

Product Summary

The GPL6107 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 GPL6107 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.

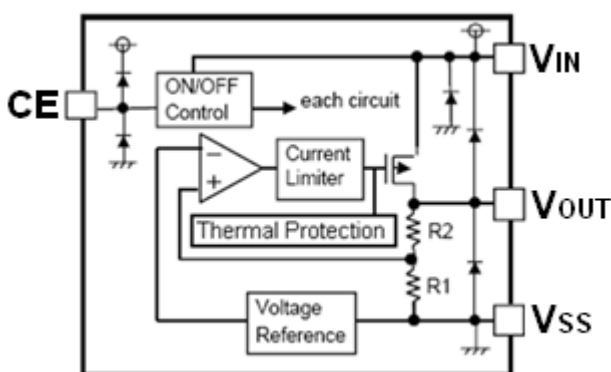
Features

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

Applications

- Battery powered systems
- Portable instrumentations
- PC peripherals
- CD/DVD-ROM, CD/RW
- Wireless devices
- Battery charger

Block Diagram



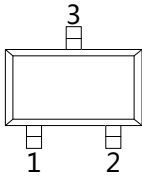
Order Information

GPL6107①②

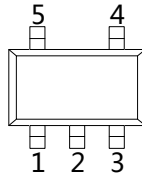
Designator	Description
①	Output Voltage e.g.3.3V=33
②	Package: SOT-23-3L=K3 SOT-23-5L=K5 SOT-89-3L=KE SOT-89-5L=KT

Pin Configuration

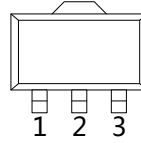
SOT-23-3



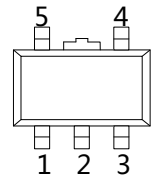
SOT-23-5



SOT-89-3



SOT-89-5



Pin Number		Pin Name	Function
SOT-23-3	SOT-89-3		
1	1	V_{SS}	Ground
2	3	V_{OUT}	Output
3	2	V_{IN}	Power input

Pin Number		Pin Name	Function
SOT-23-5	SOT-89-5		
1	5	V_{IN}	Power Input Pin
2	2	V_{SS}	Ground
3	4	CE	Chip Enable Pin
4	3	NC	No Connection
5	1	V_{OUT}	Output Pin

Absolute Maximum Ratings ($T_a=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Ratings	Units	
Input Voltage	V_{IN}	$V_{SS}-0.3\sim V_{SS}+7$	V	
Output Voltage	V_{OUT}	$V_{SS}-0.3\sim V_{IN}+0.3$	V	
Output Current	I_{OUT}	2000	mA	
Power Dissipation	SOT-23-3	P_D	0.4	W
	SOT-89	P_D	0.6	W
Operating Free Air Temperature Range	T_A	-40~85	$^{\circ}\text{C}$	
Operating Junction Temperature Range	T_j	-40~125	$^{\circ}\text{C}$	
Storage Temperature	T_{stg}	-40~125	$^{\circ}\text{C}$	
Lead Temperature(Soldering, 10 sec)	T_{solder}	260	$^{\circ}\text{C}$	

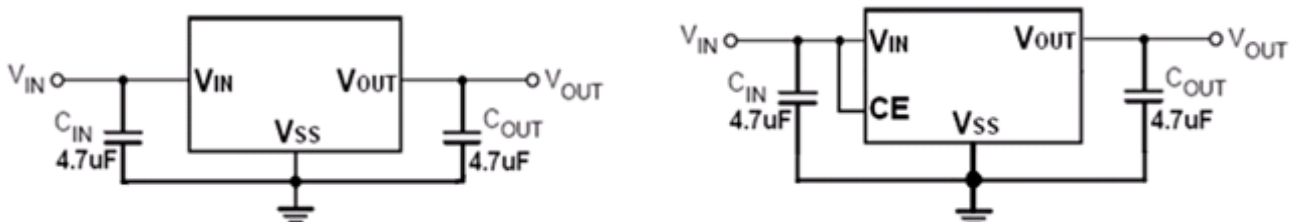
Electrical Characteristics ($V_{IN}=V_{OUT}+1V$, $C_{IN}=C_{OUT}=4.7\mu F$, $T_A=25^\circ C$, unless otherwise specified)

