

### Features

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

### Applications

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

### 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. SOT89-3, SOT23-3 and SOT23-5 packages are available.

### Order Information

SSP7985P①②③④

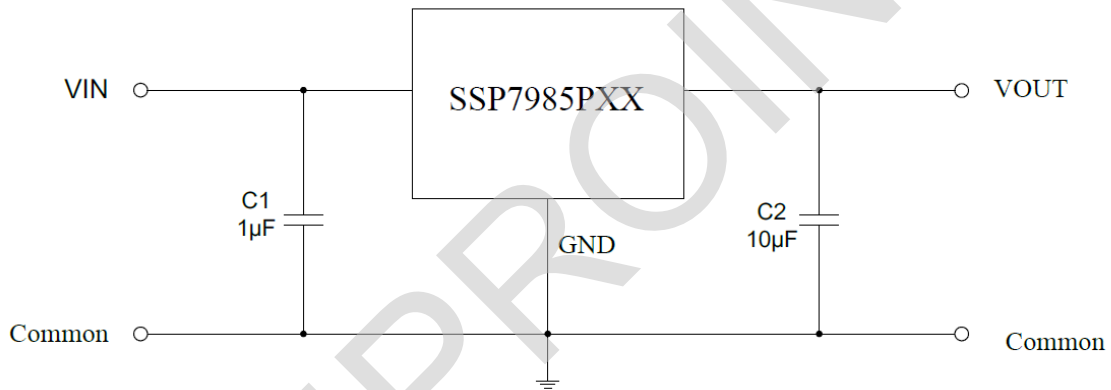
| Designator | Symbol  | Description               |
|------------|---------|---------------------------|
| ① ②        | Integer | Output Voltage(2.5V~5.0V) |
| ③          | P       | Package:SOT89-3           |
|            | M       | Package:SOT23-3           |
|            | M5      | Package:SOT23-5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

Note: "①②" stands for output voltages. Other voltages can be specially customized.

