



GP
ELECTRONICS

GPL6388V120SKE

50V Low Current Consumption 150mA CMOS Voltage Regulator

Product Summary

The GPL6388V120SKE is positive voltage regulators manufactured by CMOS technologies with low power consumption and low dropout voltage, which provide large output currents even when the difference of the input-output voltage is small. The GPL6388V120SKE can deliver 150mA output current and allow an input voltage as high as 50V. The series are very suitable for the battery-powered equipments, such as RF applications and other systems requiring a quiet voltage source.

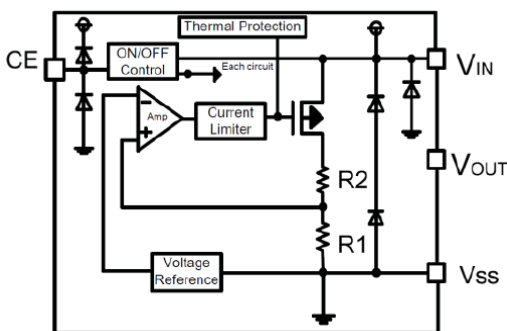
Features

- Low Quiescent Current: 3μA
- Operating Voltage Range: 2.5V~50V
- Output Current: 150mA
- Low Dropout Voltage: 500mV@50mA(V_{OUT}=3.3V)
- Output Voltage: 12V
- High Accuracy: ±2%/±1% (Typ.)
- High Ripple Rejection: 80dB@1kHz
- Low Output Noise: 27xV_{OUT} μ V_{RMS} (10Hz~100kHz)
- Excellent Line and Load Transient Response
- Built-in Current Limiter, Short-Circuit Protection
- Over-Temperature Protection

Applications

- Cordless Phones
- Radio control systems
- Laptop, Palmtops and PDAs
- Single-lens reflex DSC
- PC peripherals with memory
- Wireless Communication Equipment
- Portable Audio Video Equipment
- Car Navigation Systems
- LAN Cards
- Ultra-low Power Microcontrollers

Block Diagram

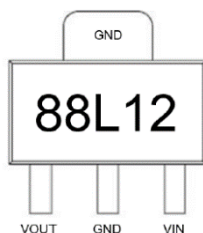


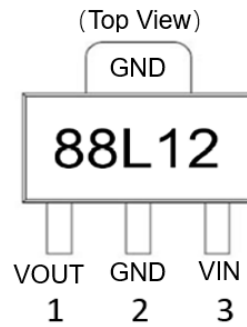
Order Information

GPL6388V①S②

Designator	Description
①	Output Voltage e.g. 12V=120
②	Package: SOT-23-3L=K3 SOT-23-5L=K5 SOT-89-3L=KE SOT-89-5L=KT SOT-223=DT

Marking:



PIN CONFIGURATION

SOT-89-3L (S-Type)

PIN NUMBER	PIN NAME	FUNCTION
1	V _{OUT}	Output
2	G _{ND}	Ground
3	V _{IN}	Power Input

Absolute Maximum Ratings¹⁾ (T_A=25°C, unless otherwise noted)

Parameter	Symbol	Ratings	Units
Input Voltage ²⁾	V _{IN}	-0.3~ 65	V
Output Voltage ²⁾	V _{OUT}	0.3~ 15	V
CE Pin Voltage ²⁾	V _{CE}	0.3~ V _{IN} +0.3	V
Output Current	I _{OUT}	400	mA
Power Dissipation	P _D	1.5	W
Operating Junction Temperature Range ³⁾	T _j	-40~150	°C
Storage Temperature	T _{stg}	-40~150	°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 ratings only, and functional operation of the device at these or any other conditions beyond those indicated under *recommended operating conditions* is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.
- 2) All voltages are with respect to network ground terminal.
- 3) ESD testing is performed according to the respective JEDEC standard. The human body model is a 100 pF capacitor discharged through a 1.5kΩ resistor into each pin. The machine model is a 200pF capacitor discharged directly into each pin.

Recommended Operating Conditions

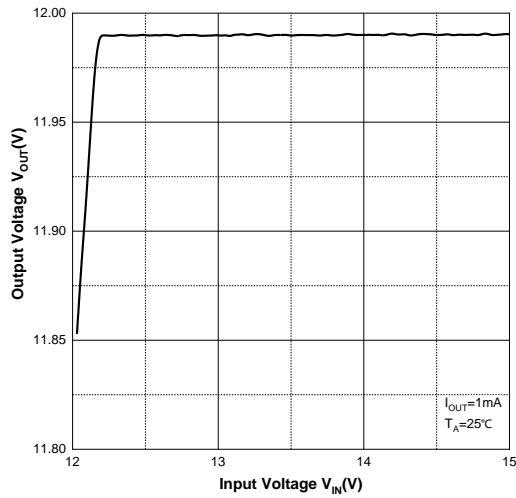
Parameter	Min.	Nom.	Max.	Units
Supply voltage at V _{IN}	2.5		50	V
Operating junction temperature range, T _j	-40		150	°C
Operating free air temperature range, T _A	-40		125	°C