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:

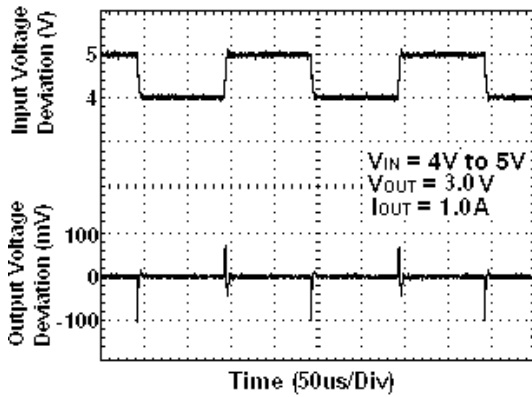
1. V_{OUT} : Specified Output Voltage.
2. $V_{OUT(E)}$: Effective Output Voltage (i.e. The Output Voltage When $V_{IN} = (V_{OUT} + 1.0V)$ And Maintain A Certain I_{OUT} Value).
3. V_{diff} : The Difference Of Output Voltage And Input Voltage When Input Voltage Is Decreased Gradually Till Output Voltage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

Typical Application

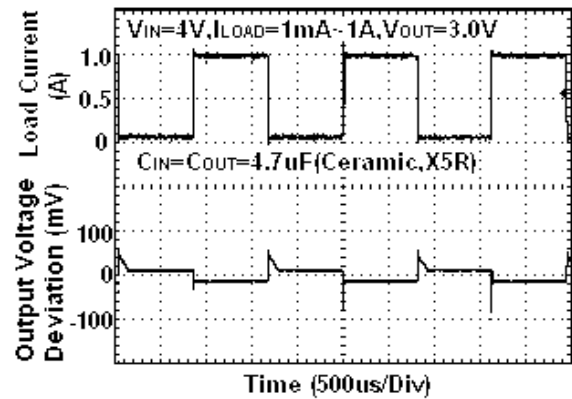


Typical Performance Characteristics

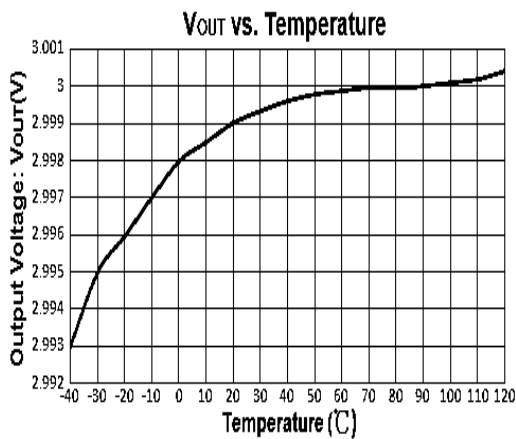
