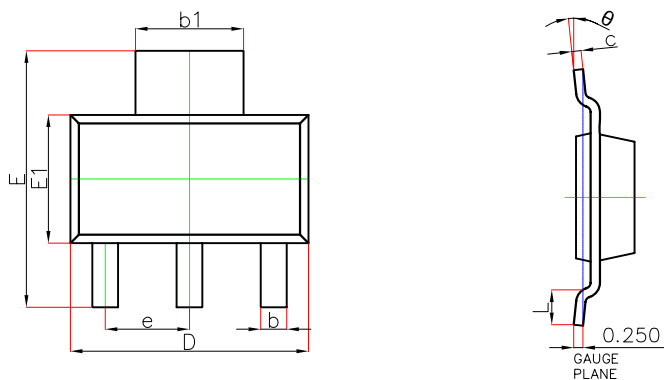
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.197
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF		0.061 REF	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP		0.060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

SOT-89-3L Suggested Pad Layout



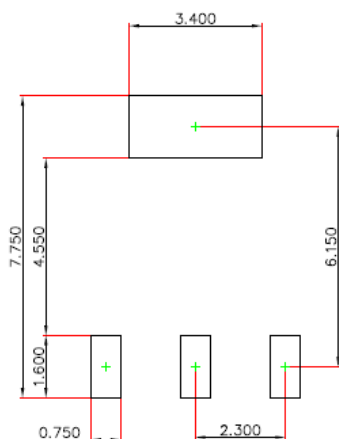
- Note:
1. Controlling dimension: in millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.

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°

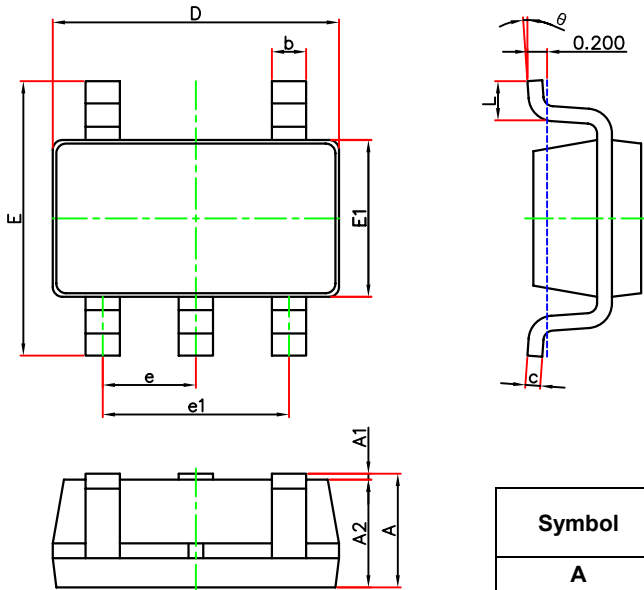
SOT-223 Suggested Pad Layout



Note:

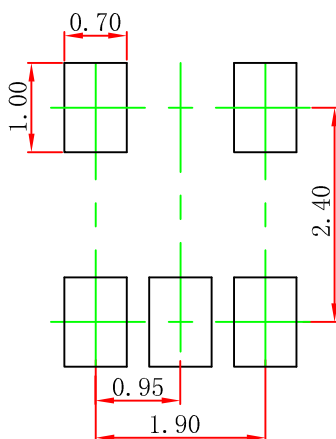
1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.050 mm.
3. The pad layout is for reference purposes only.

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
theta	0°	8°	0°	8°

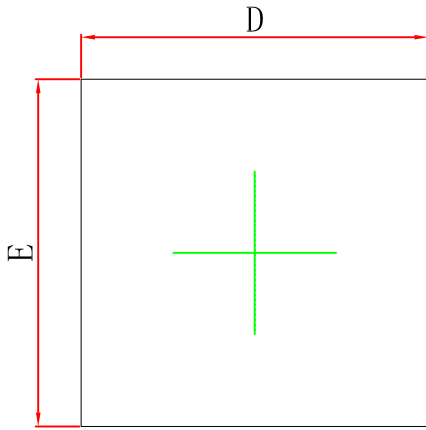
SOT-23-5L Suggested Pad Layout



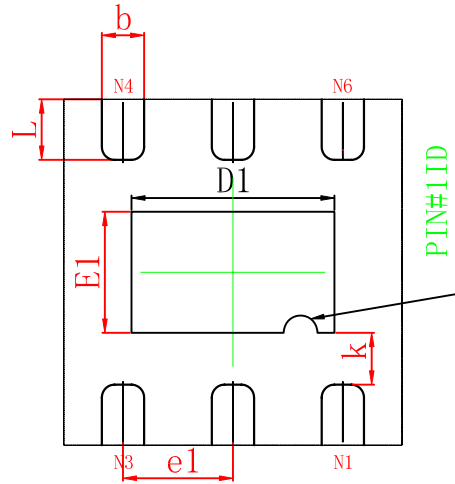
Note:

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

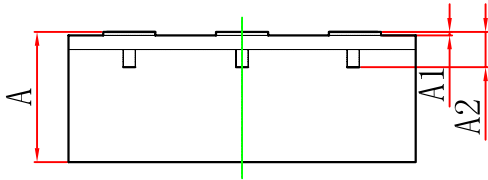
WBHFBP-06L Package Outline Dimensions



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

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