



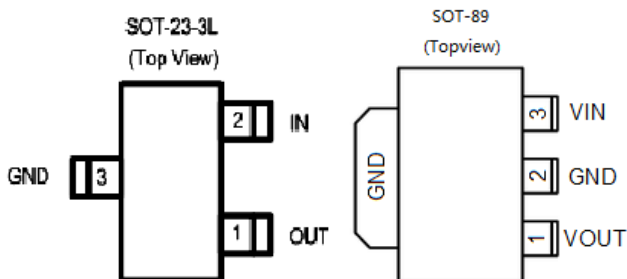
## General Description

The SE8801 is a very low dropout three-terminal regulator and specifically designed for today's electricity meter applications. There are two distinct requirements for the power supplies for the electricity meters. The first requirement is low power consumption. The second is low noise. Most of the power supplies in the market could only satisfy one requirement, but not both of them at the same time. The SE8801 is now the first IC in the market that is able to satisfy both requirements. The SE8801 uses a very unique design to achieve very low power consumption while providing a very low noise power output for electricity meter applications.

## Features

- Output voltage of 3.3/4.3/5.0V/5.7 (Typ.)
- Low quiescent Current
- Over-current/Over-temperature Protection.
- Minimum external components.
- Output voltage tolerances of 4.3V  $\pm$ 1%
- Output voltage tolerances of 3.3V/5.0V/5.7V  $\pm$ 2%
- ESD rating is 2KV (Per MIL-STD-883D)
- Input Voltage up to 30V
- Operating Junction Temperature from  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$

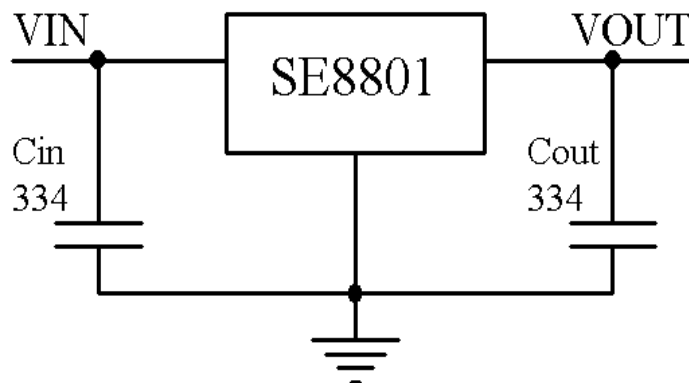
## Pin Configuration



## Applications

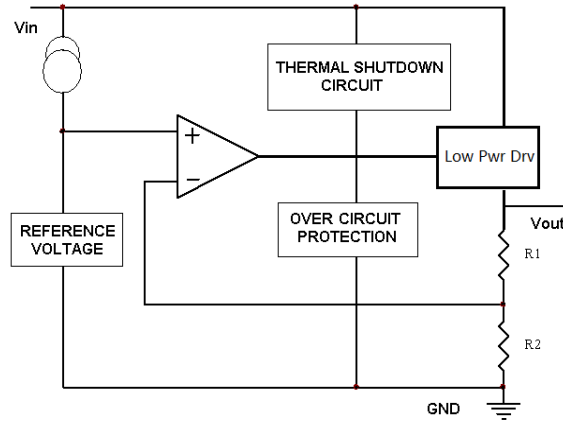
- Electricity meter.
- Networking Equipments where low noise and low power consumption is required.

## Typical Application

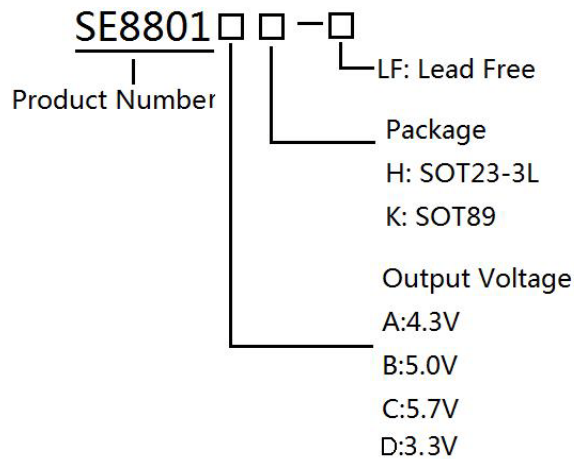




### Functional Block Diagram



### Ordering Information



### Marking Information

Part Number	Marking Information	Package	Remarks
SE8801BH	801x <sup>●</sup>	SOT-23-3L	The last character: the batch number.
SE8801AK	SE8801A YYWW-LF	SOT-89	A: 4.3V
SE8801BK	SE8801B YYWW-LF		B: 5.0V
SE8801CK	SE8801C YYWW-LF		C: 5.7V
SE8801DK	SE8801D YYWW-LF		D: 3.3V
			LF : Lead Free YYWW: Production batch



