■ Product introduction

MCP1702T-xxxxE series is a positive voltage regulator circuit with low voltage difference, high precision output voltage and ultra-low power consumption current developed by practical CMOS technology.Due to the built-in low on state resistance transistor, so the output voltage difference is low, and it has high input voltage bearing capacity. The maximum working voltage can reach 14V, which is suitable for the application circuit requiring high voltage withstand.

■ Product features

● High accuracy of output voltage: accuracy ± 2%

● Ultra low power consumption current: typical value 3ua

● Low output voltage temperature drift: 50 ppm / ℃

● High input withstand voltage: increase to 14V and keep output voltage stable

■ Product use

● Regulated power supply using battery powered equipment   ● Stabilized power supply of communication equipment

● Stabilized power supply for toys   ● Regulated power supply for mobile phone

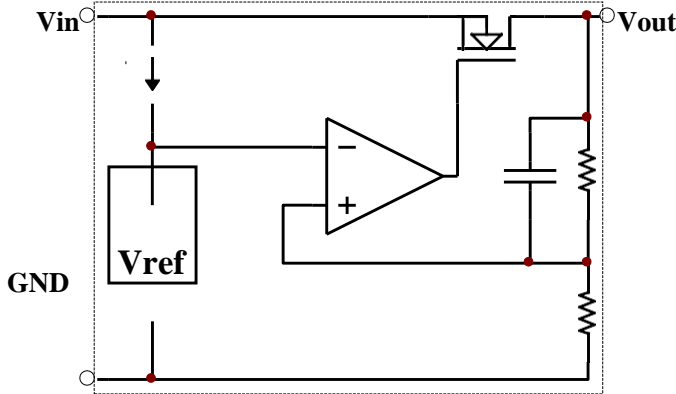● Stabilized power supply for portable medical instruments

■ Package form and pin function definition
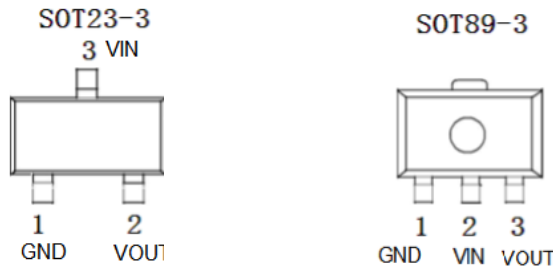
■ Model selection

Name	Maximum input voltage (V)	Output voltage (V)	Tolerance	Packaging
MCP1702T-xxxxE	14	1.8	± 2%	SOT23-3 SOT89-3
	14	2.5	± 2%	
	14	2.7	± 2%	
	14	3.0	± 2%	
	14	3.3	± 2%	
	14	3.6	± 2%	
	14	5.0	± 2%	

■ Principle block diagram

■ Application circuit
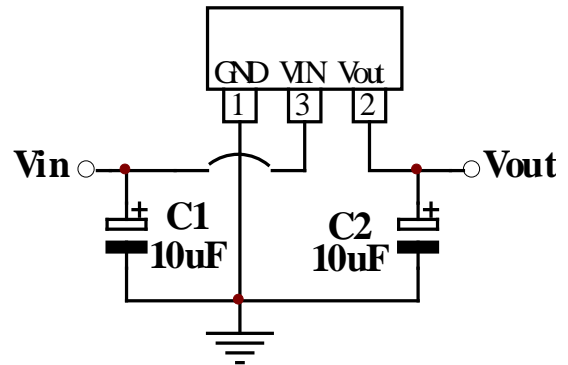
■ Limit parameter

Project	Symbol	Parameter	Limit value	Company
Voltage	VIN	Maximum input voltage	16	V
Power waste	PD	power waste	400	mW
Temperature	Tw	working temperature	-25-70	℃
	Tc	Storage temperature	-40-85	℃
	Th	welding temperature	260	℃,10s

■ electrical properties

◆ 1.8V （ T_{OPT}=25℃ ）

Symbol	Parameter	Test conditions	Minimum value	Typical value	Maximum	Company
V_{OUT}	output voltage	V_{IN}=2.8V，I_{OUT}=40mA	1.764	1.8	1.836	V
I_{OUT}	Output current	V_{IN}=2.8V，V_{OUT}≥1.62V		250		mA
△V_{OUT}	Load regulation	V_{IN}=2.8V, 1mA≤I_{OUT} ≤60mA	—	45	90	mV
V_{DIF}	Drop voltage	I_{OUT}=40mA	—	170	—	mV
I_{SS}	Quiescent current	Vin = 2.8V, no load	—	2	3	μA
$\Delta V_{OUT}/(\Delta V_{IN}*V_{OUT})$	Line Regulation	2.8V≤V_{IN}≤14V, I_{OUT}=40mA	—	0.2	0.3	％/V
V_{IN}	input voltage	—	—	—	14	V
ΔV_{OUT} /ΔTa	temperature coefficient	V_{IN}=2.8V，I_{OUT}=40mA, 0℃≤Ta≤85℃	—	±0.7	—	mV/℃