Input Transient Response



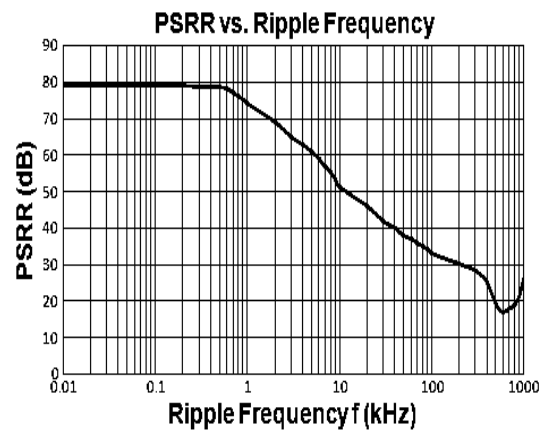
Load Transient Response



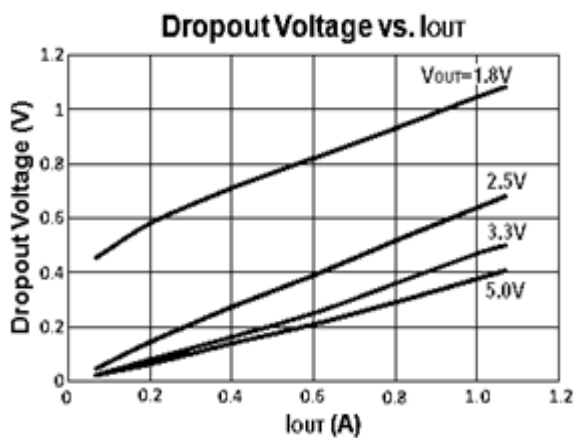
Output Voltage vs. Temperature



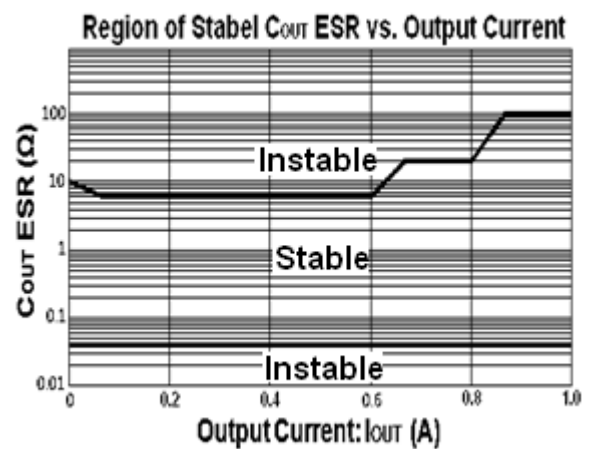
Power Supply Rejection Ratio Voltage



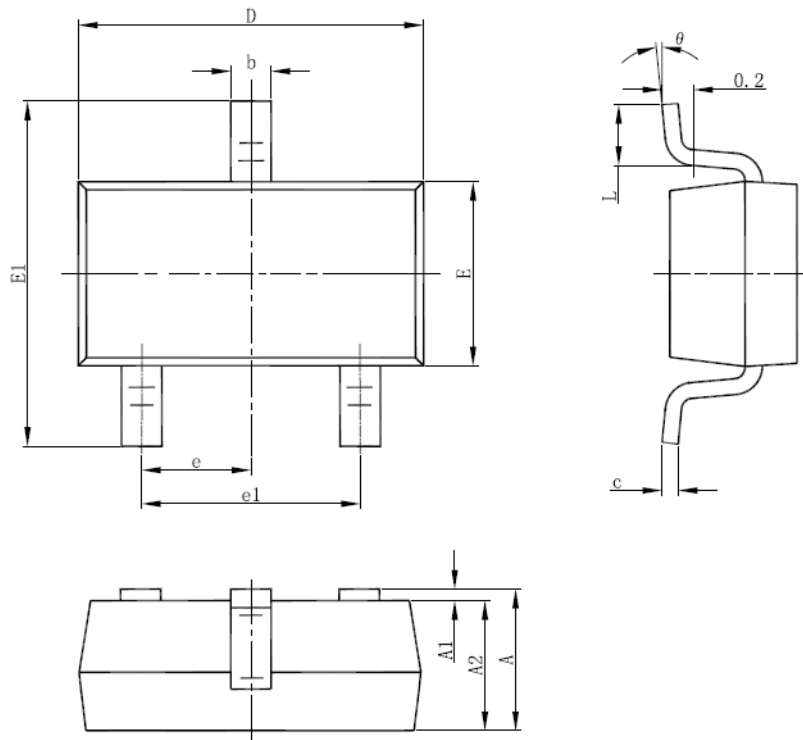
Dropout Voltage vs. Output Current



Region of Stable C_{OUT} ESR vs. Load

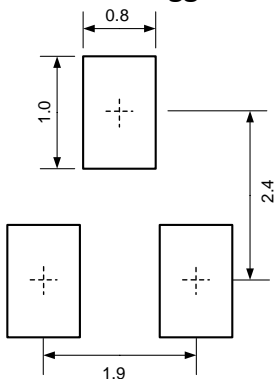


SOT-23-3L Package Outline Dimensions



Symbol	Dimensions in millimeters	
	Min.	Max.
A	1.050	1.250
A1	0.000	0.100
A2	1.050	1.150
b	0.300	0.500
c	0.100	0.200
