GPL6221B Series

Low Noise CMOS Voltage Regulators

Product Summary

The GPL6221B 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 GPL6221B series work with low-ESR ceramic capacitors, reducing the amount of board space necessary for power applications. The GPL6221B 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 equipment, such as RF applications and other systems requiring a quiet voltage source.

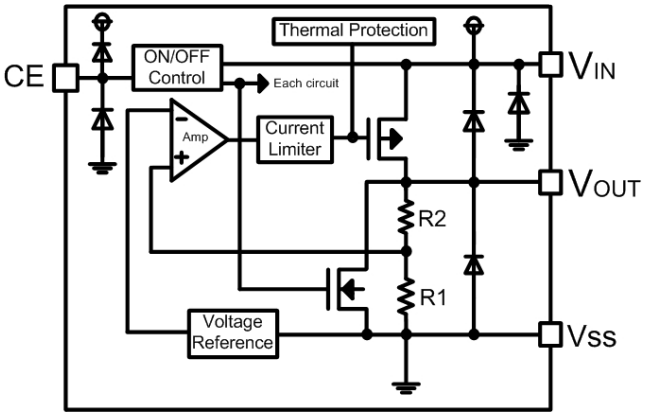
Features

- Low Quiescent Current: 50μA
- High Ripple Rejection：80dB@1kHz
- Operating Voltage Range: 1.8V～6.0V
- Low Dropout Voltage: 55mV@100mA
- Output Voltage:0.8V~ 5.0V
- High Accuracy: ±2%(Typ.)
- 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
- MP3, MP4 Player
- Battery-Powered Equipment

Block Diagram



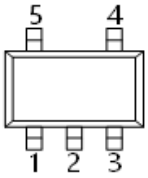
Order Information

GPL6221V①B②

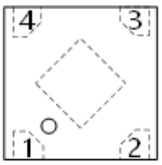
Designator	Description
①	Output Voltage e.g.1.8V=18
②	Package: SOT-23-5L=K5 DFN1X1-4L=H1

Pin Configuration

SOT-23-5L



DFN1X1-4L



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

DFN1X1-4L

Pin Number	Pin Name	Function
1	V_{OUT}	Output Pin
2	V_{SS}	Ground
3	CE	Chip Enable Pin
4	V_{IN}	Power Input Pin

Absolute Maximum Ratings (T_A=25℃,unless otherwise noted) [1)]

Parameter		Symbol	Ratings	Units
Input Voltage[2)]		V_{IN}	-0.3~V_{SS}+7	V
Output Voltage[2)]		V_{OUT}	-0.3~ V_{IN}+0.3	V
Output Current		I_{OUT}	500	mA
Power Dissipation	SOT-23-5L	P_D	0.38	W
	DFN1X1-4L	P_D	0.40	W
Thermal Resistance	SOT-23-5L	θ_{JA}	258	°C/W
	DFN1X1-4L	θ_{JA}	250	°C/W
Operating Free Air Temperature Range		T_A	-40~85	°C
Operating Junction Temperature Range		T_j	-40~125	°C
Storage Temperature		T_{stg}	-40~125	°C
Lead Temperature(Soldering, 10 sec)		T_{solder}	260	°C
ESD Rating		Human Body Model -(HBM)	2	kV
		Machine Model- (MM)	200	V

(1) Stresses beyond those listed under *absolute maximum ratings may* cause permanent damage to the device. These are stress ratingsonly, and functional operation of the device at these or any other conditions beyond those indicated under *recommended operatingconditions* is not implied. Exposure to absolute-maximum-rated conditions for extended periods my affect device reliability.

(2)All voltages are with respect to network ground terminal.