Electrical Characteristics ($V_{IN}=14V$, $C_{IN}=C_{OUT}=1\mu F$, $T_A=25^\circ C$, unless otherwise specified)

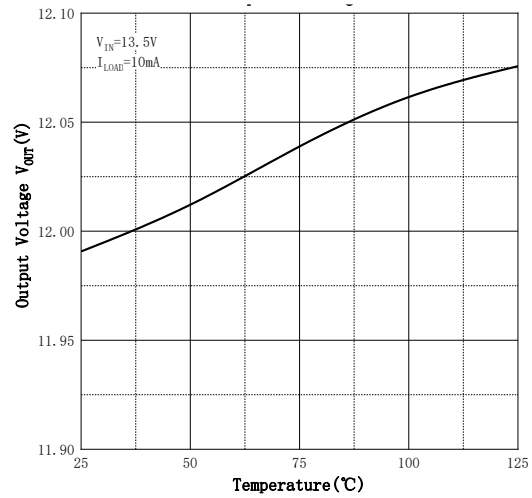
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units	
Input Voltage	V_{IN}		2.5	—	50	V	
Output Voltage Range	V_{OUT}	$I_{OUT}=1mA$		12		V	
Dropout Voltage	V_{dif}	$I_{OUT}=50mA, V_{OUT}=3.3V$	—	500	—	mV	
Supply Current	I_{SS}	$I_{OUT}=0A$	—	5	10	μA	
Line Regulation	$\frac{\Delta V_{OUT}}{V_{OUT} \times \Delta V_{IN}}$	$I_{OUT}=10mA$ $V_{OUT}+1V \leq V_{IN} \leq 18V$	—	0.01	0.3	%/V	
Load Regulation	ΔV_{OUT}	$V_{IN}=13V,$ $1mA \leq I_{OUT} \leq 100mA$	—	10	—	mV	
Temperature Coefficient	$\frac{\Delta V_{OUT}}{V_{OUT} \times \Delta T_A}$	$I_{OUT}=10mA, -$ $40^\circ C < T_A < 125^\circ C$		50		ppm	
Output Current Limit	I_{LIM}	$V_{OUT}=6V, V_{IN}=5V$	150	250		mA	
Short Current	I_{SHORT}	$V_{OUT}=V_{SS}$	—	20	—	mA	
Power Supply Rejection Ratio	PSRR	$I_{OUT}=50mA$	100Hz		75		dB
			1kHz	—	80	—	
			10kHz	—	60		
			100Khz		45		
Output Noise Voltage	V_{ON}	BW =10Hz to 100kHz		324		μV_{RMS}	
Thermal Shutdown Temperature	T_{SD}			170		$^\circ C$	
Thermal Shutdown Hysteresis	ΔT_{SD}			20		$^\circ C$	
CE "High" Voltage	$V_{CE} "H"$		1.5		14	V	
CE "Low" Voltage	$V_{CE} "L"$				0.3	V	

