GPL6230 Series

Low Consumption Current High PSRR 300mA CMOS Voltage Regulators

Product Summary

The GPL6230 series are a group of positive voltage regulators manufactured by CMOS technologies with high ripple rejection, ultra-low noise, low power consumption and low dropout voltage, which can prolong battery life in portable electronics. The GPL6230 series work with low-ESR ceramic capacitors, reducing the amount of board space necessary for power applications. The GPL6230 series consume less than 0.1μA in shutdown mode and have fast turn-on time less than 50μS.The series are very suitable for the battery-powered equipments, such as RF applications and other systems requiring a quiet voltage source.

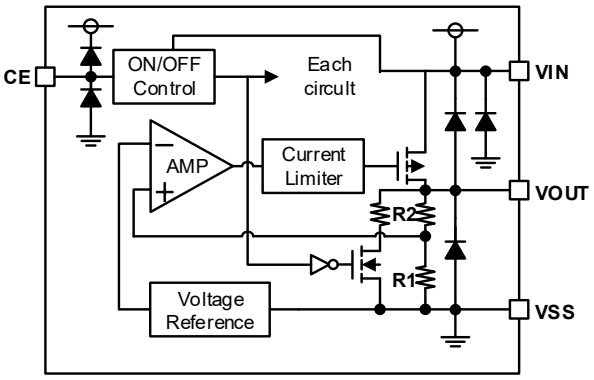
Features

- Low Quiescent Current: 5μA
- Operating Voltage Range: 2.0V~7.0V
- Low Dropout Voltage：150mV@150mA
- Output Voltage:1.2~ 5.0V
- High Accuracy: ±2%(Typ.)
- High Ripple Rejection: 65dB@1kHz
- TTL-Logic-Controlled Shutdown Input
- Excellent Line and Load Transient Response
- Built-in Current Limiter, Short-Circuit Protection

Applications

- Cellular and Smart Phones
- Radio control systems
- Laptop, Palmtops and PDAs
- Digital Still and Video Cameras
- Battery-Powered Equipment

Block Diagram



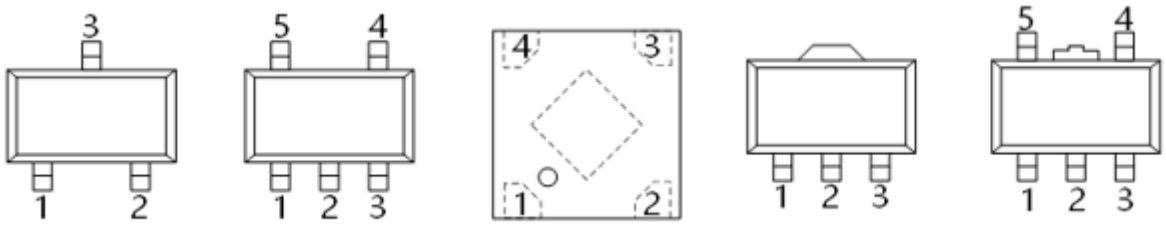
Order Information

GPL6230V①②

Designator	Description
①	Output Voltage e.g. 1.8V=18
②	Package: SOT-23-3L=K3 SOT-23-5L=K5 DFN1X1-4=H1 SOT-89-3L=KE SOT-89-5L=KT

Pin Configuration

SOT-23-3 SOT-23-5 DFN1X1-4L SOT-89-3 SOT-89-5



SOT-23-3L

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

SOT-23-5L& DFN1X1-4L

Pin Number	Pin Number	Pin Number	Function
SOT-23-5L	DFN1X1-4L		
1	4	V_{IN}	Power Input Pin
2	2	V_{SS}	Ground
3	3	CE	Chip Enable Pin
4	-	NC	No Connection
5	1	V_{OUT}	Output Pin

SOT-89-3L

Pin Number	Pin Number	Function
1	V_{SS}	Ground
3	V_{OUT}	Output
2	V_{IN}	Power input

SOT-89-5L

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

Absolute Maximum Ratings (T_A=25℃,unless otherwise noted)