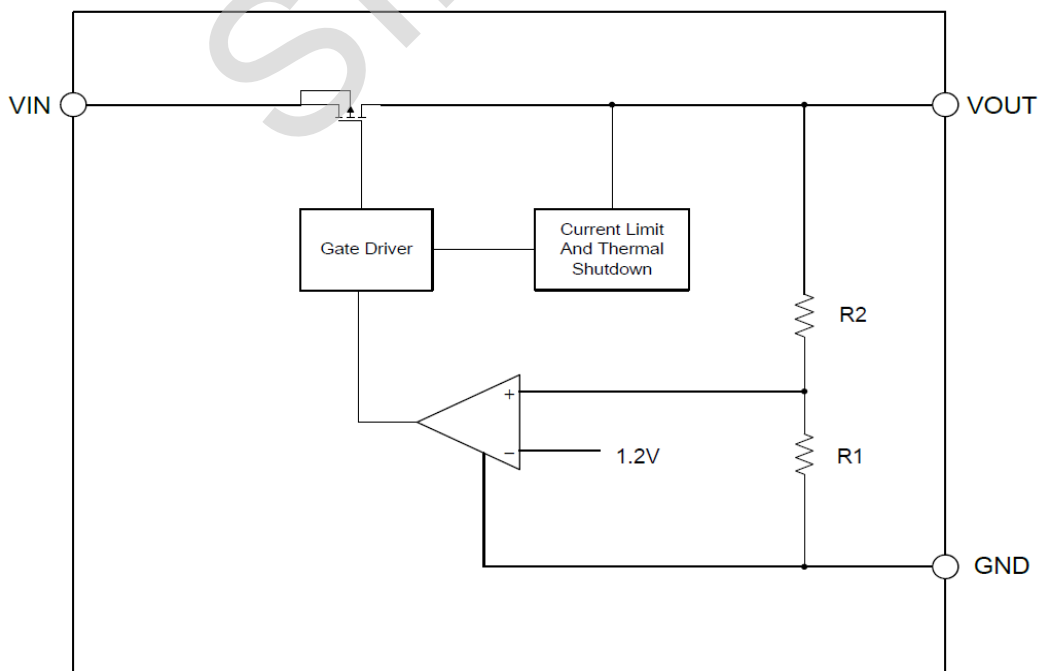
### Selection Table

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

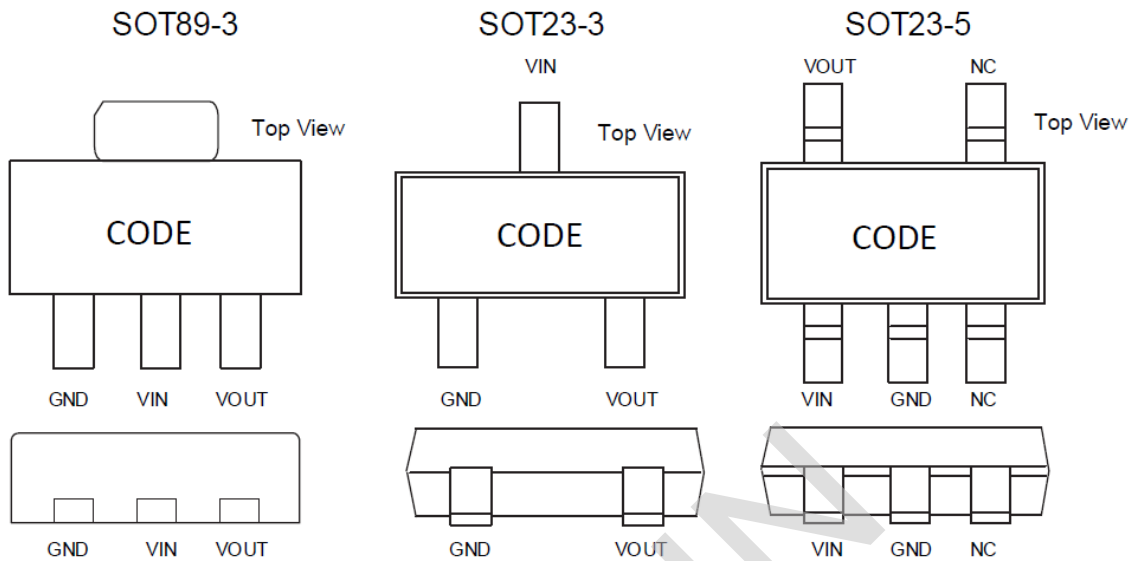
### Typical Application



### Block Diagram



### Pin Assignment



### Absolute Maximum Ratings

| Item                                     | 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                            | Internally limited |     |      |
| Temperature                              | Operating Ambient Temperature          | -40                | 85  | °C   |
|  | Storage Temperature                    | -40                | 150 | °C   |
|  | Operating virtual junction Temperature | -                  | 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: Stresses exceeding the range specified under “Absolute Maximum Ratings” may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

### Electrical Characteristics

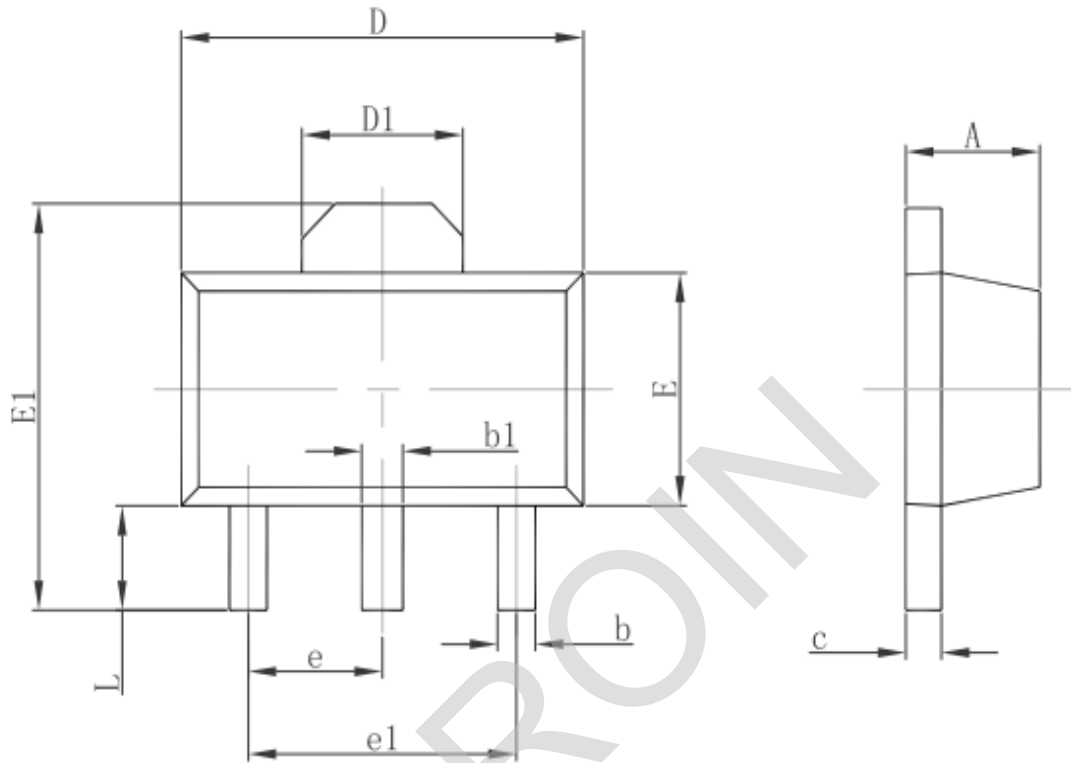
(At TA=25° C, CIN=1uF, VIN=VOUTNOM+1.0V, COUT=10uF, unless otherwise noted)