### Absolute Maximum Rating

Parameter	Symbol	Maximum	Units
Power dissipation@25°C: SE8801H(SOT-23-3L) SE8801K(SOT-89)	$P_D$	0.25 0.45	W
Input Voltage	$V_{IN}$	-0.3~30	V
Operating Junction Temperature Range	$T_J$	-40 to +125	°C
Thermal Resistance SE8801H(SOT-23-3L) SE8801K(SOT-89)	$\theta_{JA}$	150 95	°C/W
Lead Temperature (Soldering) 10 seconds	$T_{LEAD}$	$260 \pm 5$	°C
Storage Temperature	$T_{STG}$	-65 to +150	°C
ESD (HBM) Susceptibility	$V_{ESD}$	2	KV

Note: 1) Thermal resistance test board Size: 5mm\*5mm\*1.6mm,  $T_a=25^\circ\text{C}$ ;

### Recommended Operating Conditions

Parameter	Symbol	Value	Units
Supply Input Voltage	$V_{IN}$	7.0 to +25	V
Junction Temperature	$T_J$	-40 to +85	°C

### Electrical Characteristics

$V_{IN} = 8\text{V}$ ;  $I_{OUT} = 10\text{mA}$ ;  $C_{IN} = C_{OUT} = 1\mu\text{F}$ ;  $T_J = 25^\circ\text{C}$ ; unless otherwise specified

Symbol	Parameter	Conditions	SE8801			Unit
			Min	Typ	Max	
$V_O$	Output Voltage	$I_{OUT} = 10\text{mA}$	- 1%	4.3	+ 1%	V
			- 2%	3.3	+ 2%	V
			- 2%	5.0	+ 2%	V
			- 2%	5.7	+ 2%	V
$\Delta V_O$	Line Regulation	$7\text{V} \leq V_{IN} \leq 20\text{V}$	--	0.07	--	%/V
$\Delta V_O$	Load Regulation	$1\text{mA} \leq I_O \leq 50\text{mA}$	--	50	--	mV

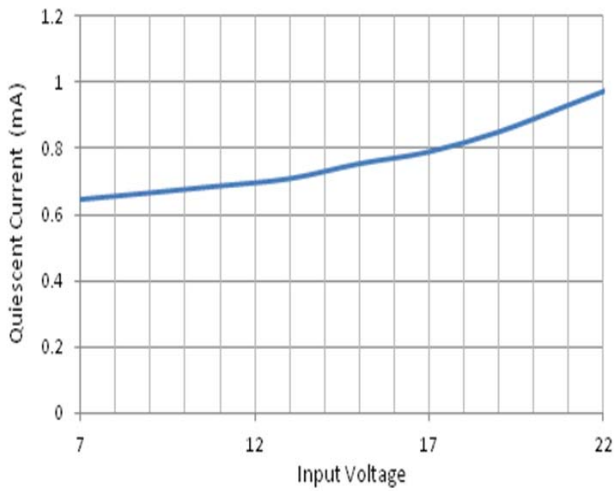


$I_Q$	Quiescent Current		--	0.65	--	mA
$\Delta I_Q$	Quiescent Current Change	$7V \leq V_{IN} \leq 20V$	--	0.32	--	mA
		$1mA \leq I_O \leq 50mA$	--	-0.17	--	mA
Vdrop	Dropout Voltage	$\Delta V_O = -2\%$	-	0.8	--	V
$\Delta V_{IN} / \Delta V_{OUT}$	Ripple Rejection	f = 120Hz, C <sub>IN</sub> =C <sub>OUT</sub> =0.33uF 8V ≤ V <sub>IN</sub> ≤ 16V	--	55	--	dB
$I_{PK}$	Peak Output Current	V <sub>in</sub> =8V	50	60	--	mA
		V <sub>in</sub> =15V	90	100	--	
$\Delta V_O / \Delta T$	Average Output Voltage Tempco	I <sub>O</sub> = 10mA	--	0.10	--	mV/°C
T <sub>OTP</sub>	Thermal Protection Temperature		--	130	--	°C
V <sub>IN</sub> (Min)	Minimum Value of Input Voltage Required to Maintain Line Regulation	I <sub>O</sub> = 10mA	5.8	6.2	--	V