Parameter		Symbol	Ratings	Units
Input Voltage		V_{IN}	V_{SS}-0.3~ V_{SS}+8	V
Output Voltage		V_{OUT}	V_{SS}-0.3~ V_{IN}+0.3	V
Output Current		I_{OUT}	300	mA
Power Dissipation	SOT-23	P_D	0.25	W
	SOT-89	P_D	0.50	W
Operating Free Air Temperature Range		T_A	-40~85	℃
Operating Junction Temperature Range		T_j	-40~125	℃
Storage Temperature		T_{stg}	-40~125	℃
Lead Temperature(Soldering, 10 sec)		T_{solder}	260	℃

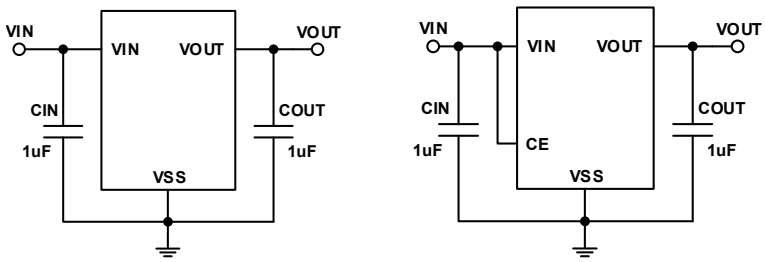
Electrical Characteristics(V_{IN}=V_{OUT}+1V, C_{IN}=C_{OUT}=1μF, T_A=25℃, unless otherwise specified)

Parameter		Symbol	Conditions	Min.	Typ.	Max.	Units
Output Voltage		$V_{OUT}(E)$ 1)	I_{OUT}=1mA	V_{OUT} *0.98	V_{OUT}	V_{OUT} *1.02	V
Supply Current		I_{SS}	I_{OUT}=0		5	10	μA
Standby Current		I_{STBY}	CE = V_{SS}			0.1	μA
Output Current		I_{OUT}	—	300			mA
Dropout Voltage2)		V_{dif}	I_{OUT} =150Ma,V_{OUT}≥3.0V		150		mV
Load Regulation		ΔV_{OUT}	V_{IN}= V_{OUT} +1V, 1mA≤I_{OUT}≤100mA		10		mV
Line Regulation		$\frac{\Delta V_{OUT}}{V_{OUT} \times \Delta V_{IN}}$	I_{OUT} =10mA V_{OUT} +1V≤V_{IN}≤6V		0.01	0.2	%/V
Output Voltage Temperature Characteristics		$\frac{\Delta V_{OUT}}{\Delta T \times V_{OUT}}$	I_{OUT} =10mA -40≤T≤+85		100		ppm
Output Current Limit		I_{LIM}	V_{OUT}=0.5 x $V_{OUT(Normal)}$, V_{IN} = V_{OUT}+1V	350	700		mA
Short Current		I_{Short}	V_{OUT} =V_{SS}		50		mA
Input Voltage		V_{IN}	—	2.0		7.0	V
Power Supply Rejection Rate	1kHz	PSRR	I_{OUT}=50mA		65		dB
	10kHz				50		
CE "High" Voltage		V_{CE}"H"		1.5		V_{IN}	V
CE "Low" Voltage		V_{CE}"L"				0.3	V

1) $V_{OUT}(E)$: Effective Output Voltage (Ie. The output voltage when V_{IN} = (V_{OUT} +1.0V) and maintain a certain I_{OUT} Value).

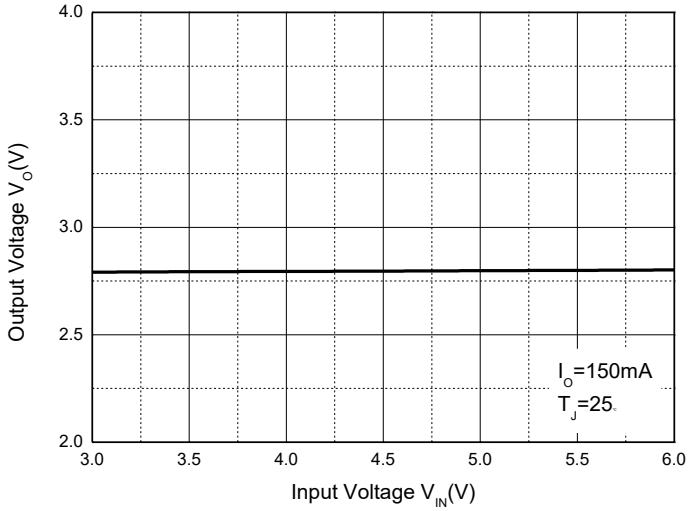
2) V_{dif} : The Difference Of Output Voltage And Input Voltage When Input Voltage Is Decreased Gradually Till Output Voltage Equals To 98% Of V_{OUT} (E).