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

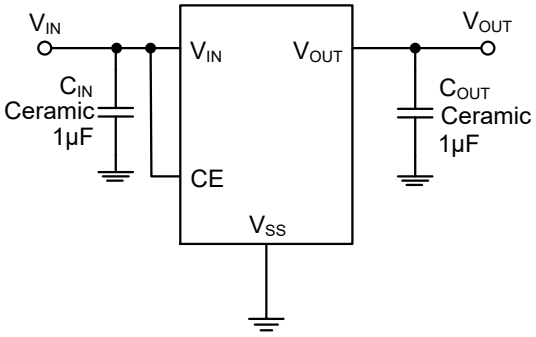
Parameter		Symbol	Conditions	Min.	Typ.	Max.	Units
Output Voltage		$V_{OUT(E)}$ 2)	I_{OUT}=1mA	V_{OUT}*0.98	V_{OUT}1)	V_{OUT}*1.02	V
Supply Current		I_{SS}	I_{OUT}=0		50	90	μA
Standby Current		I_{STBY}	CE = V_{SS}		0.1	1	μA
Output Current		I_{OUT}	V_{OUT}≥1.8V	500	700		mA
			V_{OUT}≥0.8V	300	500		
Dropout Voltage3)		Vdif	I_{OUT} =100mA		55		mV
Load Regulation		ΔV_{OUT}	V_{IN}= V_{OUT} +1V		1		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		50		ppm
Short Current		I_{Short}	V_{OUT} =V_{SS}		100		mA
Input Voltage		V_{IN}	—	1.8		6.0	V
Power Supply Rejection Rate	100Hz	PSRR	I_{OUT}=50mA		75		dB
	1kHz				80		
	10kHz				70		
CE "High" Voltage		$V_{CE"H"}$		1.5		V_{IN}	V
CE "Low" Voltage		$V_{CE"L"}$				0.3	V
Thermal Shutdown Threshold		T_{SD}			160		℃
Thermal Shutdown Hysteresis		ΔT_{SD}			20		℃
C_{OUT} Auto-Discharge Resistance		$R_{DISCHRG}$	V_{IN}=5V		100		Ω

1) V_{OUT}: Specified Output Voltage.

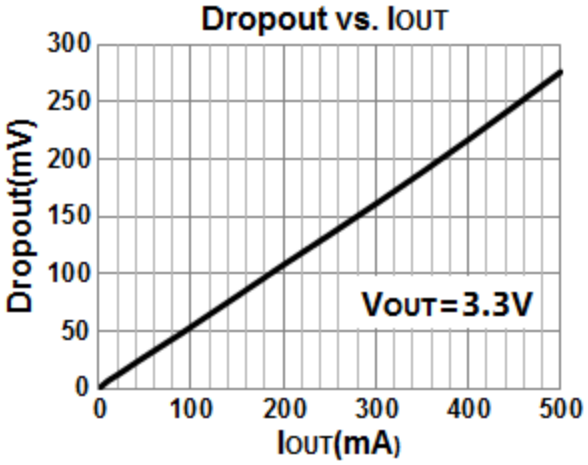
2) V_{OUT}(E) : Effective Output Voltage (Ie. The output voltage when V_{IN} = (V_{OUT} +1.0V) and maintain a certain I_{OUT} Value).

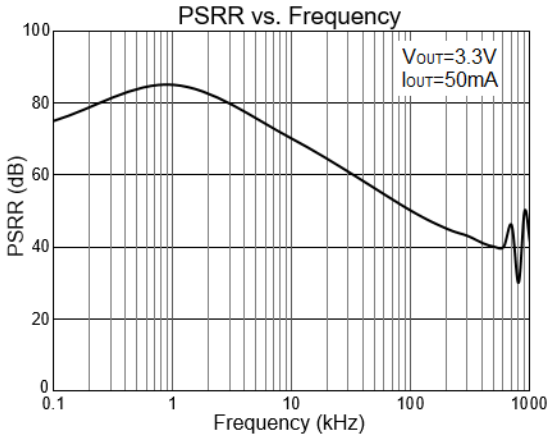
3) V_{dif} : The Difference Of Output Voltage And Input Voltage When Input Voltage Is Decreased Gradually Till Output Voltage Equals To 98% Of V_{OUT} (E).

