



## General Description

SE85XX series is designed for power-sensitive applications. It includes a precision and high voltage input stage, an ultra-low-power bias current branch, and results in a ultra-low-power and low-dropout linear regulator.

The SE85XX operates from an input voltage of  $V_{OUT}+1V$  to 35V, consumes only 2.6  $\mu$  A of quiescent current, and offers 1% initial accuracy and low dropout voltage, 300mV typical at 100mA.

SE85XX has 1.8V, 2.5V, 3.0V, 3.3V, 3.6V, 4.0V, 4.2V, 5.0V fixed voltage versions.

Other features include short-circuit protection and thermal shutdown.

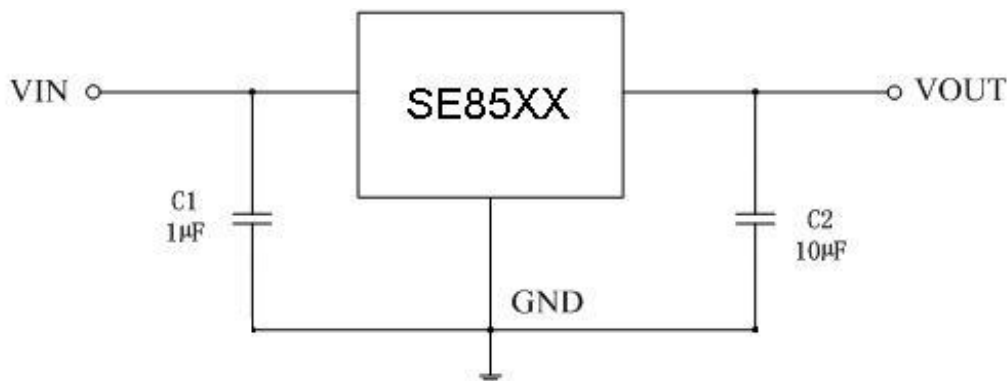
## Features

- Ultra Low Quiescent Current: 2.6  $\mu$  A(Typ.)
- Wide Operating Voltage:  $V_{OUT}+1V$  to 35V
- High output current:  $\geq 200mA$
- System startup with no overshoot
- Short circuit protection is designed with no overshoot
- UVLO 1.8V
- Low Dropout Voltage
- High Accuracy Output Voltage:  $\pm 1\%$
- Excellent power / load transient response
- Low temperature coefficient:  $\pm 100ppm/^{\circ}C$
- Thermal and Short-Circuit Protection
- SOT-89 and SOT-23 package
- Customer Pin Assignments are available

## Applications

- Battery-powered Smoke sensor
- Smoke sensor
- Microcontrollers
- Household appliances and instruments

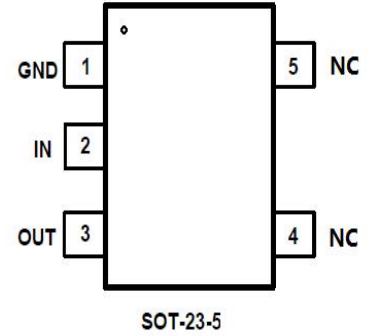
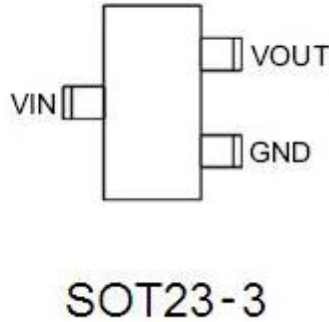
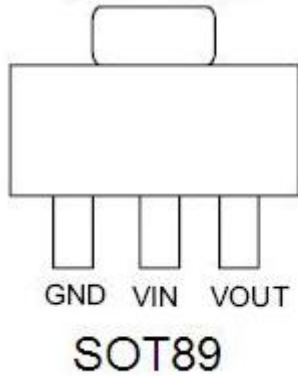
## Application Diagram





