

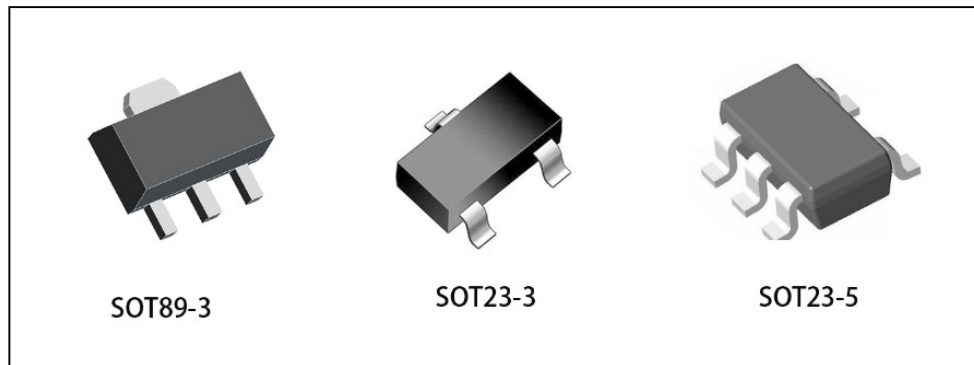
## 60V、150mA Low Power LDO

### SSP7985

#### General Description

The SSP7985 series is a group of positive voltage output, three-pin regulators, that provide a high current even when the input/output voltage differential is small. Low power consumption and high accuracy is achieved through CMOS and laser trimming technologies.

The SSP7985 consists of a high-precision voltage reference, an error amplification circuit, and a current limited output driver. Transient response to load variations have improved in comparison to the existing series.



#### Features

- High input voltage: 60V
- Low temperature coefficient
- Built-in current limiter
- High PSRR: 70dB at 1KHz
- Good Transient Response
- Large Output Current: 150mA
- Low Quiescent Current: 2 $\mu$ A
- Output voltage accuracy: tolerance  $\pm 2\%$
- Integrated Short-Circuit Protection
- Dropout Voltage: 70mV@10mA/700mV@100mA
- High Input Voltage Rating: Up to 80V
- Packages: SOT89-3, SOT23-3 and SOT23-5

#### Applications

- Battery-powered equipment
- Smoke detector and sensor
- Home Appliance
- Microcontroller Applications

**Order information**

Product model	Package	Manner of packing	Packing quantity
SSP7985PxxPR	SOT89-3	Reel	1000
SSP7985PxxMR	SOT23		3000
SSP7985PxxM5R	SOT23-5		3000

**Selection Guide Table**

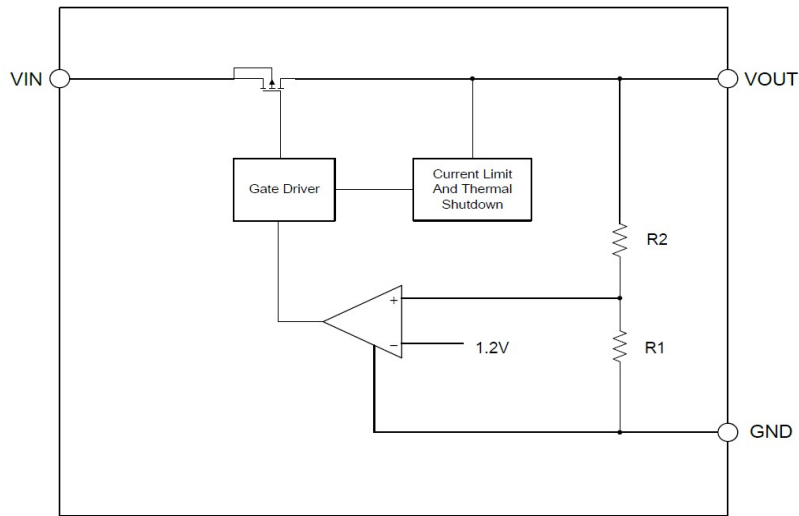
 SSP7985P<sup>①</sup> <sup>②</sup> <sup>③</sup> <sup>④</sup>

Designator	Symbol	Description
<sup>①</sup> <sup>②</sup>	Integer	Output Voltage(2.5V~5.0V)
<sup>③</sup>	P	Package:SOT89-3
	M	Package:SOT23-3
	M5	Package:SOT23-5
<sup>④</sup>	R	RoHS / Pb Free
	G	Halogen Free