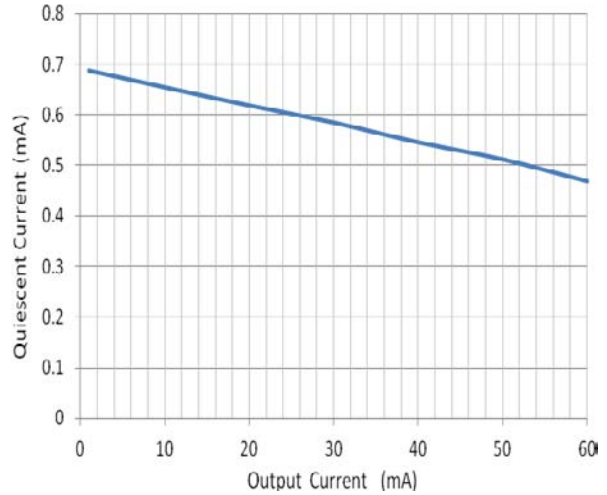


### Typical Performance Characteristic

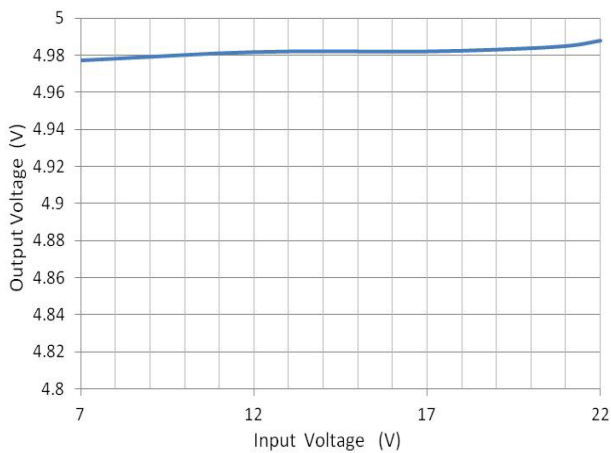
$V_{IN} = 8V$ ,  $I_{OUT} = 10mA$ ,  $C_{IN} = C_{OUT} = 0.33\mu F$ ,  $T_J = 25^\circ C$ , unless specified otherwise.