### Pin Configuration

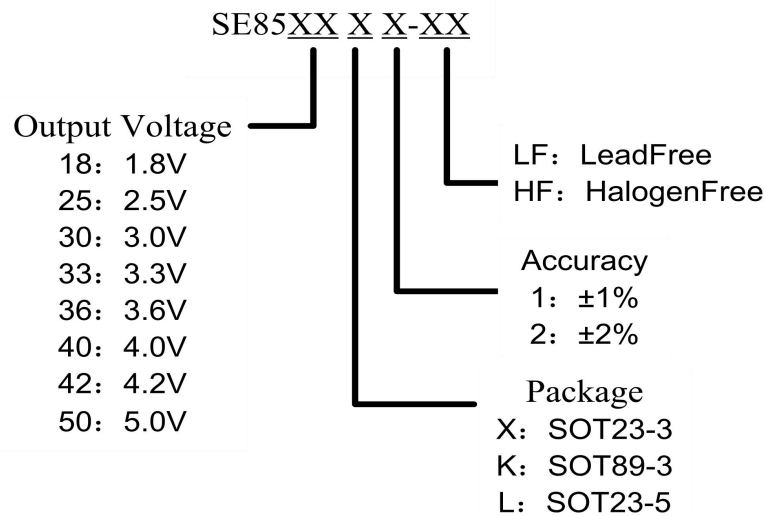
(Customer pin assignments are available)



### Absolute Maximum Rating

Symbol	Parameter	Value	Units
V <sub>IN</sub>	Input Supply Voltage	40	V
V <sub>OUT</sub>	Output Voltage	6	
T <sub>A</sub>	Operating Temperature	-40---105	°C
T <sub>STG</sub>	Storage Temperature	-40---150	
T <sub>J</sub>	Maximum Junction Temperature	150	
T <sub>LEAD</sub>	Lead Temperature (Soldering) 10 seconds	260	
θ <sub>JA</sub>	Thermal Resistance, Junction-to-Ambient	165(SOT89)	°C/W
		230(SOT23)	
P <sub>D</sub>	Power Consumption	750 (SOT89)	mW
		250 (SOT23)	

### Ordering Information

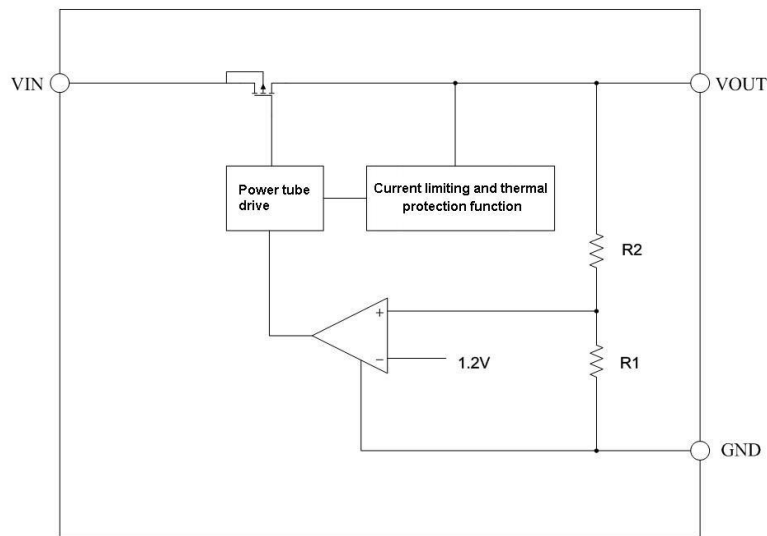




## Operating Rating

Parameter	Value	Units
Operating Temperature	-20℃~85	℃
Storage Temperature	-40℃~125	℃
Lead Temperature (Soldering) 10 seconds	260±5	℃

