GENERAL DESCRIPTION

MCP1702T-XXseries are a set of Low Dropout Linear Regulator ICs implemented inCMOS technology.They can withstand voltag 18V. And they are available with lowvoltage drop and lowquiescent current,widely used in battery-powered applications, 9V alkaline and one or two cell Li-Ion-powered , audio, video and communication appliances.

FEATURES

- Low Power Consumption
- Low Voltage Drop
- Low Temperature Coefficient
- Withstanding Voltage 18V
- Quiescent Current 1.5μA
- Output Voltage Accuracy: tolerance ±2%
- High output current: 300mA

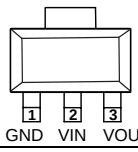
TYPICAL APPLICATIONS

- Battery-powered Equipments
- Communication Equipments
- Audio/Video Equipments
- Smart Battery Packs
- Smoke Detectors
- CO2 DETECTORS

PIN CONFIGURATION

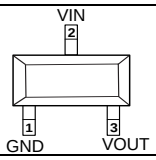
SOT89





SOT23A





PIN DESCRIPTION

No.	Name	Functions Description
1	GND	ground
2	V_{IN}	input
3	V_{OUT}	output

OUTPUT

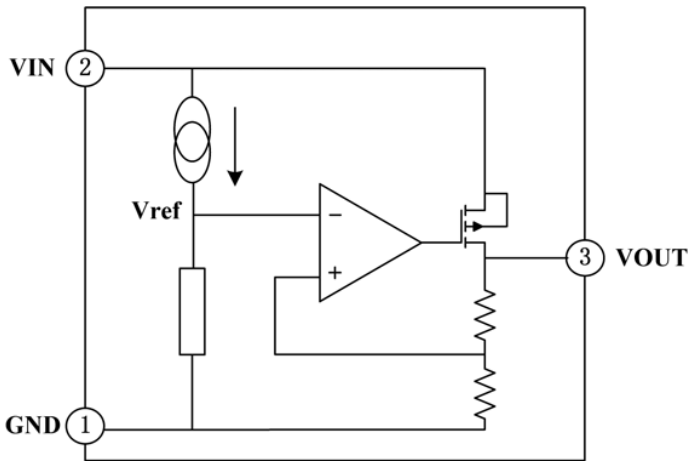
MCP1702T－XXXX E/XX

Output	Temperature Range	Package

2502 : 2.5V
2802 : 2.8V
3002 : 3.0V
3302 : 3.3V
5002 : 5.0V

CB : SOT23A
MB: SOT89

FUNCTIONAL BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Description	Symbol	Value range	Unit
Limit Power Voltage	V_{IN}	−0.3～+18	V
Storage Temperature Range	T_{STG}	−50～+125	℃
Operating Free-air Temperature Range	T_A	−40～+85	℃

Note : Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

HEAT DISSIPATION

Description	Symbol	Package	Value range	Unit
Thermal resistance	θ_{JA}	SOT89	200	℃/W
		SOT23A	500	℃/W
Power dissipation	P_W	SOT89	500	mW
		SOT23A	200	mW

DC CHARACTERISTICS (unless otherwise noted T_A =+25°C)

(V_{IN}= V_{OUT}+2.0V，C_{IN}=C_L=10uF，Ta=25°C, unless otherwise noted)

Series +3.3V OUTPUT

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	V_{IN}=V_{OUT}+2.0V， I_{OUT}=10mA	3.234	3.3	3.366	V
Output Current	I_{OUT}	V_{IN}=V_{OUT}+2.0V	300	—	—	mA
Load Regulation	△ V_{OUT}	V_{IN}=V_{OUT}+2.0V 1mA≤I_{OUT}≤300mA	—	37	100	mV
Voltage Drop	V_{DIF}	I_{OUT}=100mA，△V_{OUT}=2%	—	195	300	mV
Quiescent Current	I_{SS}	No Load	—	1.5	3.0	μA
Line Regulation	△ V_{OUT}/ V_{OUT}* △ V_{IN}	V_{OUT}+1.0V≤V_{IN}≤18V， I_{OUT}=1mA	—	—	0.2	%/V
Input Voltage	V_{IN}	—	—	—	18	V
Temperature Coefficient	△ V_{OUT}/ △ T_A*V_{OUT}	V_{IN}=V_{OUT}+2.0V，I_{OUT}=10mA， -40°C≤T_A≤85°C	—	±100	—	ppm/°C
Over current Protection	Ilim	V_{OUT}=0V	—	400	—	mA

Note : When V_{IN}=V_{OUT}+2.0V, as the output voltage declined 2%, the V_{DIF}=V_{IN}-V_{OUT}.