Typical Application

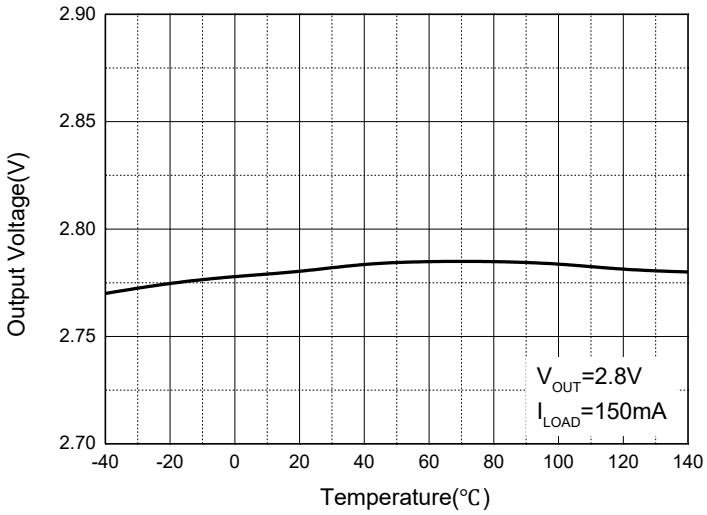


Typical Performance Characteristics

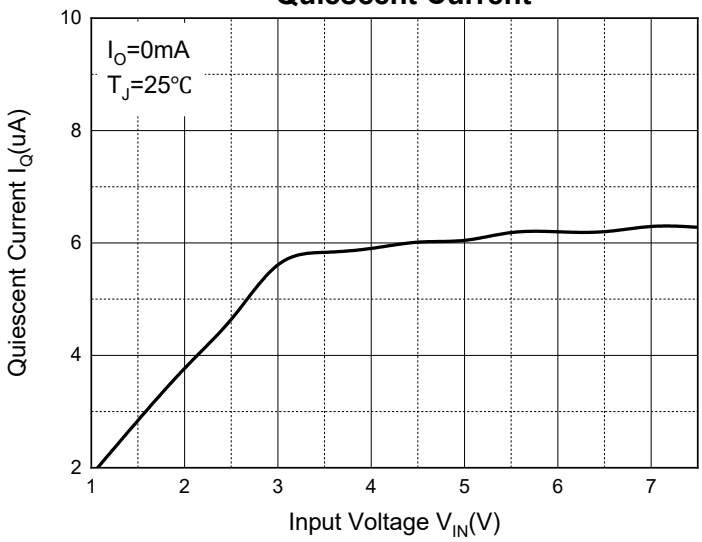
Output Characteristics



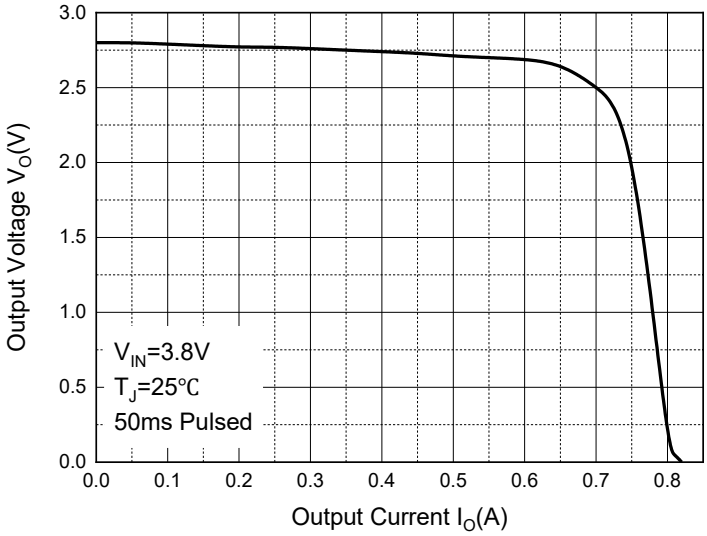
Output Voltage vs. Temperature