## Block Diagram



## Electrical Characteristics

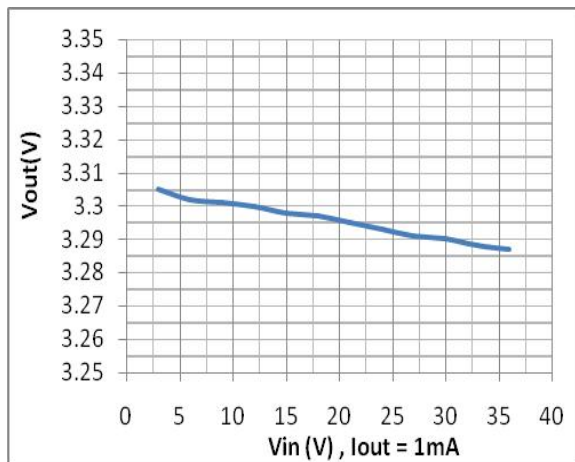
( $V_{IN}=V_{OUT}+1V$  ;  $T_j=25^{\circ}C$  unless otherwise noted.)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{IN}$	Input Supply Voltage		1.8		36	V
$V_{OUT}$	Output Voltage Accuracy	$I_{OUT}=10mA$	-1%		1%	V
			-2%		2%	V
$I_Q$	Quiescent Current			2.6	6.0	μA
$I_{OUT}$	Output Current		200	250		mA
$V_{DROP}$	Dropout Voltage	$I_{OUT}=10mA$ $\Delta V_{OUT} = -V_{OUT} * 2\%$		30		mV
		$I_{OUT}=100mA$ $\Delta V_{OUT} = -V_{OUT} * 2\%$		300		mV
		$I_{OUT}=200mA$ $\Delta V_{OUT} = -V_{OUT} * 2\%$		600		mV
$V_{LR}$	Load Regulation	$1mA \leq I_{OUT} \leq 100mA$		40		mV
$V_{SR}$	Line Regulation	$I_{OUT}=1mA$ , $V_{IN}=(V_{OUT}+1V)$ to 30V		0.2		%/V

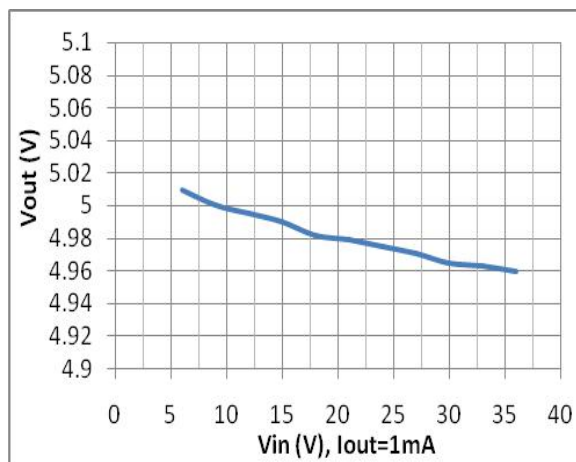


$I_{LIMIT}$	Current Limit	$V_{IN}=(V_{OUT} +1V)$ to 30V $R_{LOAD}=V_{OUT} /1A$	450		mA
$T_{SHDN}$	Thermal Protection		125		°C
$TC_{VOUT}$	Output Voltage Temperature Coefficient	$I_{OUT}=10mA$ $-40^{\circ}C \leq T_{AMB} \leq 100^{\circ}C$	±100		ppm/°C

