

### Features

- Low power consumption
- Low voltage drop
- Low temperature coefficient
- High input voltage - up to 20V
- Output voltage accuracy: tolerance  $\pm 2\%$
- Over current protection
- SOT23-3LSOT89-3 Package Available

### Applications

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

### General Description

The TPMCP1703T 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 20V. 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.

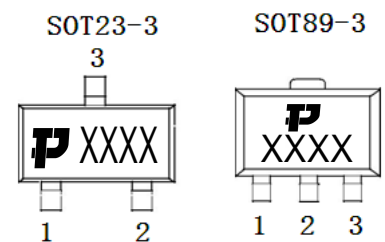
### Ordering Information

**TPMCP1703T-5002E/MB**

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

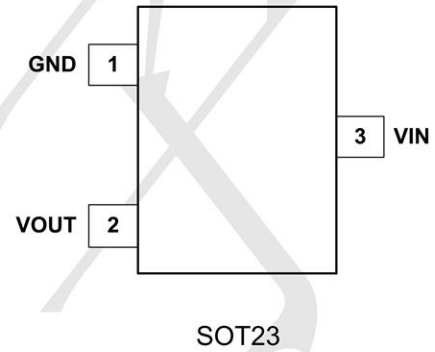
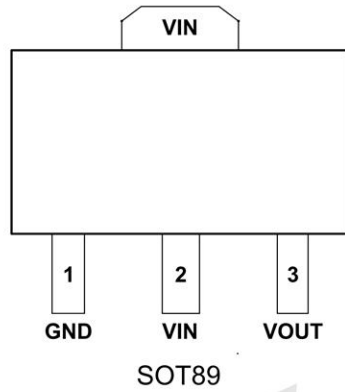
Output voltage: 12=1.2V  
15=1.5V  
18=1.8V  
30=3.0V  
33=3.3V  
50=5.0V

### Marking Information



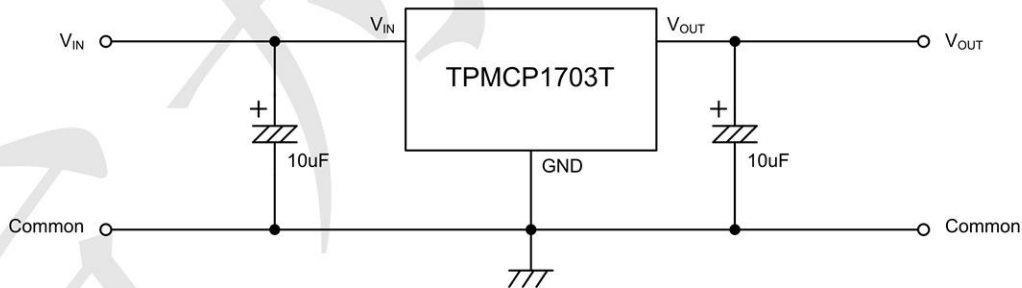
**P** is Logo  
XXXX: Marking ID

## PIN CONFIGURATION

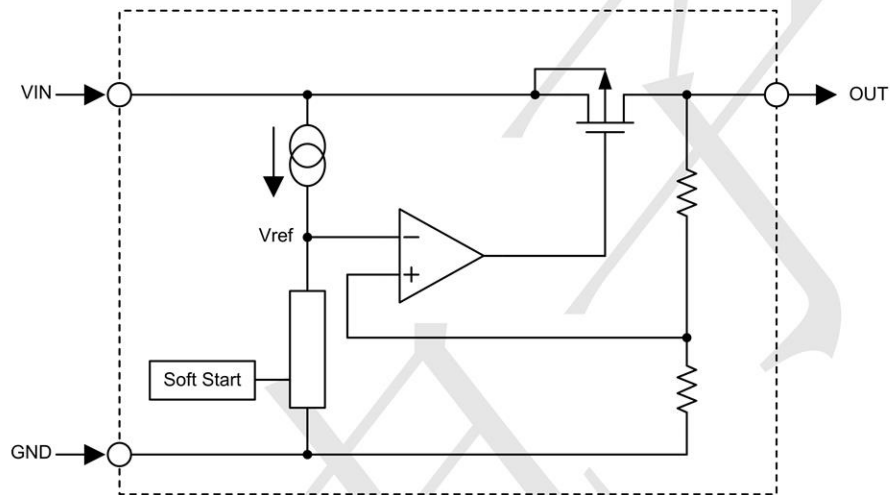


Pin Name	Pin Function
VIN	Power Input Voltage
GND	Ground
OUT	Output Voltage

## Typical Application Circuit



## BLOCK DIAGRAM



## Absolute Maximum Ratings

Parameter	Value	Unit	
$V_{IN}$	-0.3 to +24	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  $T_a = 25^\circ\text{C}$

