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# TPMCP1702T Series

## 18V,300mA,2uA, CMOS LDO Regulator

www.sot23.com.tw

## Features

- Low power consumption
- Low voltage drop
- Low temperature coefficient
- High input voltage - up to 18V
- Output voltage accuracy: tolerance ±2%
- Over current protection
- SOT23-3L SOT89-3 Package Available

## Applications

- Battery-powered equipment
- Communication equipment
- Audio/Video equipment

## General Descrition

The TPMCP1702T device series are low power high voltage regulators implemented in CMOS technology which have the advantages of low voltage drop and low quiescent current. They allow input voltages as high as 18V. They are available with several fixed output voltages ranging from 2.1V to 5.0V. The soft-start function inhibits the problem of output overshoot during power on.

Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain variable voltages and currents.

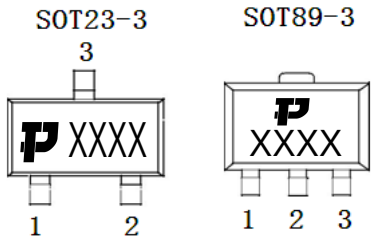
## Ordering Information

**TPMCP1702T-3302E/CB**

- MB:SOT89-3 Package
- CB:SOT23-3L Package

Output voltage: 12=1.2V
15=1.5V
18=1.8V
30=3.0V
33=3.3V
50=5.0V

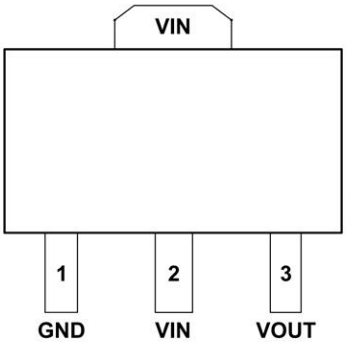
Marking Information



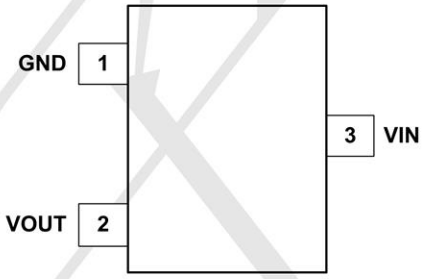

is Logo

XXXX: Marking ID

## PIN CONFIGURATION



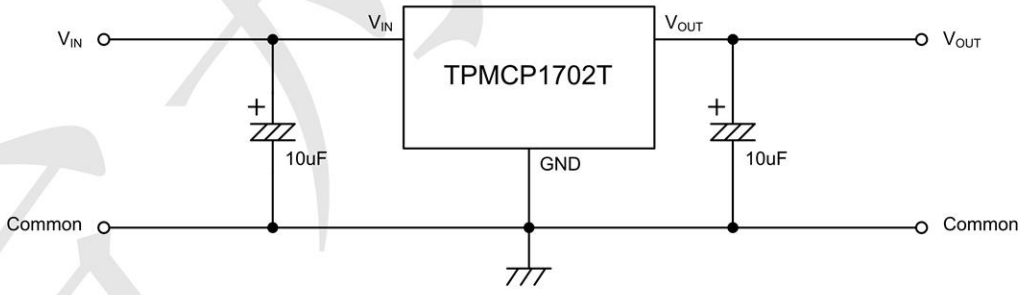

SOT89



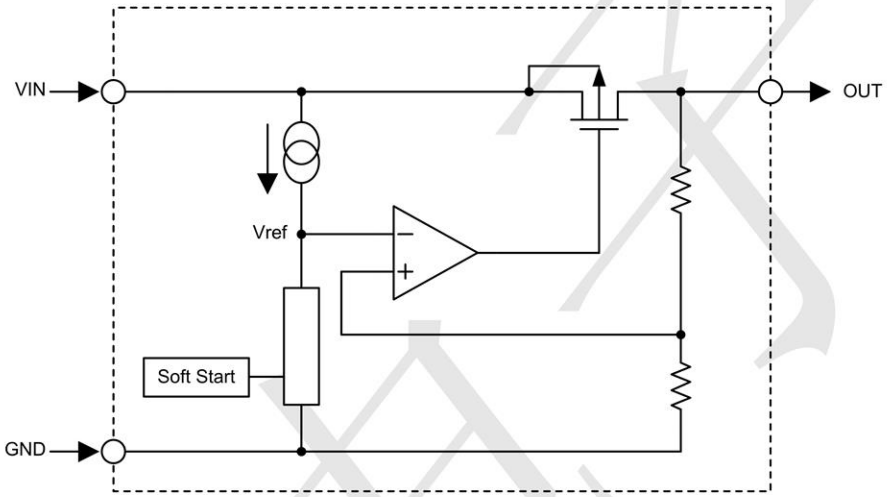

SOT23

| Pin Name | Pin Function |
|---|---|
| VIN | Power Input Voltage |
| GND | Ground |
| OUT | Output Voltage |