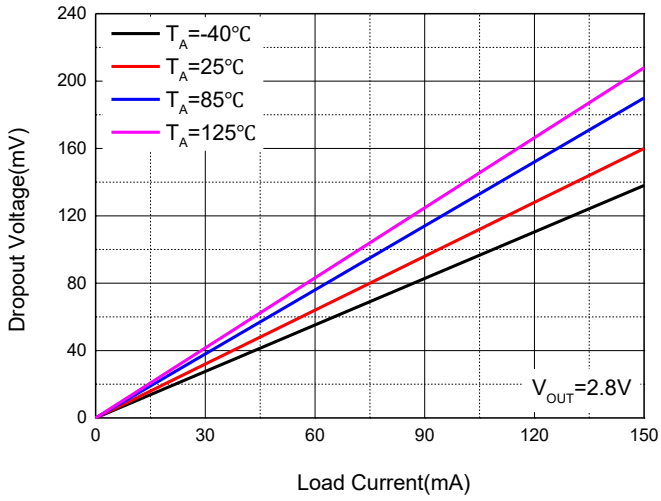
Quiescent Current



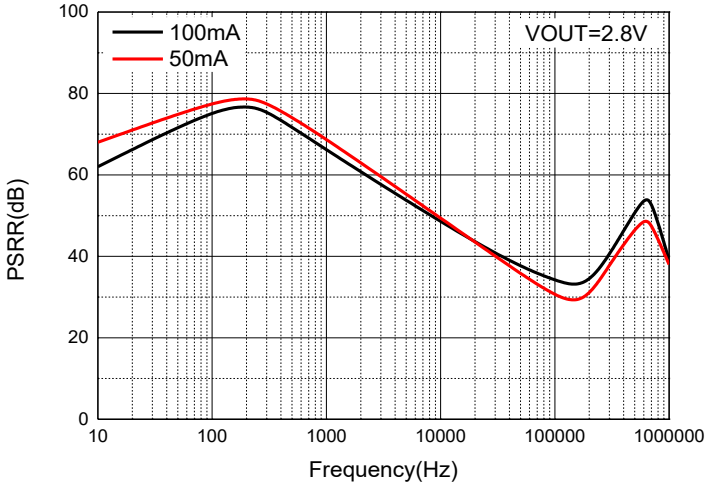
Current Cut-off Grid Voltage



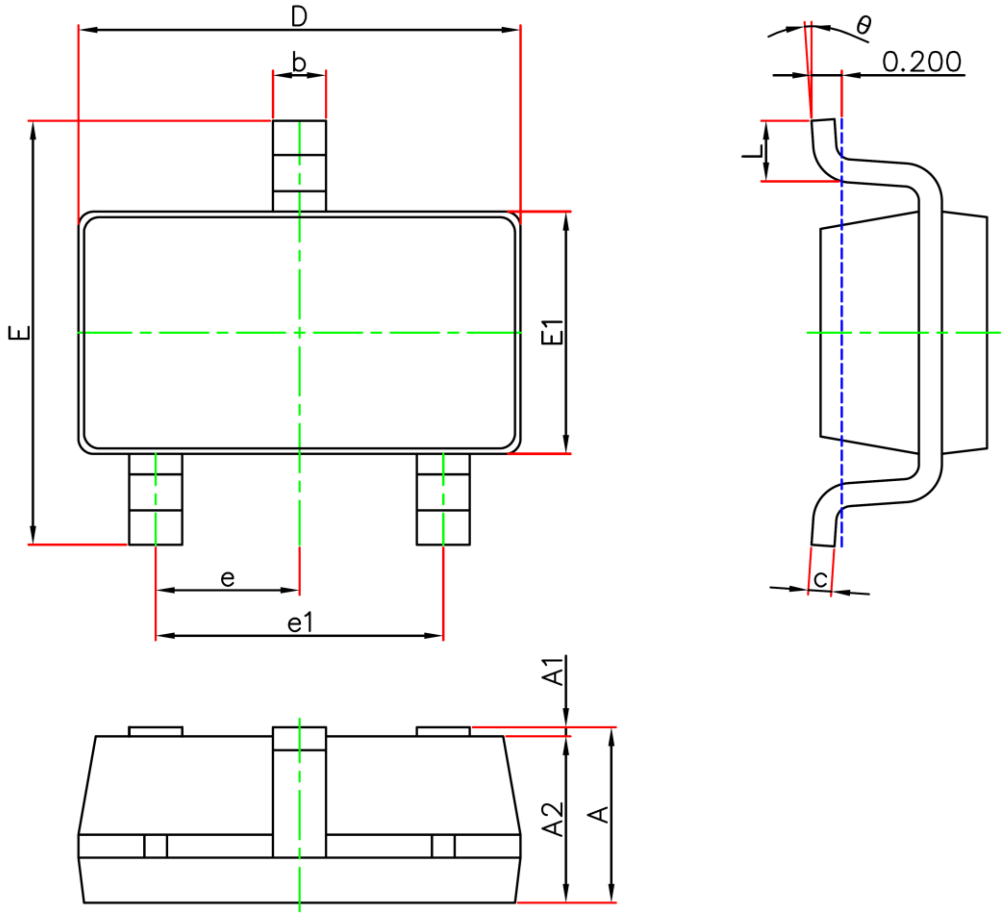
Dropout Voltage vs. Load Current