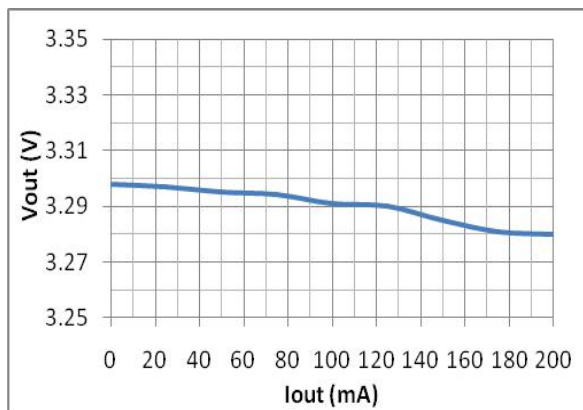
**Typical Performance Characteristics**



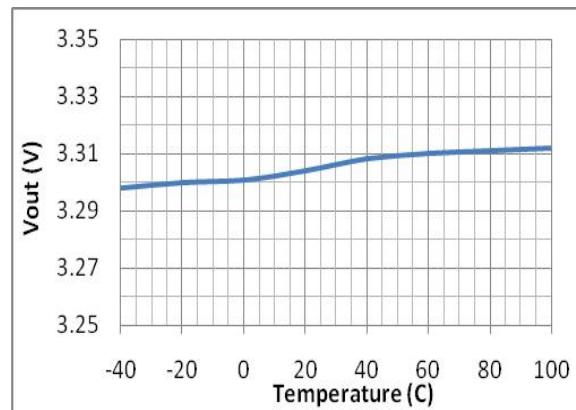
V<sub>OUT</sub>: 3.3V



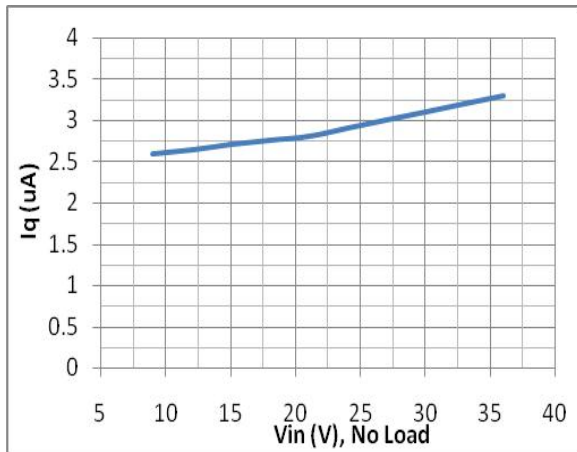
V<sub>OUT</sub>: 5.0V



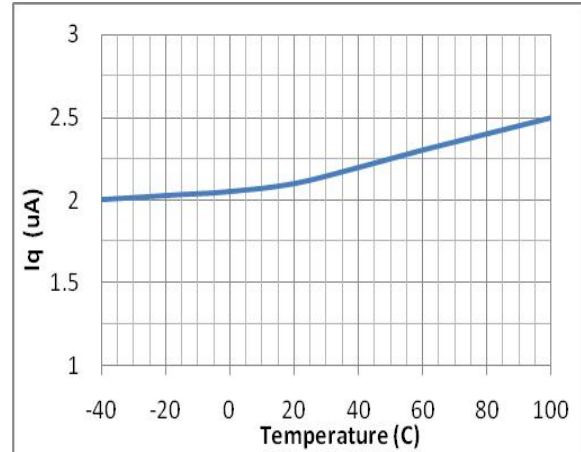
V<sub>OUT</sub>: 3.3V



V<sub>OUT</sub>: 3.3V



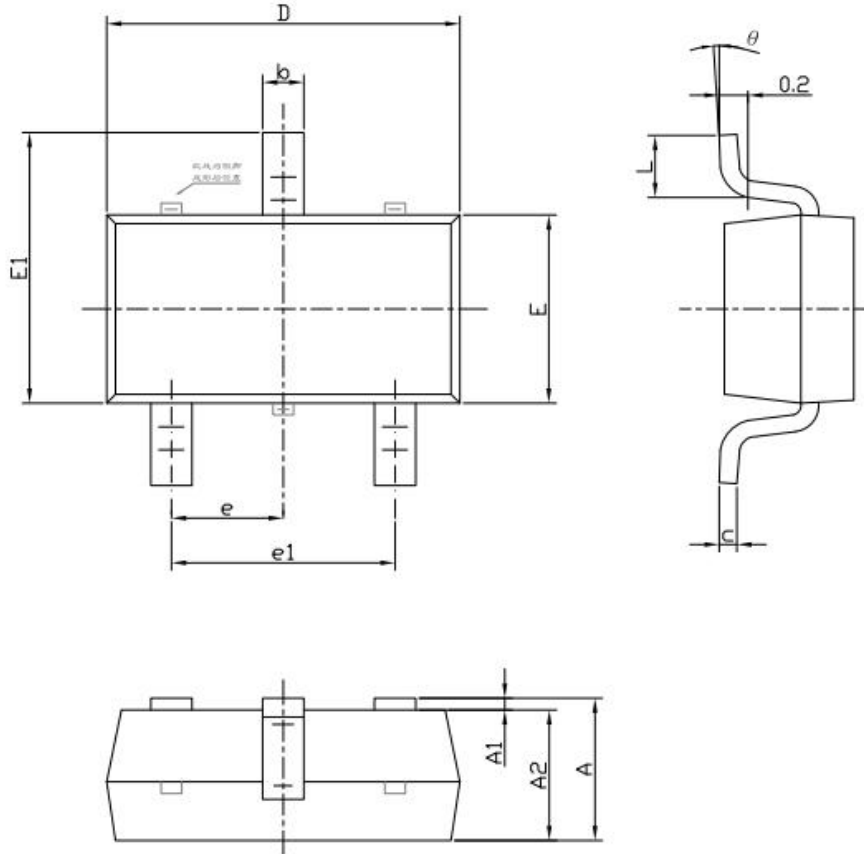
$V_{OUT}$ : 3.3V



$V_{OUT}$ : 5.0V



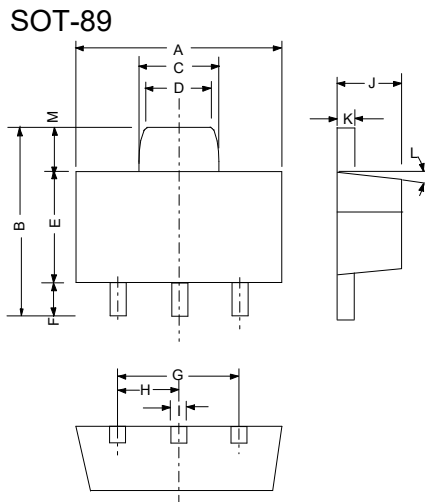
Outline Drawing for SOT-23-3



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
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	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