## Typical Application Circuit



## BLOCK DIAGRAM




## Absolute Maximum Ratings

| Parameter | | Value | Unit |
|---|---|---|---|
| $V_{IN}$ | | -0.3 to +22 | V |
| Operating Temperature Range, $T_a$ | | -40 to +85 | °C |
| Maximum Junction Temperature, $T_{J(MAX)}$ | | +150 | °C |
| Storage Temperature Range | | -65 to +165 | °C |
| Junction-to-Ambient Thermal Resistance, $\theta_{JA}$ | SOT23 | 200 | °C/W |
| | SOT89-3 | 500 | °C/W |
| Power Dissipation, $P_{D(MAX)}$ | SOT23 | 0.20 | W |
| | SOT89-3 | 0.50 | W |

Note: $P_{D(MAX)}$ is measured at $T_a$ = 25°C

## Recommended Operating Range

| Parameter | Value | Unit |
|---|---|---|
| $V_{IN}$ | $V_{OUT}$+2 to 22 | V |

## Electrical Characteristics

**+3.3V Output** Ta=25℃

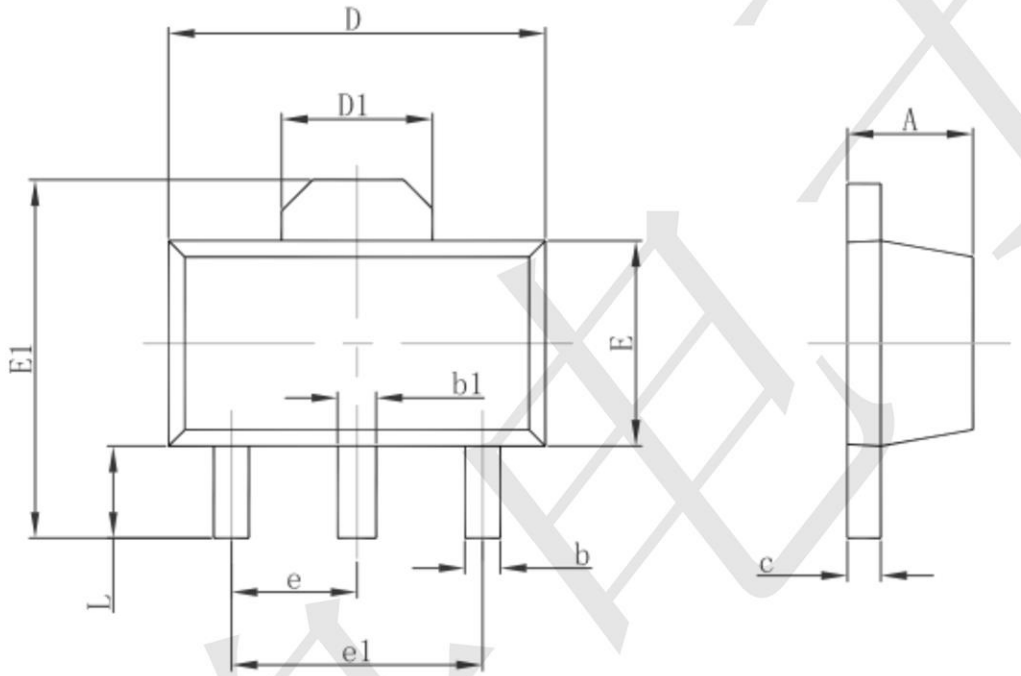
| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $V_{IN}$ | Input Supply Voltage | — | — | — | 18 | V |
| $V_{OUT}$ | Output Voltage | $V_{IN}=V_{OUT}+1V$<br>$I_{OUT}=40mA$ | 3.201 | 3.300 | 3.399 | V |
| $I_{OUT}$ | Output Current | $V_{IN}=V_{OUT}+1V$<br>$V_{OUT}\geq 2.97V$ | 300 | — | — | mA |
| $\Delta V_{OUT}$ | Load Regulation | $V_{IN}=V_{OUT}+1V$<br>$1mA \leq I_{OUT} \leq 80mA$ | — | 45 | 90 | mV |
| $V_{DIF}$ | Voltage Drop(Note) | $I_{OUT}=40mA$,<br>$\Delta$ Vo=2% | — | 90 | — | mV |
| $I_{SS}$ | Current Consumption | 无负载 | — | 2 | 3 | uA |
| $\frac{\triangle VOUT}{\triangle VIN \times VOUT}$ | Line Regulation | $Vo+1V \leq V_{IN} \leq 18V$<br>$I_{OUT}=40mA$ | — | 0.2 | 0.4 | %/V |
| $\frac{\triangle VOUT}{\triangle Ta}$ | Temperature Co efficient | $V_{IN}=V_{OUT}+1V$<br>$I_{OUT}=40mA$<br>-40℃<Ta<85℃ | — | ±0.7 | — | mV/℃ |