D	2.820	3.020
E	1.500	1.700
E1	2.650	2.950
e	0.950TYP	
e1	1.800	2.000
L	0.300	0.600
θ	0°	8°

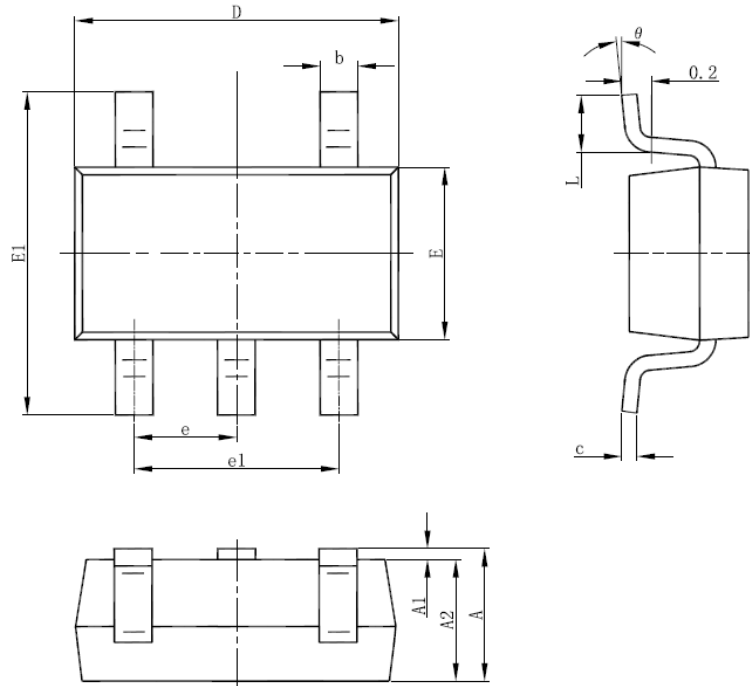
SOT-23-3L Suggested Pad Layout (Unit: mm)



Notes:

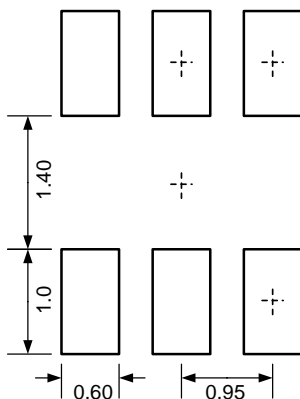
1. General tolerance: $\pm 0.05\text{mm}$.
2. The pad layout is for reference purposes only.

SOT-23-5L Package Outline Dimensions



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	1.050	1.250
A1	0.000	0.100
A2	1.050	1.150
b	0.300	0.500
c	0.100	0.200
D	2.820	3.020
E	1.500	1.700
E1	2.650	2.950
e	0.950(BSC)	
e1	1.800	2.000
L	0.300	0.600
θ	0°	8°