◆ 2.5V　　　　　($T_{OPT=}$25℃)

Symbol	Parameter	Test conditions	Minimum value	Typical value	Maximum	Company
V_{OUT}	output voltage	V_{IN}=3.5V，I_{OUT}=40mA	2.45	2.5	2.55	V
I_{OUT}	Output current	V_{IN}=3.5V，V_{OUT}≥2.25V		250		mA
△V_{OUT}	Load regulation	V_{IN}=3.5V，1mA≤I_{OUT} ≤60mA	—	45	90	mV
V_{DIF}	Drop voltage	I_{OUT}=40mA	—	110	—	mV
I_{SS}	Quiescent current	Vin = 3.5V, no load	—	2	3	μA
$\Delta V_{OUT}/(\Delta V_{IN} * V_{OUT})$	Line Regulation	3.5V≤V_{IN}≤14V，I_{OUT}=40mA	—	0.2	0.3	％/V
V_{IN}	input voltage	—	—	—	14	V
ΔV_{OUT} /ΔTa	temperature coefficient	V_{IN}=3.5V，I_{OUT}=40mA，0℃≤Ta≤85℃	—	±0.7	—	mV/℃

◆ 2.7V　　　　　($T_{OPT=}$25℃)

Symbol	Parameter	Test conditions	Minimum value	Typical value	Maximum	Company
V_{OUT}	output voltage	V_{IN}=3.7V，I_{OUT}=40mA	2.646	2.7	2.754	V
I_{OUT}	Output current	V_{IN}=3.7V，V_{OUT}≥2.43V		250		mA
△V_{OUT}	Load regulation	V_{IN}=3.7V，1mA≤I_{OUT} ≤60mA	—	45	90	mV
V_{DIF}	Drop voltage	I_{OUT}=40mA	—	100	—	mV
I_{SS}	Quiescent current	Vin = 3.7V, no load	—	2	3	μA
$\Delta V_{OUT}/(\Delta V_{IN} * V_{OUT})$	Line Regulation	3.7V≤V_{IN}≤14V，I_{OUT}=40mA	—	0.2	0.3	％/V
V_{IN}	input voltage	—	—	—	14	V
ΔV_{OUT} /ΔTa	temperature coefficient	V_{IN}=3.7V，I_{OUT}=40mA，0℃≤Ta≤85℃	—	±0.7	—	mV/℃

◆ 3.0V　　　　　($T_{OPT=}$25℃)

Symbol	Parameter	Test conditions	Minimum value	Typical value	Maximum	Company
V_{OUT}	output voltage	V_{IN}=4V，I_{OUT}=40mA	2.94	3	3.06	V
I_{OUT}	Output current	V_{IN}=4V，V_{OUT}≥2.7V		250		mA
△V_{OUT}	Load regulation	V_{IN}=4V，1mA≤I_{OUT}≤60mA	—	45	90	mV
V_{DIF}	Drop voltage	I_{OUT}=40mA	—	95	—	mV
I_{SS}	Quiescent current	No load, VIN = 4V	—	2	3	μA
$\Delta V_{OUT}/(\Delta V_{IN} * V_{OUT})$	Line Regulation	4V≤V_{IN}≤14V，I_{OUT}=40mA	—	0.2	0.3	％/V
V_{IN}	input voltage	—	—	—	14	V
ΔV_{OUT} /ΔTa	temperature coefficient	V_{IN}=4V，I_{OUT}=40mA，0℃≤Ta≤85℃	—	±0.7	—	mV/℃

◆ 3.3V   (T_{OPT}=25℃)

Symbol	Parameter	Test conditions	Minimum value	Typical value	Maximum	Company
V_{OUT}	output voltage	V_{IN}=4.3V，I_{OUT}=40mA	3.234	3.3	3.366	V
I_{OUT}	Output current	V_{IN}=4.3V，V_{OUT}≥2.97V		250		mA
△V_{OUT}	Load regulation	V_{IN}=4.3V，1mA≤I_{OUT} ≤60mA	—	45	90	mV
V_{DIF}	Drop voltage	I_{OUT}=40mA	—	90	—	mV
I_{SS}	Quiescent current	Vin = 4.3v, no load	—	2	3	µA
ΔV_{OUT} /(ΔV_{IN} * V_{OUT})	Line Regulation	4.3V≤V_{IN}≤14V，I_{OUT}=40mA	—	0.2	0.3	％/V
V_{IN}	input voltage	—	—	—	14	V
ΔV_{OUT} /ΔTa	temperature coefficient	V_{IN}=4.3V，I_{OUT}=40mA，0℃≤Ta≤85℃	—	±0.7	—	mV/℃