**+5.0V Output** Ta=25℃

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $V_{IN}$ | | — | — | — | 18 | V |
| $V_{OUT}$ | Output Voltage | $V_{IN}=V_{OUT}+1V$<br>$I_{OUT}=40mA$ | 4.85 | 5 | 5.150 | V |
| $I_{OUT}$ | Output Current | $V_{IN}=V_{OUT}+1V$<br>$V_{OUT}\geq 4.5V$ | 300 | — | — | mA |
| $\Delta V_{OUT}$ | Load Regulation | $V_{IN}=V_{OUT}+1V$<br>$1mA \leq I_{OUT} \leq 100mA$ | — | 45 | 90 | mV |
| $V_{DIF}$ | Voltage Drop(Note) | $I_{OUT}=40mA$,<br>$\Delta$ Vo=2% | — | 60 | — | mV |
| $I_{SS}$ | Current Consumption | $I_{OUT}=0mA$ | — | 2 | 3 | uA |
| $\frac{\triangle VOUT}{\triangle VIN \times VOUT}$ | Line Regulation | $Vo+1V \leq V_{IN} \leq 18V$<br>$I_{OUT}=40mA$ | — | 0.2 | 0.3 | %/V |
| $\frac{\triangle VOUT}{\triangle Ta}$ | Temperature Co efficient | $V_{IN}=V_{OUT}+1V$<br>$I_{OUT}=80mA$<br>-40℃<Ta<85℃ | — | ±0.7 | — | mV/℃ |

## Package information

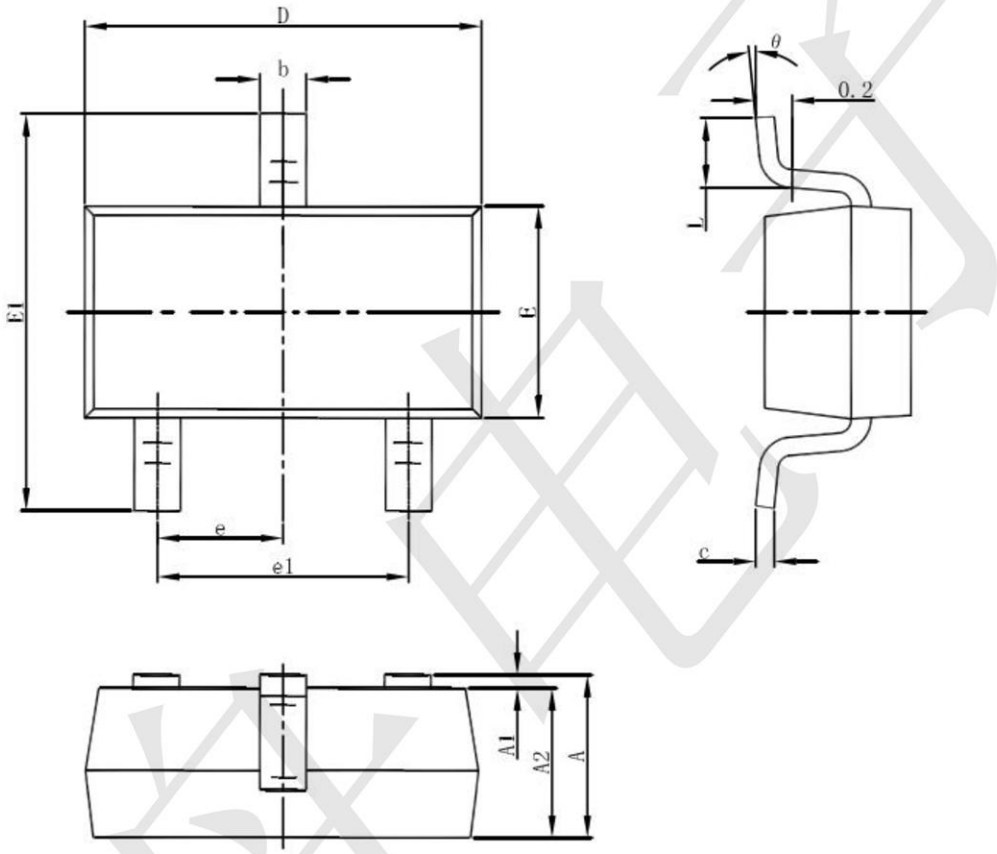
**SOT89-3**




| 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 |

## Package informantion

**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° |

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