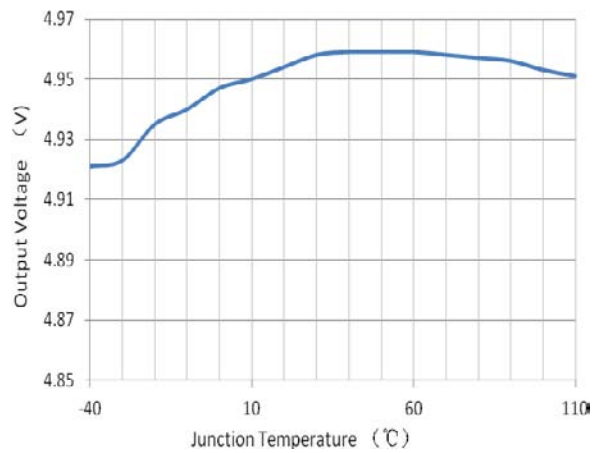
Quiescent Current VS Input Voltage



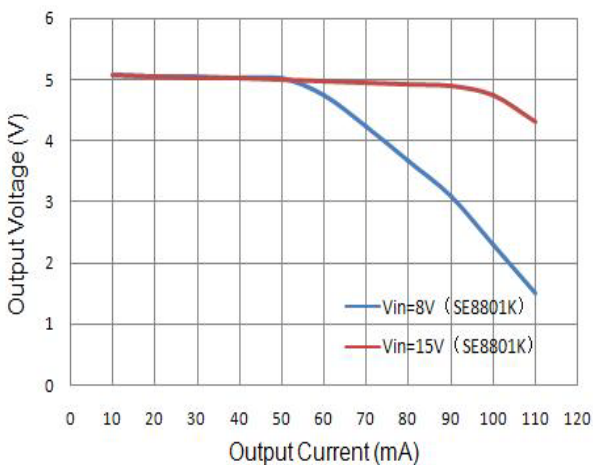
Quiescent Current VS Output Current



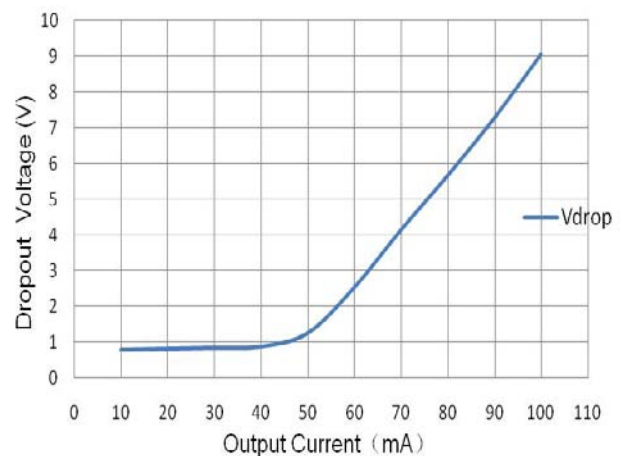
Output Voltage VS Input Voltage



Output Voltage VS Junction Temperature



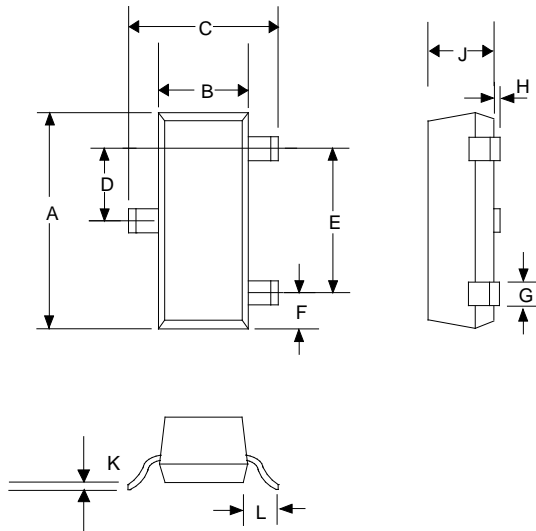
Output Voltage VS Output Current



Dropout Voltage VS Output Current

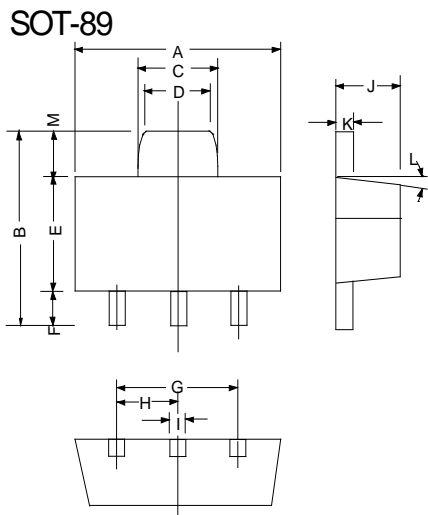


**Outline Drawing SOT-23**



DIMENSIONS				
DIM <sup>N</sup>	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.110	0.120	2.80	3.04
B	0.047	0.055	1.20	1.40
C	0.083	0.104	2.10	2.64
D	0.035	0.040	0.89	1.03
E	0.070	0.080	1.78	2.05
F	0.018	0.024	0.45	0.60
G	0.015	0.020	0.37	0.51
H	0.0005	0.004	0.013	0.10
J	0.034	0.040	0.887	1.02
K	0.003	0.007	0.085	0.18
L	-	0.027	-	0.69

**Outline Drawing SOT-89**



DIMENSIONS				
DIM <sup>N</sup>	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.173	0.181	4.400	4.600
B	0.159	0.167	4.050	4.250
C	0.067	0.075	1.700	1.900
D	0.051	0.059	1.300	1.500
E	0.094	0.102	2.400	2.600
F	0.035	0.047	0.890	1.200
G	0.118REF		3.00REF	
H	0.059REF		1.50REF	
I	0.016	0.020	0.400	0.520
J	0.055	0.063	1.400	1.600
K	0.014	0.016	0.350	0.410
L	10°TYP		10°TYP	
M	0.028REF		0.70REF	



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