◆ 3.6V   (T_{OPT}=25℃)

Symbol	Parameter	Test conditions	Minimum value	Typical value	Maximum	Company
V_{OUT}	output voltage	V_{IN}=4.5V，I_{OUT}=40mA	3.528	3.6	3.672	V
I_{OUT}	Output current	V_{IN}=4.5V，V_{OUT}≥3.15V		250		mA
△V_{OUT}	Load regulation	V_{IN}=4.5V，1mA≤I_{OUT} ≤60mA	—	45	90	mV
V_{DIF}	Drop voltage	I_{OUT}=40mA	—	80	—	mV
I_{SS}	Quiescent current	Vin = 4.5V, no load	—	2	3	µA
ΔV_{OUT}/(ΔV_{IN}*V_{OUT})	Line Regulation	4.5V≤V_{IN}≤14V，I_{OUT}=40mA	—	0.2	0.3	％/V
V_{IN}	input voltage	—	—	—	14	V
ΔV_{OUT} /ΔTa	temperature coefficient	V_{IN}=4.5V，I_{OUT}=40mA，0℃≤Ta≤85℃	—	±0.7	—	mV/℃

◆ 5.0V   (T_{OPT}=25℃)

Symbol	Parameter	Test conditions	Minimum value	Typical value	Maximum	Company
V_{OUT}	output voltage	V_{IN}=6V，I_{OUT}=40mA	4.9	5	5.1	V
I_{OUT}	Output current	V_{IN}=6V，V_{OUT}≥4.5V		250		mA
△V_{OUT}	Load regulation	V_{IN}=6V，1mA≤I_{OUT} ≤60mA	—	45	90	mV
V_{DIF}	Drop voltage	I_{OUT}=40mA	—	60	—	mV
I_{SS}	Quiescent current	Vin = 6V, no load	—	2	3	µA
ΔV_{OUT}/(ΔV_{IN}*V_{OUT})	Line Regulation	6V≤V_{IN}≤14V，I_{OUT}=40mA	—	0.2	0.3	％/V
V_{IN}	input voltage	—	—	—	14	V
ΔV_{OUT} /ΔTa	temperature coefficient	V_{IN}=6V，I_{OUT}=40mA，0℃≤Ta≤85℃	—	±0.7	—	mV/℃