Typical Performance Characteristics

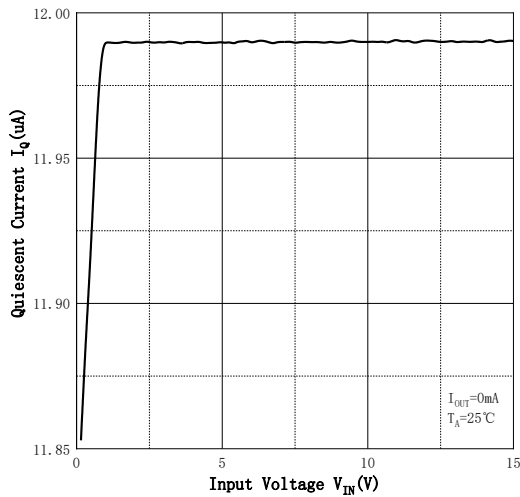
Line Regulation



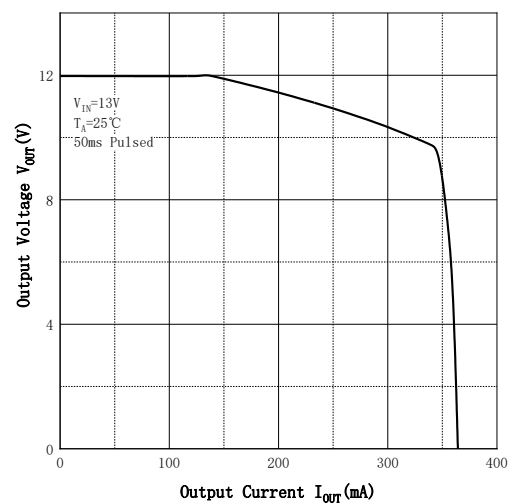
Temperature Regulation



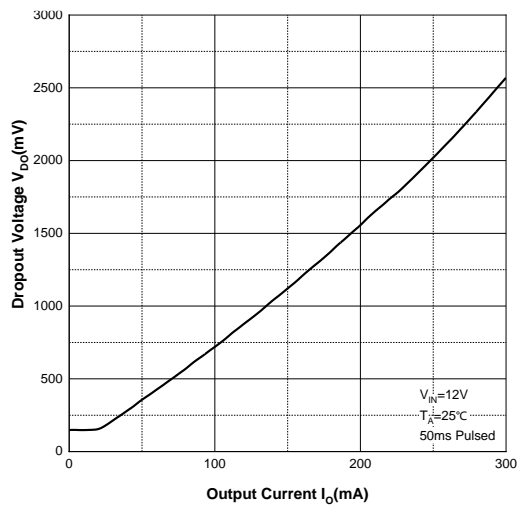
Quiescent Current



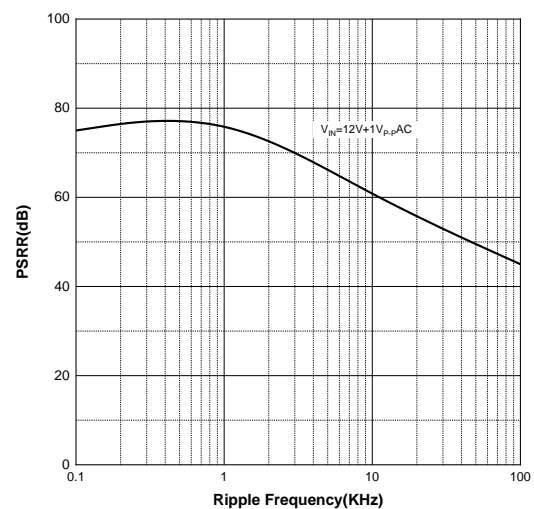
Load Regulation



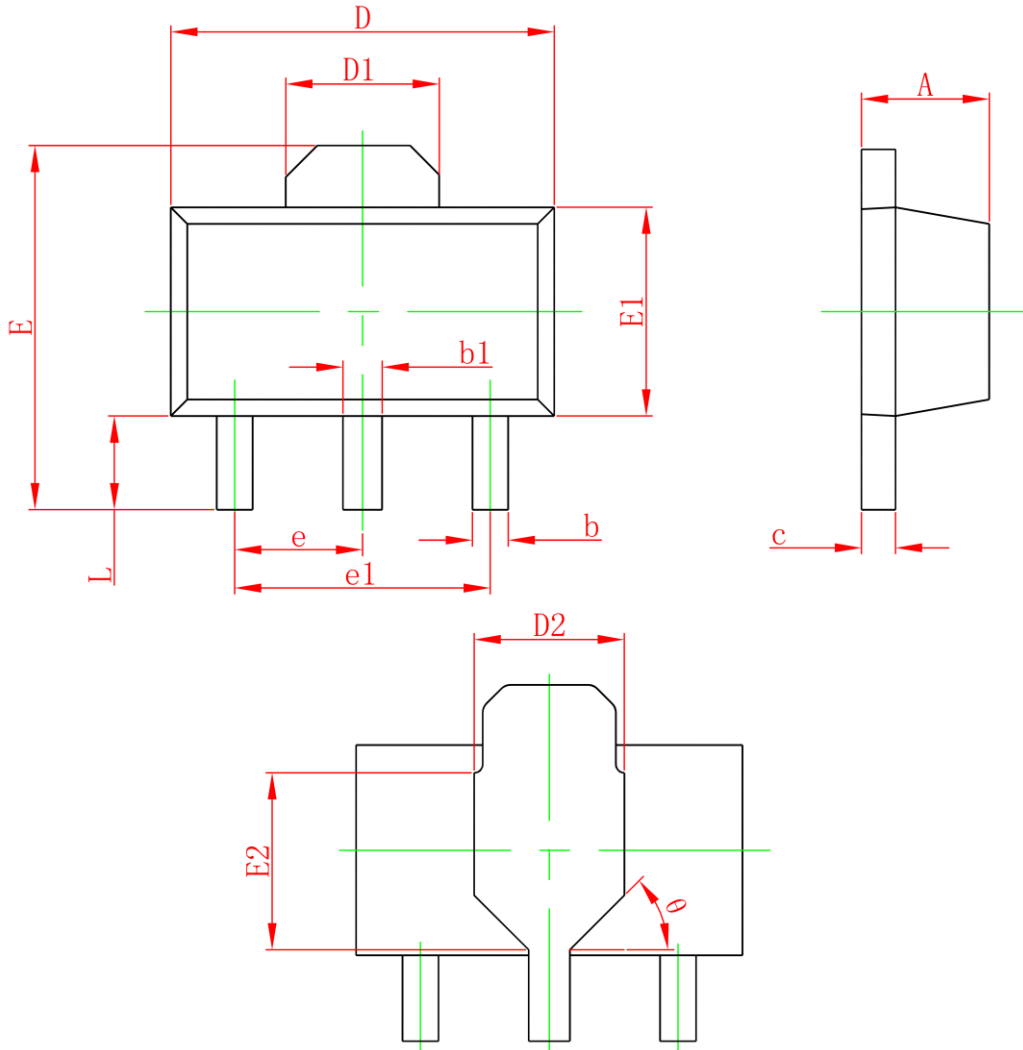
Dropout Voltage



PSRR vs. Frequency



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°	

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.
- GreenPower Electronics products belong to consumer electronics or other civilian electronic products.