$\theta$	0°	8°	0°	8°

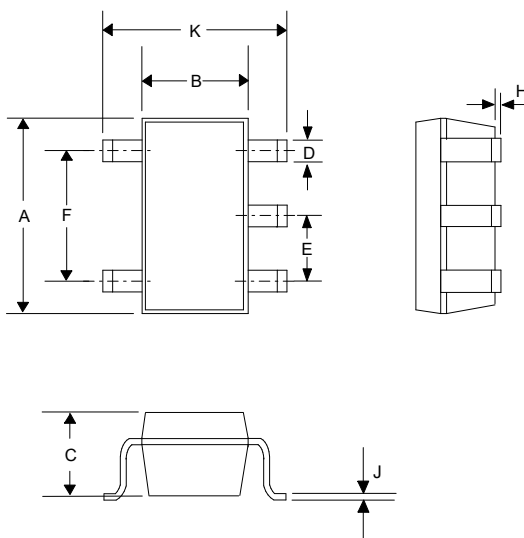


**Outline Drawing for SOT-89**



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	

**Outline Drawing for SOT-23-5**



DIMENSIONS				
DIM <sup>N</sup>	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.110	0.120	2.80	3.05
B	0.059	0.070	1.50	1.75
C	0.036	0.051	0.90	1.30
D	0.014	0.020	0.35	0.50
E	-	0.037	-	0.95
F	-	0.075	-	1.90
H	-	0.006	-	0.15
J	0.0035	0.008	0.090	0.20
K	0.102	0.118	2.60	3.00



## Customer Support

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