## Recommended Operating Range

Parameter	Value	Unit
$V_{IN}$	$V_{OUT}+2$ to 24	V



**Electrical Characteristics**

**+3.3V Output**  $T_a=25^{\circ}\text{C}$

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{IN}$	Input Supply Voltage	—	—	—	20	V
$V_{OUT}$	Output Voltage	$V_{IN}=V_{OUT}+1\text{V}$ $I_{OUT}=40\text{mA}$	3.201	3.300	3.399	V
$I_{OUT}$	Output Current	$V_{IN}=V_{OUT}+1\text{V}$ $V_{OUT}\geq 2.97\text{V}$	300	—	—	mA
$\Delta V_{OUT}$	Load Regulation	$V_{IN}=V_{OUT}+1\text{V}$ $1\text{mA}\leq I_{OUT}\leq 80\text{mA}$	—	45	90	mV
$V_{DIF}$	Voltage Drop(Note)	$I_{OUT}=40\text{mA}$ , $\Delta V_o=2\%$	—	90	—	mV
$I_{SS}$	Current Consumption	无负载	—	2	3	$\mu\text{A}$
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	$V_o+1\text{V}\leq V_{IN}\leq 18\text{V}$ $I_{OUT}=40\text{mA}$	—	0.2	0.4	%/V
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Co efficient	$V_{IN}=V_{OUT}+1\text{V}$ $I_{OUT}=40\text{mA}$ $-40^{\circ}\text{C}<T_a<85^{\circ}\text{C}$	—	$\pm 0.7$	—	$\text{mV}/^{\circ}\text{C}$

**+5.0V Output**  $T_a=25^{\circ}\text{C}$

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{IN}$		—	—	—	20	V
$V_{OUT}$	Output Voltage	$V_{IN}=V_{OUT}+1\text{V}$ $I_{OUT}=40\text{mA}$	4.85	5	5.150	V
$I_{OUT}$	Output Current	$V_{IN}=V_{OUT}+1\text{V}$ $V_{OUT}\geq 4.5\text{V}$	300	—	—	mA
$\Delta V_{OUT}$	Load Regulation	$V_{IN}=V_{OUT}+1\text{V}$ $1\text{mA}\leq I_{OUT}\leq 100\text{mA}$	—	45	90	mV
$V_{DIF}$	Voltage Drop(Note)	$I_{OUT}=40\text{mA}$ , $\Delta V_o=2\%$	—	60	—	mV
$I_{SS}$	Current Consumption	$I_{OUT}=0\text{mA}$	—	2	3	$\mu\text{A}$
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	$V_o+1\text{V}\leq V_{IN}\leq 18\text{V}$ $I_{OUT}=40\text{mA}$	—	0.2	0.3	%/V
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Co efficient	$V_{IN}=V_{OUT}+1\text{V}$ $I_{OUT}=80\text{mA}$ $-40^{\circ}\text{C}<T_a<85^{\circ}\text{C}$	—	$\pm 0.7$	—	$\text{mV}/^{\circ}\text{C}$