PSRR vs. Frequenc

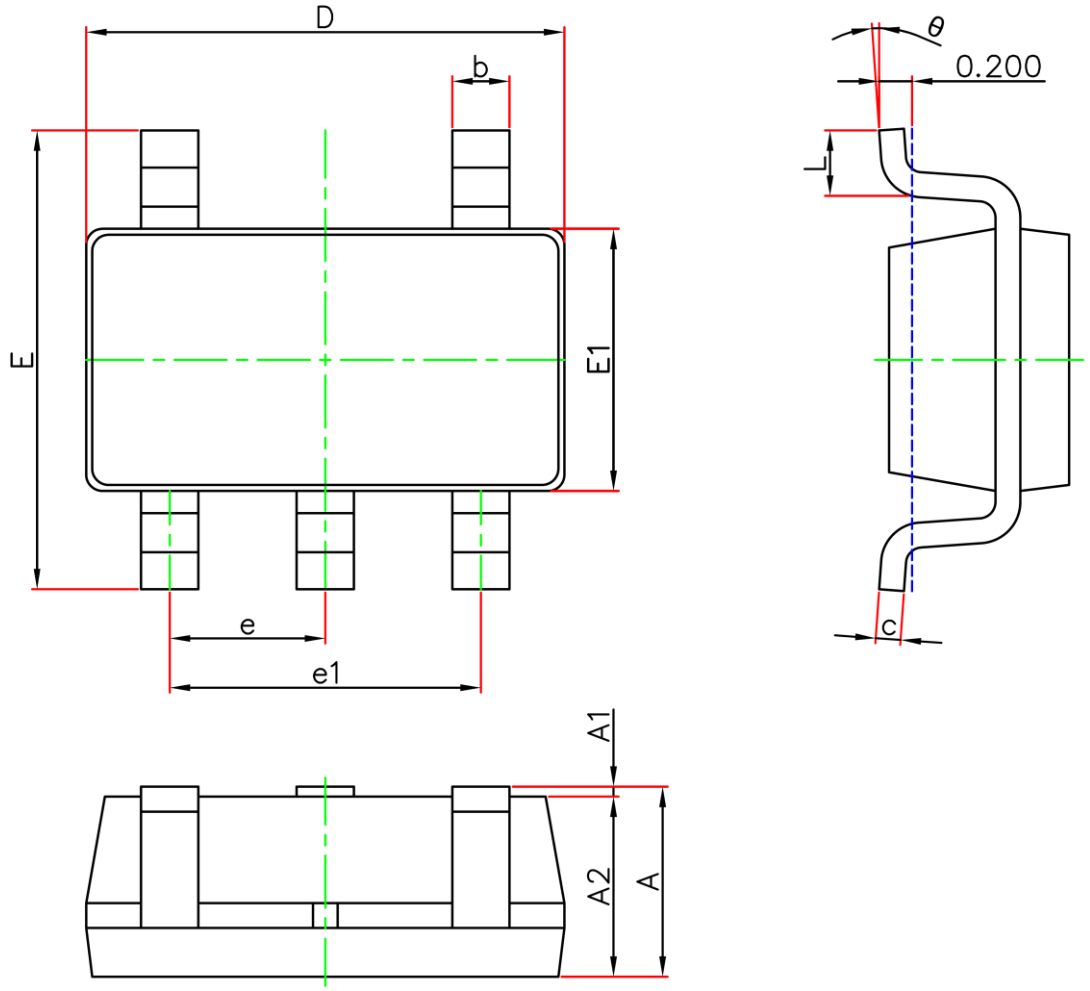


SOT-23-3L Package Outline Dimensions



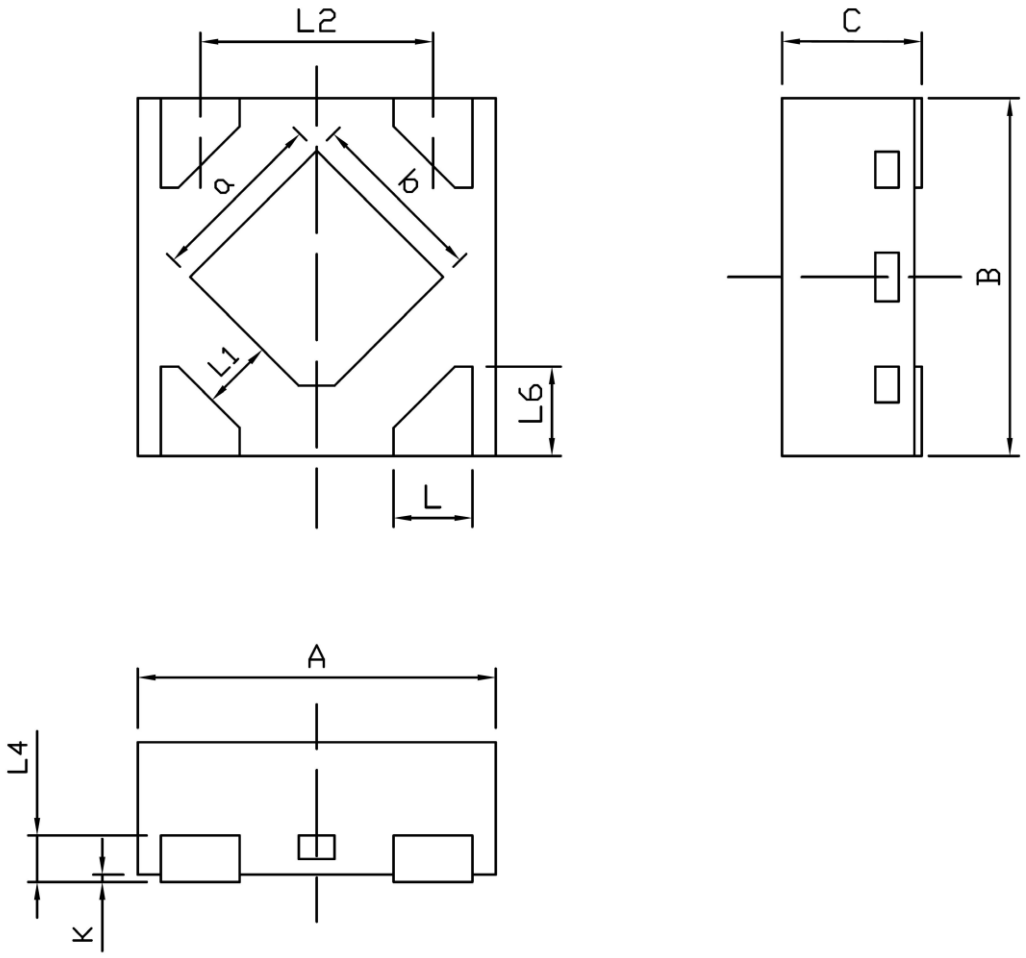
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0	0.150	0.000	0.006
A2	1.050	1.250	0.041	0.049
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	2.650	2.950	0.104	0.116
E1	1.500	1.700	0.059	0.067
e	0.950TYP		0.037TYP	
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 Package Outline Dimensions