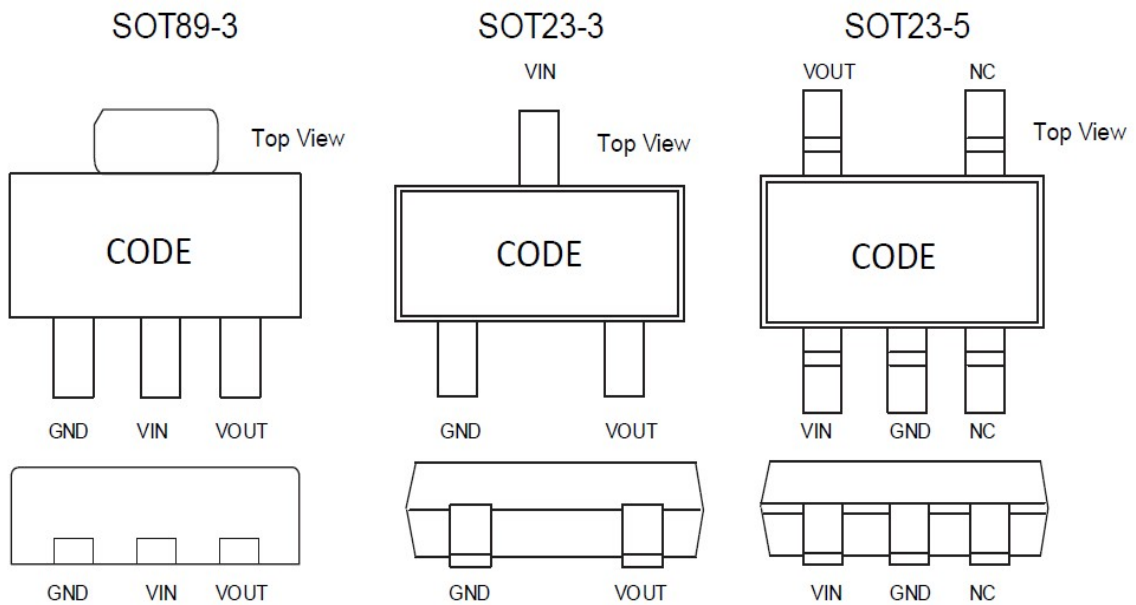
 Note:”<sup>①</sup> <sup>②</sup> ” stands for output voltages. Other voltages can be specially customized.

Part No.	Output Voltage	Package
SSP7985P25XX	2.5V	SOT89-3 SOT23-3 SOT23-5
SSP7985P27XX	2.7V	
SSP7985P30XX	3.0V	
SSP7985P33XX	3.3V	
SSP7985P36XX	3.6V	
SSP7985P40XX	4.0V	
SSP7985P44XX	4.4V	
SSP7985P50XX	5.0V	

## Functional Block Diagram



## Pin Assignment



## Absolute Maximum Ratings

Parameter	Description	Min	Max	Unit
Voltage	VIN Pin to GND Pin	-0.3	80	V
	VOUT Pin to GND pin	-0.3	6	V
	VOUT Pin to VIN Pin	-35	0.3	V
Current	Peak output	250mA		
Temperature	Operating Ambient Temperature	-40	85	°C
	Storage Temperature	-40	150	°C
	junction temperature, operating	-	150	°C
Thermal Resistance (Junction to Ambient)	SOT89-3	180		°C/W
	SOT23-3	380		°C/W
	SOT23-5	300		°C/W
Power Dissipation	SOT89-3	600		mW
	SOT23-3	300		mW
	SOT23-5	400		mW
Electrostatic discharge rating	Human Body Model (HBM)	4		kV
	Charged Device Model (MM)	100		V

Note: These are just the limit parameters. Beyond the range specified in the Absolute Maximum Ratings may cause serious damage to the equipment. Long exposure to extreme conditions may affect the reliability of the device.