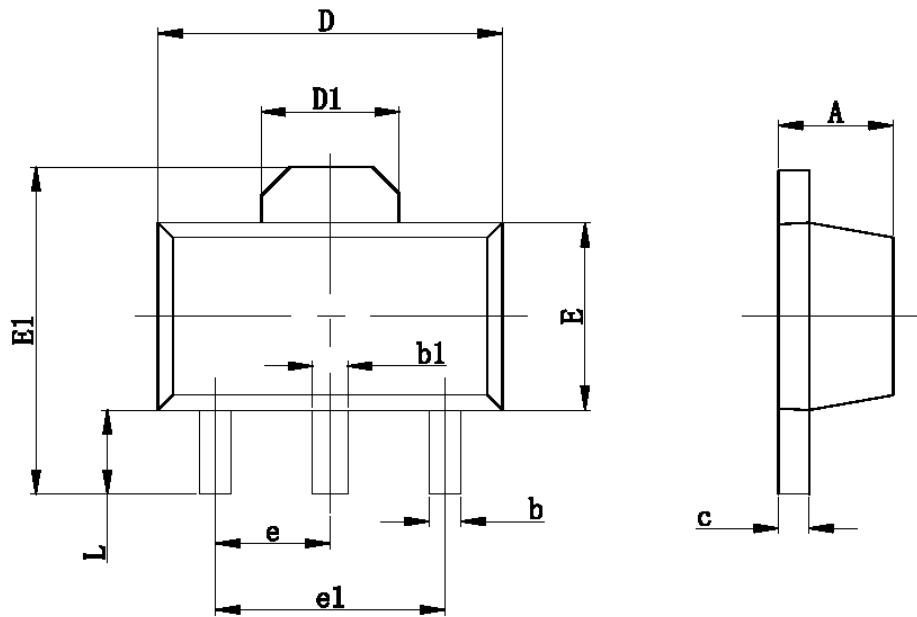
SOT-23-5L Suggested Pad Layout (Unit: mm)



Notes:

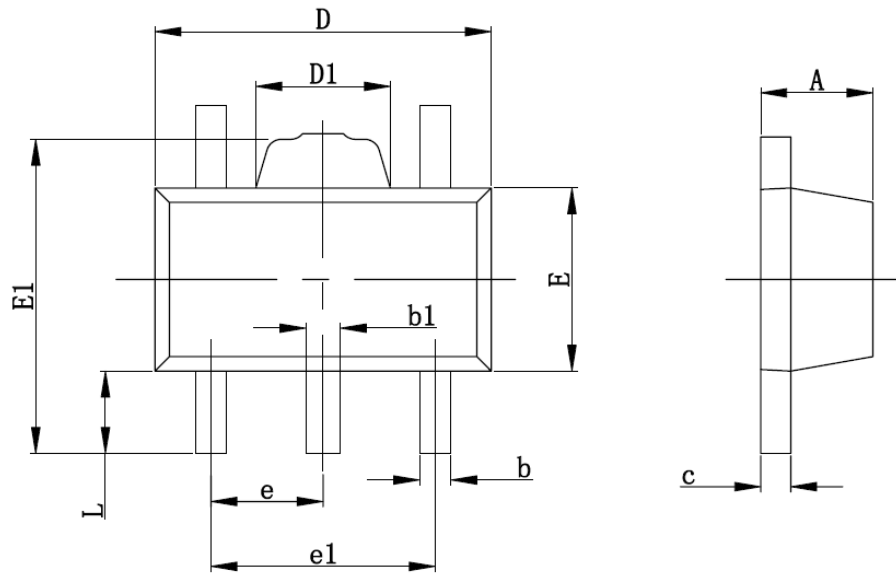
1. General tolerance: ± 0.05 mm.
2. The pad layout is for reference purposes only.

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	1.550REF		0.061REF	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500TYP		0.060TYP	
e1	3.000TYP		0.118TYP	
L	0.900	1.200	0.035	0.047

SOT-89-5L 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	0.360	0.560	0.014	0.022
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.400	1.800	0.055	0.071
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500TYP		0.060TYP	
e1	2.900	3.100	0.114	0.122
L	0.900	1.100	0.035	0.043