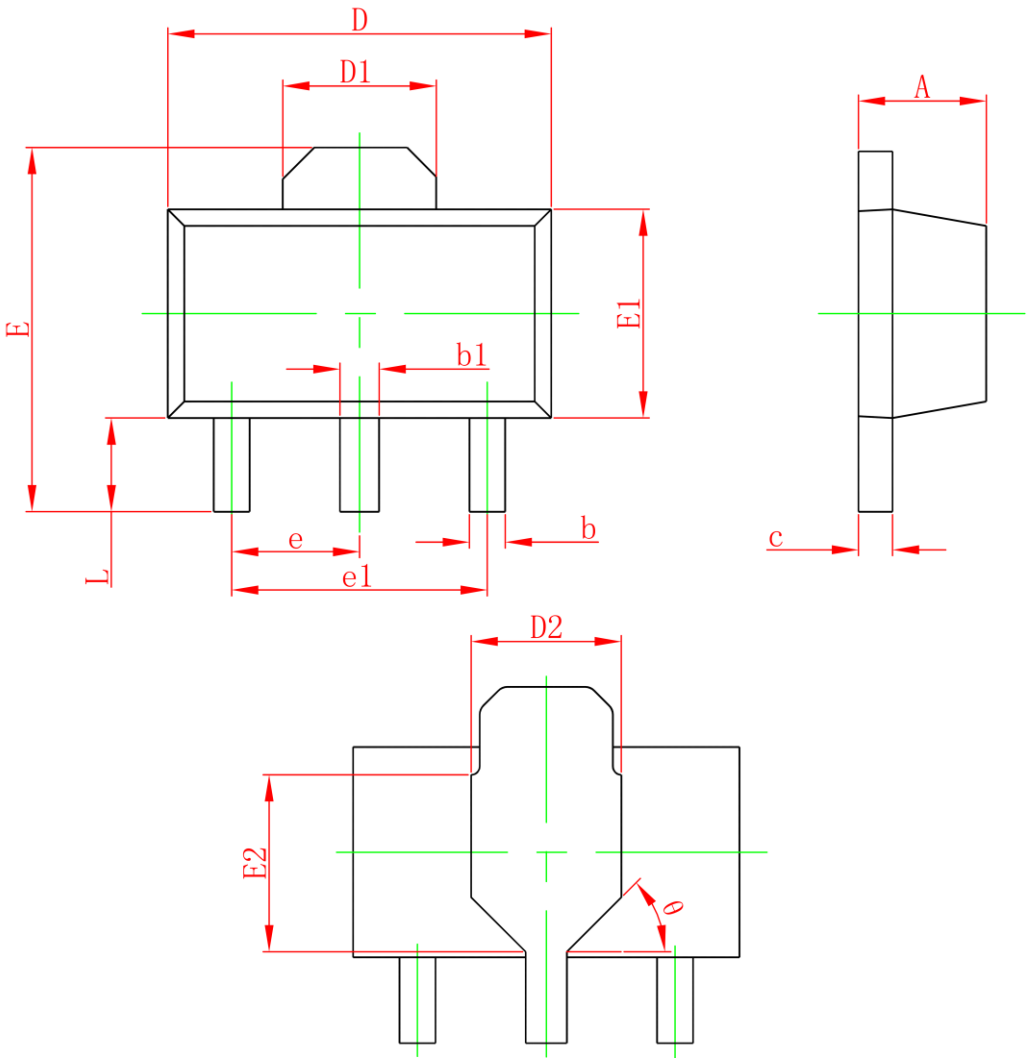
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0	0.150	0.000	0.006
A2	1.050	1.250	0.041	0.049
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	2.650	2.950	0.104	0.116
E1	1.500	1.700	0.059	0.067
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