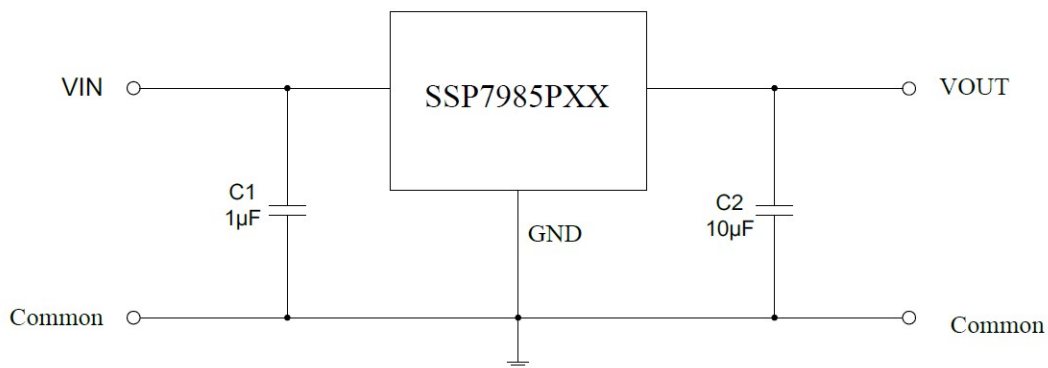
## Electrical Characteristics

(At TA=25°C, CIN=1uF, VIN=VOUTNOM+1.0V, COUT=10uF, unless otherwise noted)

Parameter	Symbol	Test Conditions	MIN	TYP	MAX	UNIT
Input Voltage	V <sub>IN</sub>		5	—	60	V
Quiescent Current	I <sub>GND</sub>	V <sub>IN</sub> =12V, No load	—	2	—	μA
Output Voltage	V <sub>OUT</sub>	V <sub>in</sub> =12V, I <sub>out</sub> =10mA	V <sub>OUTNOM</sub> * 0.98	V <sub>OUTNOM</sub>	V <sub>OUTNOM</sub> * 1.02	V
Output Current	I <sub>OUT_MAX</sub>		—	150	—	mA
Dropout Voltage(1)	V <sub>DROP</sub>	I <sub>OUT</sub> =10mA , V <sub>IN</sub> =V <sub>OUTNOM</sub> -0.1V	—	70	—	mV
		I <sub>OUT</sub> =100mA , V <sub>IN</sub> =V <sub>OUTNOM</sub> -0.1V	—	700	—	mV
Load Regulation	ΔV <sub>OUT</sub>	V <sub>IN</sub> =12V, 1mA≤I <sub>OUT</sub> ≤100mA	—	0.02	—	mV
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	I <sub>OUT</sub> =1mA, V <sub>OUTNOM</sub> +0.5V≤V <sub>IN</sub> ≤60V	—	0.01	—	%/V
Current Limit	I <sub>LIMIT</sub>		—	250	—	mA
Thermal Shutdown Temperature	T <sub>SHDN</sub>	Shutdown, temperature increasing	—	150	—	°C
		Reset, temperature decreasing	—	140	—	
Power Supply Rejection Ratio	PSRR	V <sub>in</sub> =12V , I <sub>out</sub> =10mA F=1Khz, V <sub>out</sub> =3.3V	—	70	—	dB

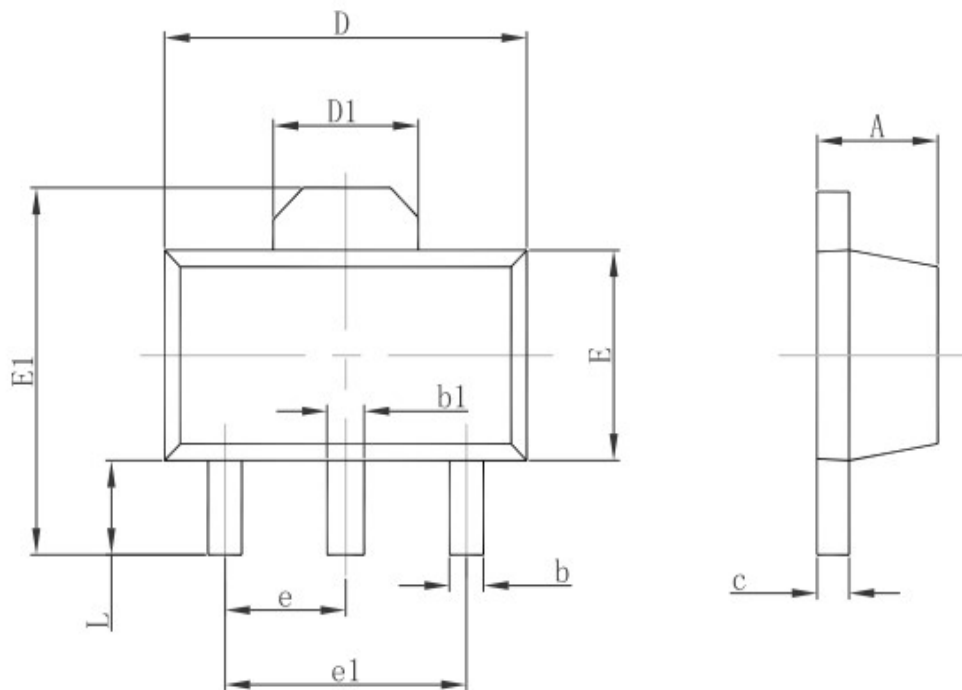
Note:(1)Dropout Voltage is the voltage difference between the input and the output at which the output voltage drops 2% below its nominal value.