| Symbol                                 | Parameter                    | Test Conditions   | MIN                           | TYP                 | MAX                           | UNIT |
|--|------------------------------|---|-------------------------------|---------------------|-------------------------------|------|
| V <sub>IN</sub>                        | Input Voltage                |   | 5                             | —                   | 60                            | V    |
| I <sub>GND</sub>                       | Quiescent Current            | V <sub>IN</sub> =12V, No load   | —                             | 2                   | —                             | uA   |
| V <sub>OUT</sub>                       | Output Voltage               | V <sub>IN</sub> =12V, I <sub>OUT</sub> =10mA                                    | V <sub>OUTNOM</sub> *<br>0.98 | V <sub>OUTNOM</sub> | V <sub>OUTNOM</sub> *<br>1.02 | V    |
| I <sub>OUT_MAX</sub>                   | Output Current               |   | —                             | 150                 | —                             | mA   |
| V <sub>DROP</sub>                      | Dropout Voltage(1)           | I <sub>OUT</sub> =10mA ,<br>V <sub>IN</sub> =V <sub>OUTNOM</sub> -0.1V          | —                             | 70                  | —                             | mV   |
|  |                              | I <sub>OUT</sub> =100mA ,<br>V <sub>IN</sub> =V <sub>OUTNOM</sub> -0.1V         | —                             | 700                 | —                             | mV   |
| ΔV <sub>OUT</sub> (ΔI <sub>OUT</sub> ) | Load Regulation              | V <sub>IN</sub> =12V,<br>1mA≤I <sub>OUT</sub> ≤100mA                            | —                             | 0.02                | —                             | %/mA |
| ΔV <sub>OUT</sub> (ΔV <sub>IN</sub> )  | Line Regulation              | I <sub>OUT</sub> =1mA,<br>V <sub>OUTNOM</sub> +0.5V≤V <sub>IN</sub> ≤60V        | —                             | 0.01                | —                             | %/V  |
| I <sub>LIMIT</sub>                     | Current Limit                |   | —                             | 250                 | —                             | mA   |
| T <sub>SHDN</sub>                      | Thermal Shutdown Temperature | Shutdown, temperature increasing  | —                             | 150                 | —                             | °C   |
|  |                              | Reset, temperature decreasing   | —                             | 140                 | —                             |      |
| PSRR                                   |                              | V <sub>in</sub> =12V , I <sub>out</sub> =10mA<br>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.

