

Product introduction

UMW MCP1703T-xxxxE/CB 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 16V, which is suitable for the application circuit requiring high voltage withstand.

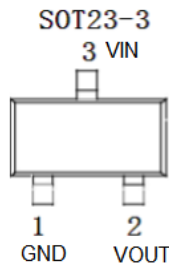
Product features

- High accuracy of output voltage: accuracy $\pm 2\%$
- Ultra low power consumption current: typical value 3uA
- Low output voltage temperature drift: 50 ppm / °C
- High input withstand voltage: increase to 16V and keep output voltage stable

Product use

- Regulated power supply using battery powered equipment
- Stabilized power supply for toys
- Stabilized power supply for portable medical instruments
- Stabilized power supply of communication equipment
- Regulated power supply for mobile phone

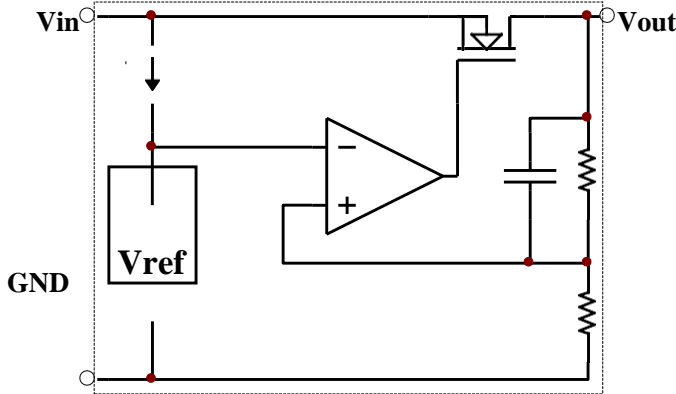
Package form and pin function definition



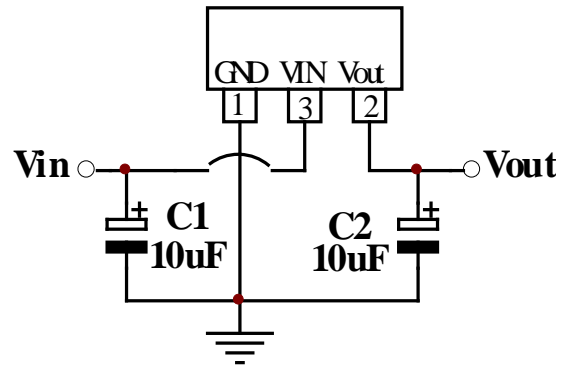
Model selection

Name	Maximum input voltage (V)	Output voltage (V)	Tolerance	Packaging
MCP1703T-xxxxE	16	1.8	$\pm 2\%$	SOT23-3
	16	2.5	$\pm 2\%$	
	16	2.7	$\pm 2\%$	
	16	3.0	$\pm 2\%$	
	16	3.3	$\pm 2\%$	
	16	3.6	$\pm 2\%$	
	16	5.0	$\pm 2\%$	

■ Principle block diagram



■ Application circuit



■ Limit parameter

Project	Symbol	Parameter	Limit value	Company
Voltage	VIN	Maximum input voltage	18	V
Power waste	PD	power waste	400	mW
Temperature	Tw	working temperature	-25 - 70	°C
	Tc	Storage temperature	-40 - 85	°C
	Th	welding temperature	260	°C,10s

■ electrical properties

◆ 1.8V (T_{OUT}=25°C)

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
ΔV _{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	V _{IN} = 2.8V, no load	—	2	3	µA
ΔV _{OUT} /(ΔV _{IN} *V _{OUT})	Line Regulation	2.8V≤V _{IN} ≤16V, I _{OUT} =40mA	—	0.2	0.3	%/V
V _{IN}	input voltage	—	—	—	16	V
ΔV _{OUT} /ΔTa	temperature coefficient	V _{IN} =2.8V, I _{OUT} =40mA, 0°C≤Ta≤85°C	—	±0.7	—	mV/°C