## Application Circuits



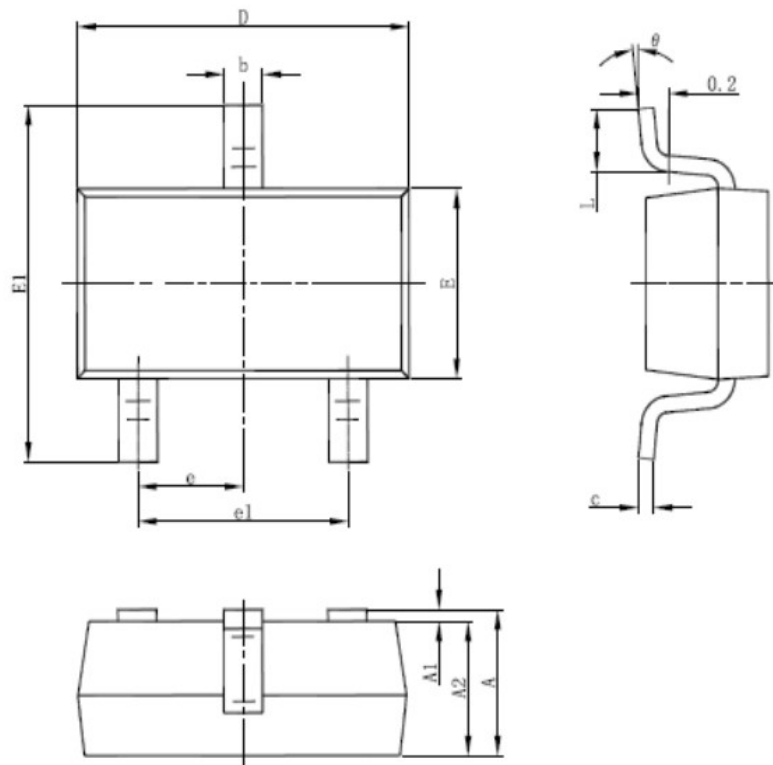
## Package Information

### 3-pin SOT89 Outline Dimensions



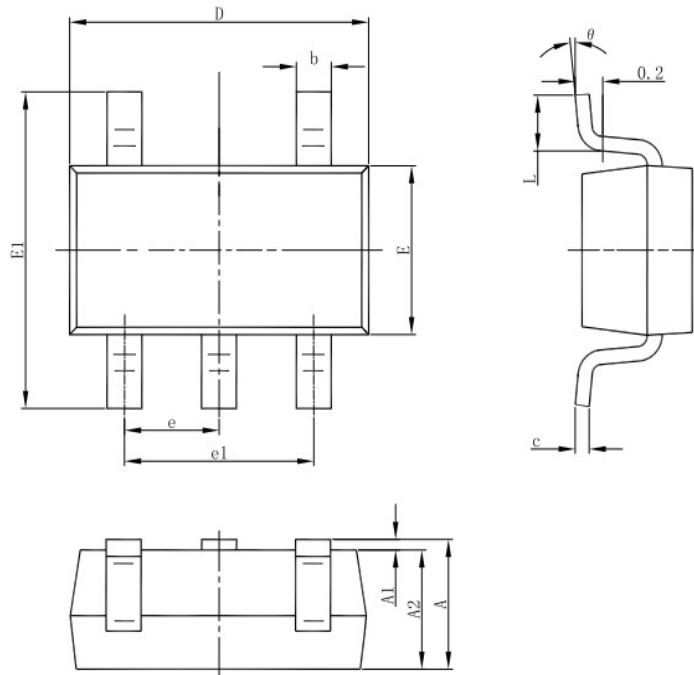
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF		0.061 REF	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP		0.060 TYP	
e1	3.000 TYP		0.118 TYP	
L	0.900	1.200	0.035	0.047

### 3-pin SOT23-3 Outline Dimensions



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
θ	0°	8°	0°	8°

## SOT23-5 Outline Dimensions



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°

### Special Version

The company reserves the right of final interpretation of this specification.

### Version Change Description

Versions: V1.2

Writer: Si Yuan Wu

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