### Package Information

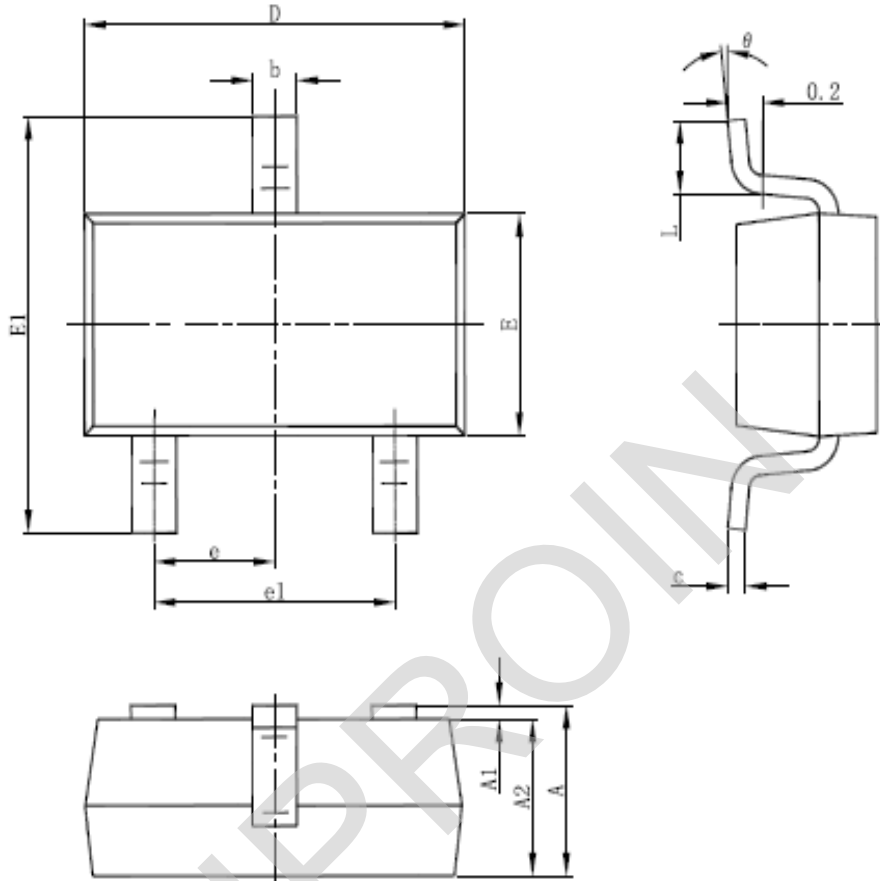
#### 3-pin SOT89 Outline Dimensions



| 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 |

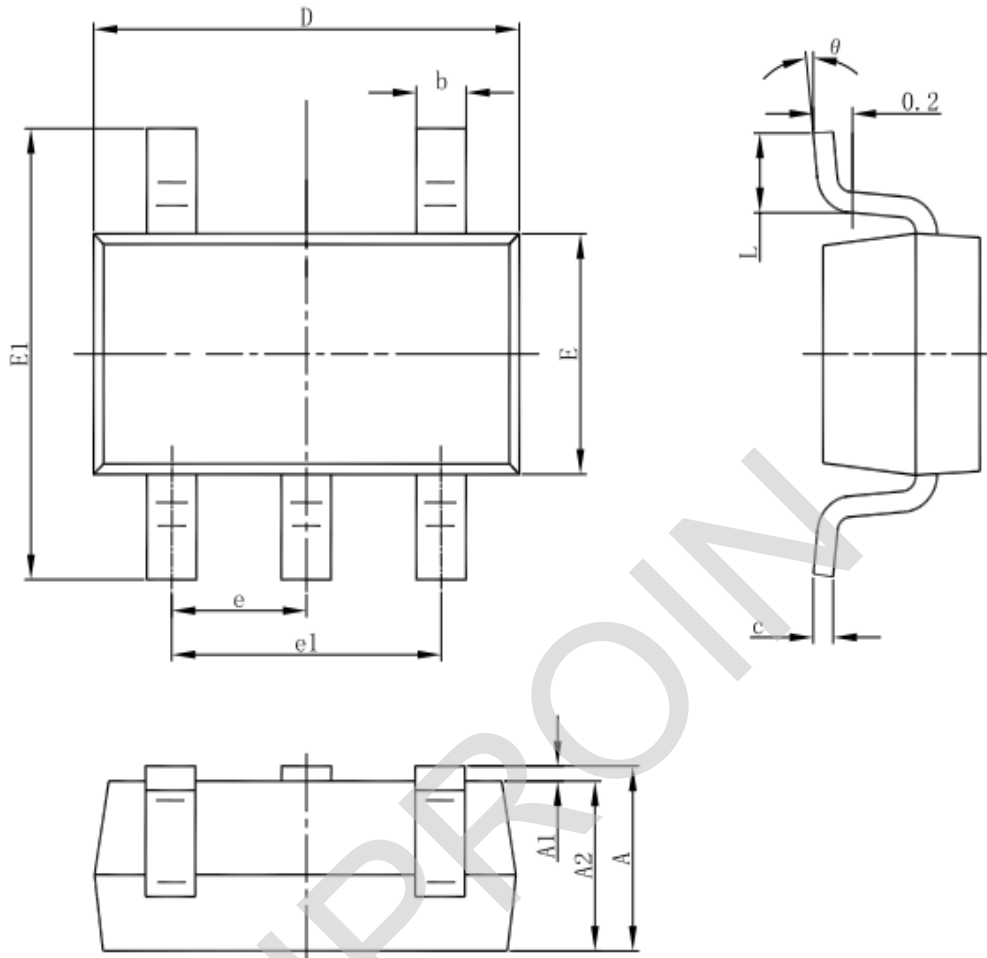
### 3-pin SOT23-3 Outline Dimensions

#### SOT-23-3L PACKAGE OUTLINE DIMENSIONS



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 1.050                     | 1.250 | 0.041                | 0.049 |
| A1     | 0.000                     | 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 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

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