250mA 16V Low Quiescent Current LDO Regulator

◆ 2.5V (T_{OPT}=25°C)

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
ΔV _{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	V _{IN} = 3.5V, no load	—	2	3	μA
ΔV _{OUT} /(ΔV _{IN} *V _{OUT})	Line Regulation	3.5V≤V _{IN} ≤16V, I _{OUT} =40mA	—	0.2	0.3	%/V
V _{IN}	input voltage	—	—	—	16	V
ΔV _{OUT} /ΔTa	temperature coefficient	V _{IN} =3.5V, I _{OUT} =40mA, 0°C≤Ta≤85°C	—	±0.7	—	mV/°C

◆ 2.7V (T_{OPT}=25°C)

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
ΔV _{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	V _{IN} = 3.7V, no load	—	2	3	μA
ΔV _{OUT} /(ΔV _{IN} *V _{OUT})	Line Regulation	3.7V≤V _{IN} ≤16V, I _{OUT} =40mA	—	0.2	0.3	%/V
V _{IN}	input voltage	—	—	—	16	V
ΔV _{OUT} /ΔTa	temperature coefficient	V _{IN} =3.7V, I _{OUT} =40mA, 0°C≤Ta≤85°C	—	±0.7	—	mV/°C

◆ 3.0V (T_{OPT}=25°C)

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
ΔV _{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, V _{IN} = 4V	—	2	3	μA
ΔV _{OUT} /(ΔV _{IN} *V _{OUT})	Line Regulation	4V≤V _{IN} ≤16V, I _{OUT} =40mA	—	0.2	0.3	%/V
V _{IN}	input voltage	—	—	—	16	V
ΔV _{OUT} /ΔTa	temperature coefficient	V _{IN} =4V, I _{OUT} =40mA, 0°C≤Ta≤85°C	—	±0.7	—	mV/°C

◆ 3.3V (T_{OPT}=25°C)

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
ΔV _{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	V _{IN} = 4.3v, no load	—	2	3	μA
ΔV _{OUT} /(ΔV _{IN} * V _{OUT})	Line Regulation	4.3V≤V _{IN} ≤16V, I _{OUT} =40mA	—	0.2	0.3	%/V
V _{IN}	input voltage	—	—	—	16	V
ΔV _{OUT} /ΔTa	temperature coefficient	V _{IN} =4.3V, I _{OUT} =40mA, 0°C≤Ta≤85°C	—	±0.7	—	mV/°C