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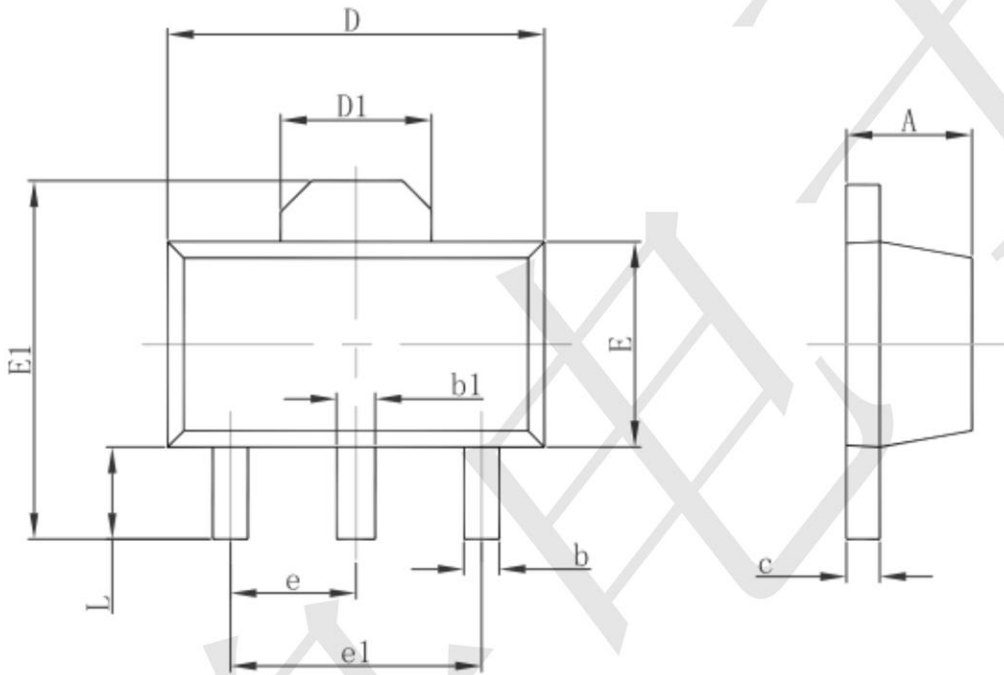
TPMCP1703T Series

20V,300mA,2uA, CMOS LDO Regulator

[www.sot23.com.tw](http://www.sot23.com.tw)

### Package information

SOT89-3

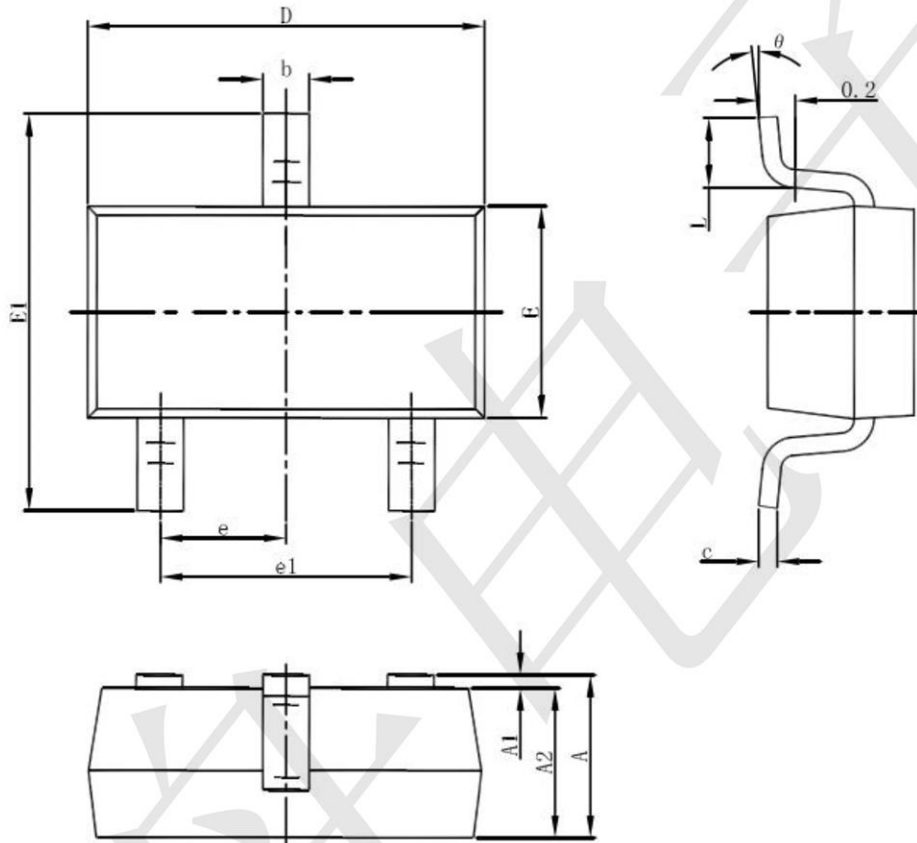


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.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