SOT-23
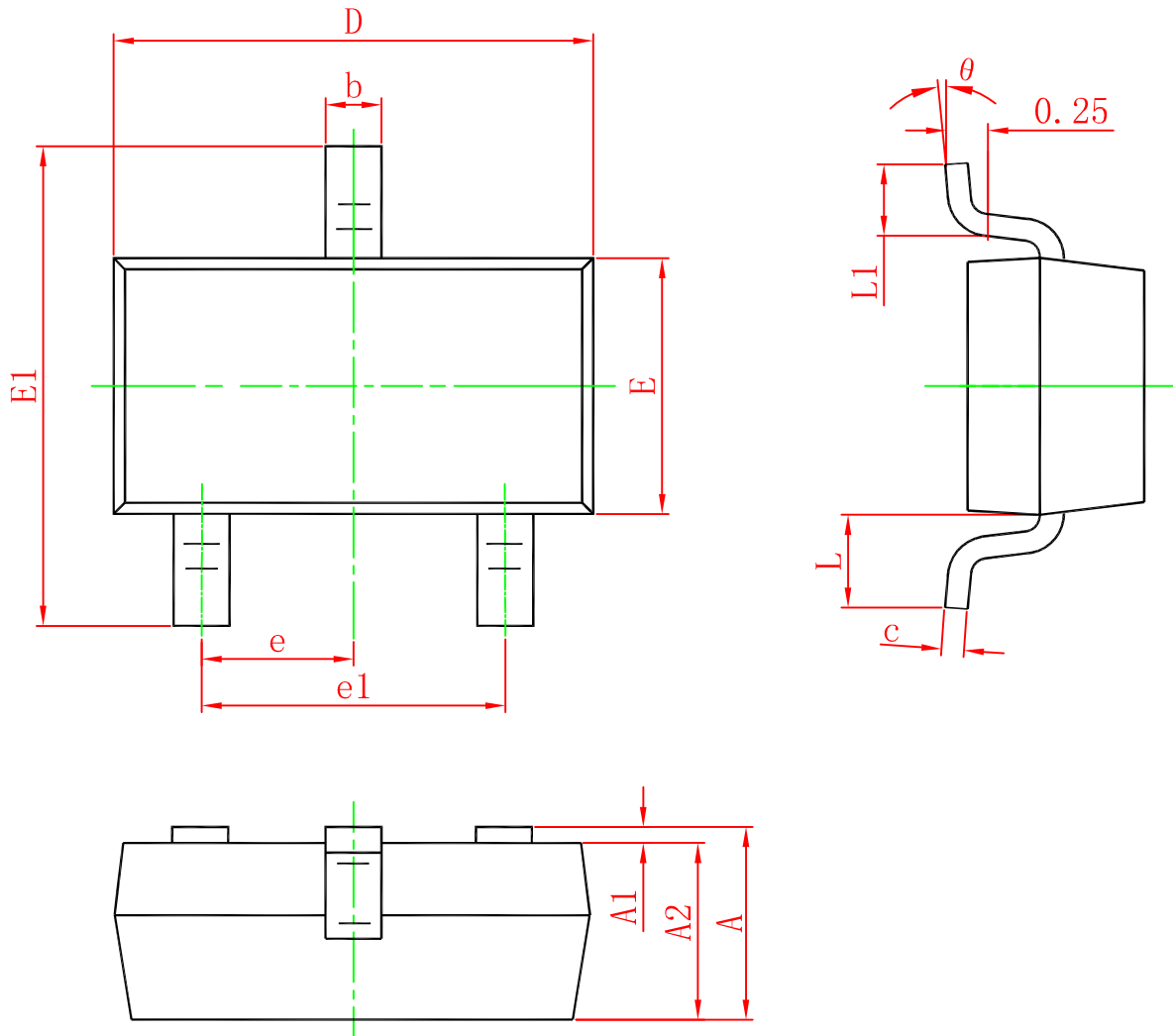
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-89-3
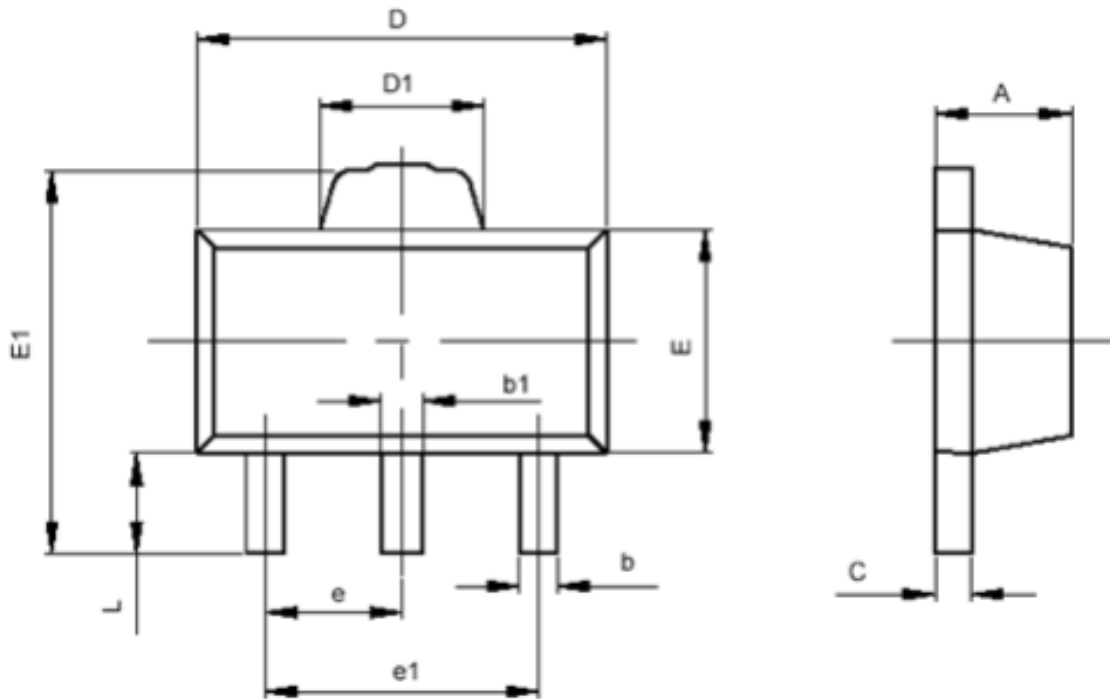
symbol	minimum value (mm)	maiximum value (mm)
A	1.400	1.600
b	0.320	0.520
b1	0.360	0.560
c	0.350	0.440
D	4.400	4.600
D1	1.400	1.800
E	2.300	2.600
E1	3.940	4.250
e	1.500TYP	
e1	2.900	3.100
L	0.900	1.100

Ordering Information

Order code	Package	Baseqty	Deliverymode
UMW MCP1702T-xxxxE/CB	SOT-23	3000	Tape and reel
UMW MCP1702T-xxxxE/MB	SOT-89	1000	Tape and reel