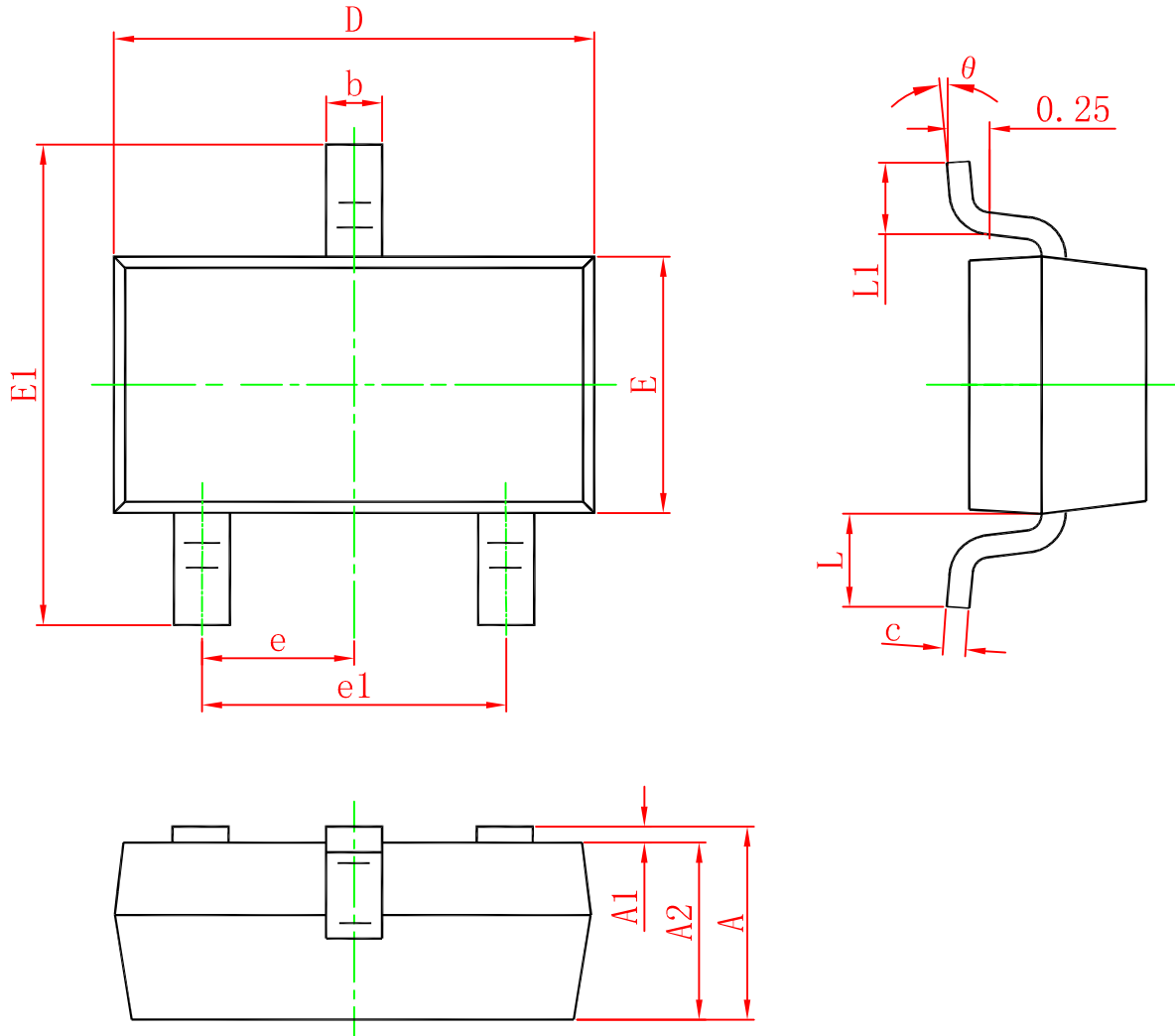
◆ 3.6V (T_{OPT}=25°C)

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
ΔV _{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	V _{IN} = 4.5V, no load	—	2	3	μA
ΔV _{OUT} /(ΔV _{IN} *V _{OUT})	Line Regulation	4.5V≤V _{IN} ≤16V, I _{OUT} =40mA	—	0.2	0.3	%/V
V _{IN}	input voltage	—	—	—	16	V
ΔV _{OUT} /ΔTa	temperature coefficient	V _{IN} =4.5V, I _{OUT} =40mA, 0°C≤Ta≤85°C	—	±0.7	—	mV/°C

◆ 5.0V (T_{OPT}=25°C)

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
ΔV _{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	V _{IN} = 6V, no load	—	2	3	μA
ΔV _{OUT} /(ΔV _{IN} *V _{OUT})	Line Regulation	6V≤V _{IN} ≤16V, I _{OUT} =40mA	—	0.2	0.3	%/V
V _{IN}	input voltage	—	—	—	16	V
ΔV _{OUT} /ΔTa	temperature coefficient	V _{IN} =6V, I _{OUT} =40mA, 0°C≤Ta≤85°C	—	±0.7	—	mV/°C

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°

Ordering information

Order code	Package	Baseqty	Deliverymode
UMW MCP1703T-xxxxE/CB	SOT-23	3000	Tape and reel