DFN1X1-4L Package Outline Dimensions



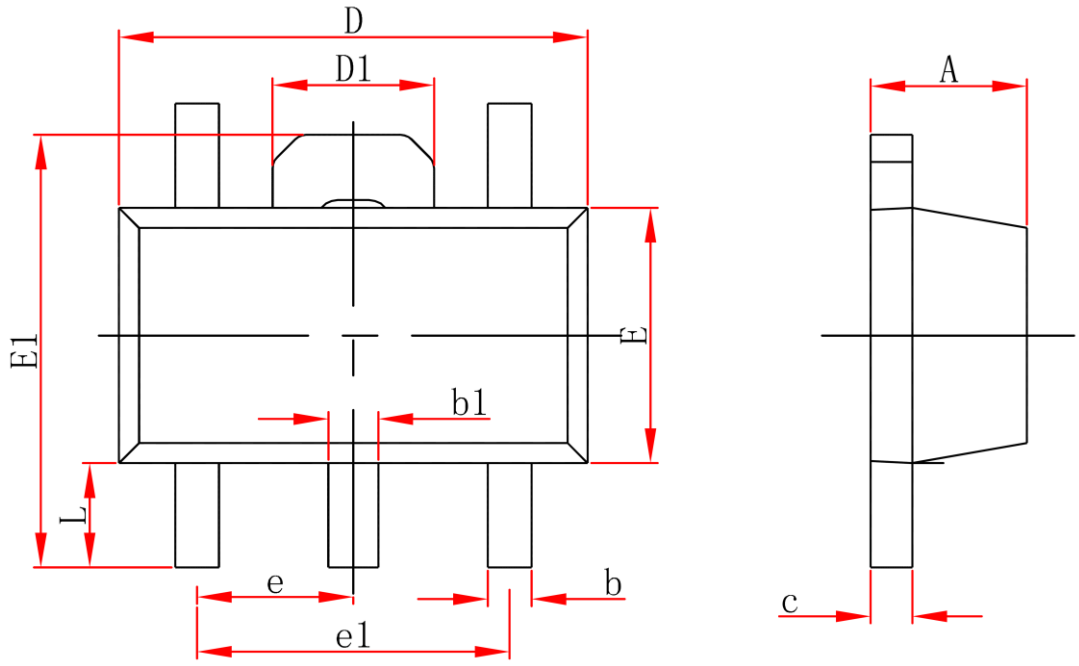
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.950	1.050	0.037	0.041
B	0.950	1.050	0.037	0.041
C	0.340	0.400	0.013	0.016
L	0.150	0.250	0.006	0.010
L1	0.150MIN		0.006MIN	
L2	0.650BSC		0.026BSC	
L4	0.127REF		0.005REF	
L6	0.200	0.300	0.008	0.012
K	0.000	0.050	0.000	0.002
a	0.380	0.580	0.015	0.023
b	0.380	0.580	0.015	0.023

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	0.020
b1	0.380	0.580	0.015	0.023
c	0.350	0.500	0.014	0.020
D	4.400	4.600	0.173	0.181
D1	1.650REF		0.065REF	
D2	1.650	1.850	0.065	0.073
E	3.900	4.400	0.154	0.173
E1	2.300	2.600	0.091	0.102
E2	1.900REF		0.075REF	
e	1.500TYP		0.059TYP	
e1	3.000TYP		0.118TYP	
L	0.900	1.200	0.035	0.047
θ	45°		45°	

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	0.020
b1	0.380	0.580	0.015	0.023
c	0.350	0.500	0.014	0.020
D	4.400	4.600	0.173	0.181
D1	1.650REF		0.065REF	
E	2.300	2.600	0.091	0.102
E1	3.900	4.400	0.154	0.173
e	1.500TYP		0.059TYP	
e1	3.000TYP		0.118TYP	
L	0.900	1.200	0.035	0.047

Attention：

- GreenPower Electronics reserves the right to improve product design function and reliability without notice.
- Any and all semiconductor products have certain probability to fail or malfunction, which may result in personal injury, death or property damage. Customer are solely responsible for providing adequate safe measures when design their systems.
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