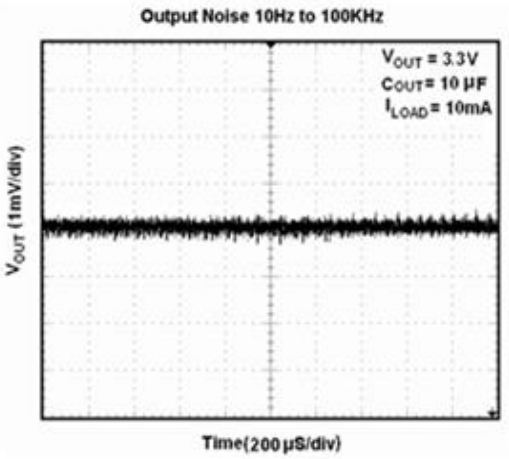
Typical Application

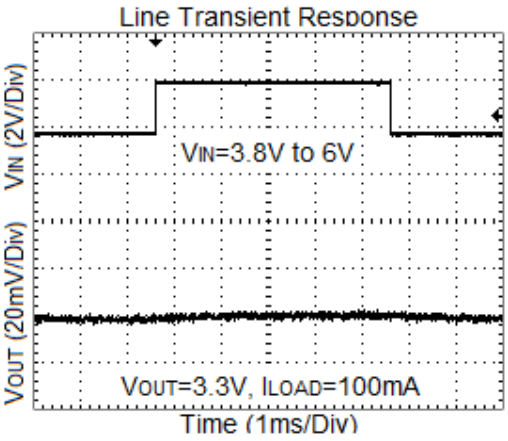


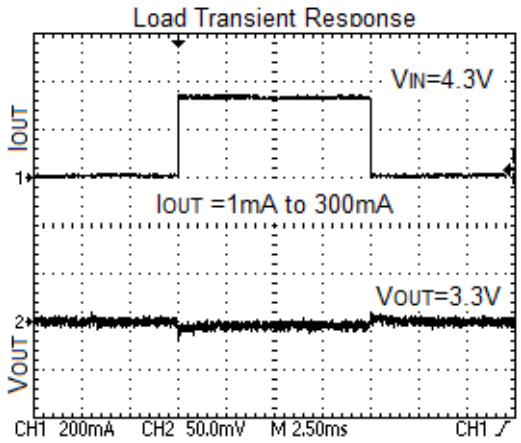
Typical Performance Characteristics

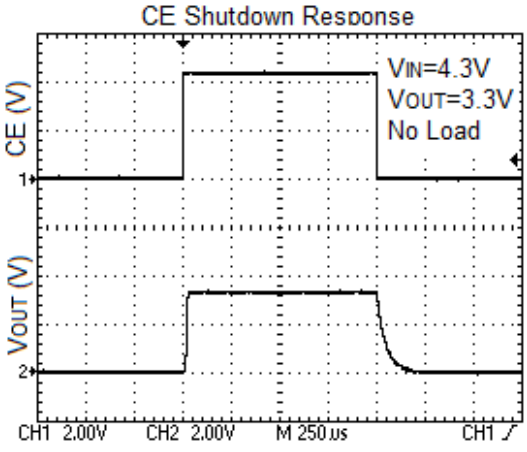




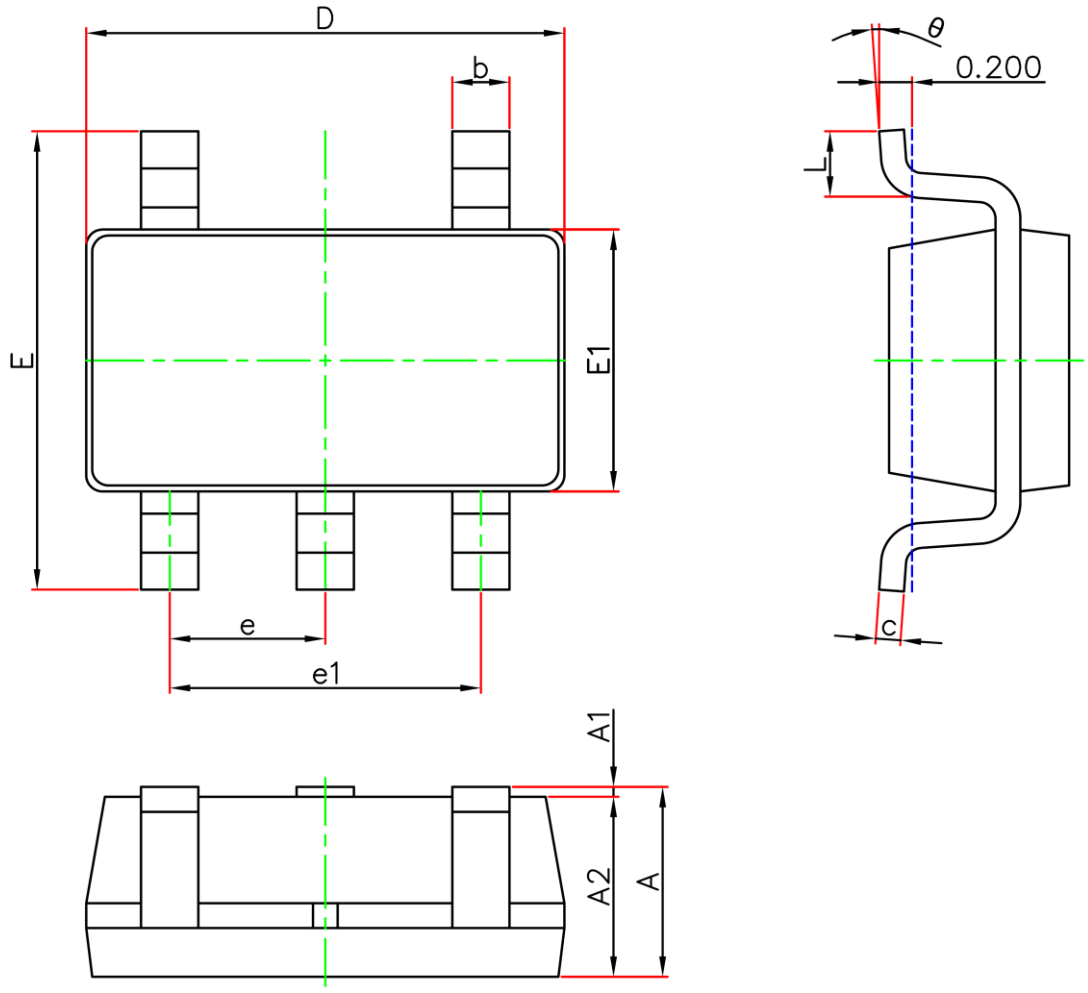






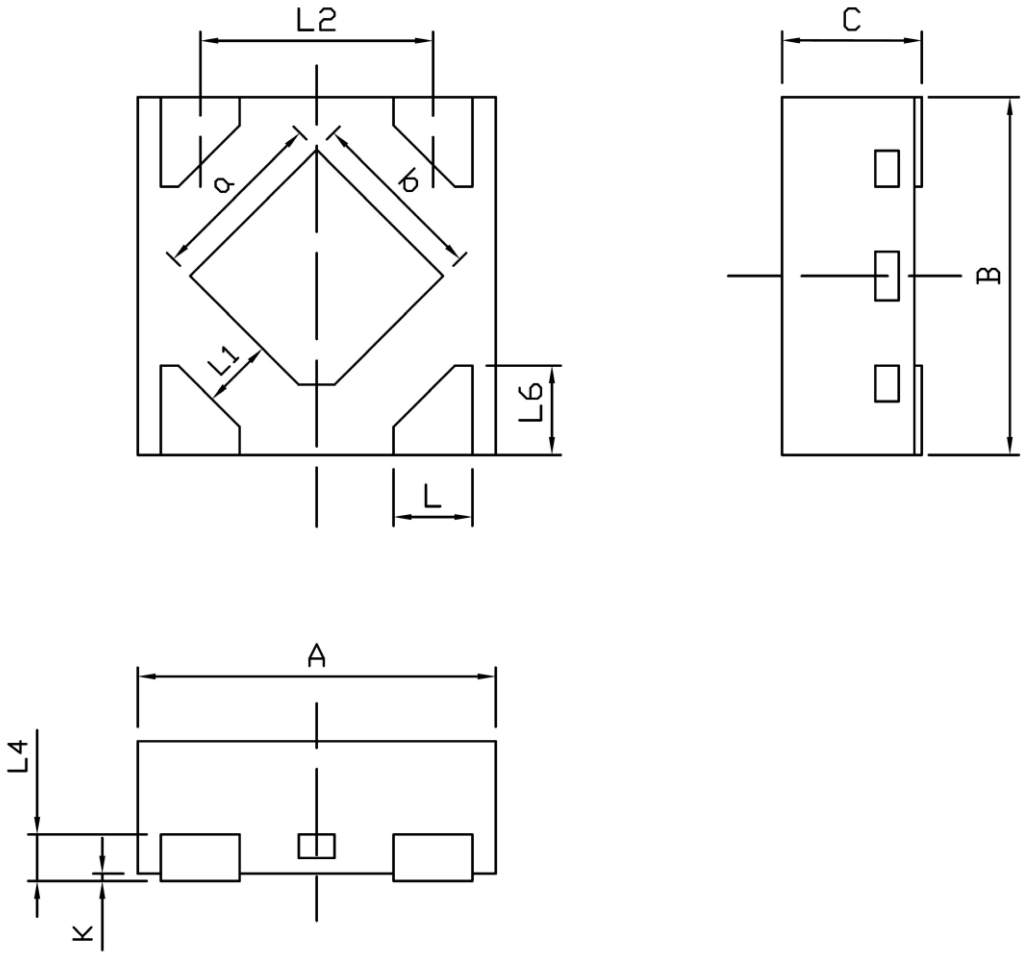


SOT-23-5L Package Outline Dimensions



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	0.270	0.006	0.011
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

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. Customers are solely responsible for providing adequate safe measures when design their systems.
- GreenPower Electronics products belong to consumer electronics or other civilian electronic products.