Series +5.0V OUTPUT

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	V_{IN}=V_{OUT}+2.0V， I_{OUT}=10mA	4.9	5.0	5.1	V
Output Current	I_{OUT}	V_{IN}=V_{OUT}+2.0V	300	—	—	mA
Load Regulation	△ V_{OUT}	V_{IN}=V_{OUT}+2.0V 1mA≤I_{OUT}≤300mA	—	37	100	mV
Voltage Drop	V_{DIF}	I_{OUT}=100mA，△V_{OUT}=2%	—	150	300	mV
Quiescent Current	I_{SS}	No Load	—	1.5	3.0	μA
Line Regulation	△ V_{OUT}/ V_{OUT}* △ V_{IN}	V_{OUT}+1.0V≤V_{IN}≤18V， I_{OUT}=1mA	—	—	0.2	%/V
Input Voltage	V_{IN}	—	—	—	18	V
Temperature Coefficient	△ V_{OUT}/ △ T_A*V_{OUT}	V_{IN}=V_{OUT}+2.0V，I_{OUT}=10mA， -40°C≤T_A≤85°C	—	±100	—	ppm/°C
Over current Protection	Ilim	V_{OUT}=0V	—	400	—	mA

Note : When V_{IN}=V_{OUT}+2.0V, as the output voltage declined 2%, the V_{DIF}=V_{IN}-V_{OUT}.

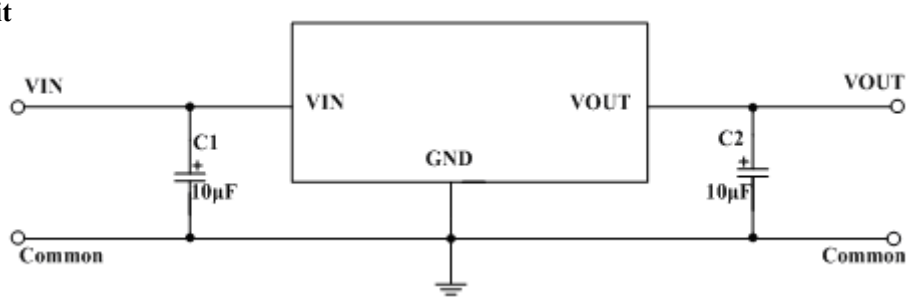
FUNCTIONAL DESCRIPTION

MCP1702T-XXseries are linear voltage regulator ICs withstanding 18V voltage. The series IC consists of a voltage reference, an error amplifier, a current limiter and a phase compensation circuit plus a driver transistor. The output stabilization capacitor is also compatible with low ESR ceramic capacitors.

The over current protection circuit and the over voltage protection circuit are built-in. The protection circuit will operate when the output current or input voltage reaches limit level.

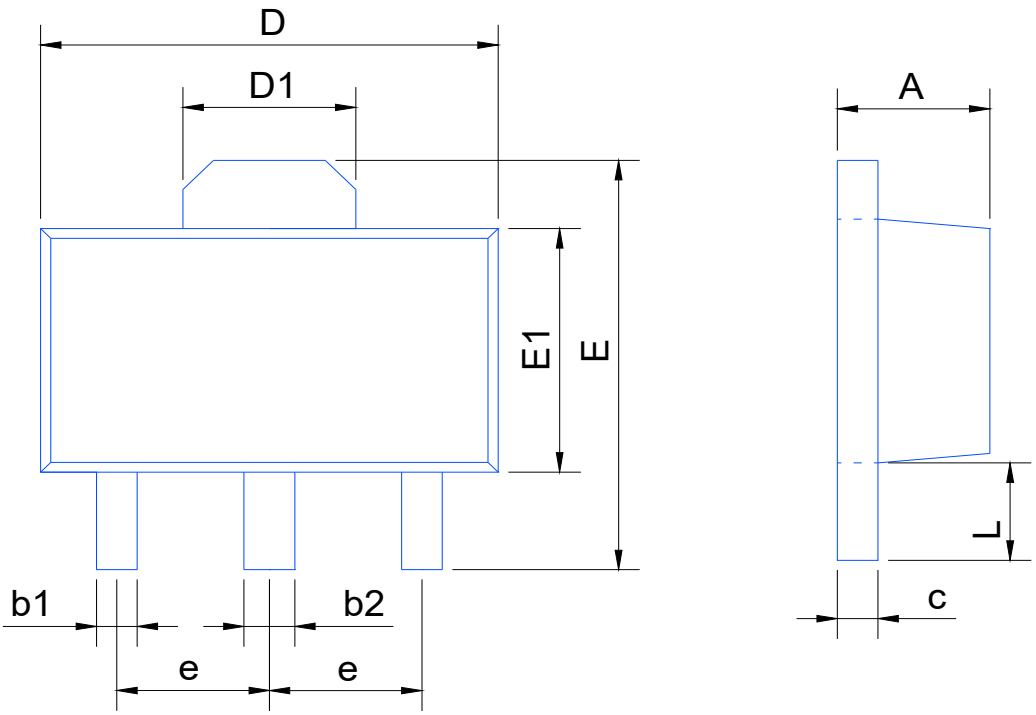
TYPICAL APPLICATION CIRCUIT

Basic Circuit



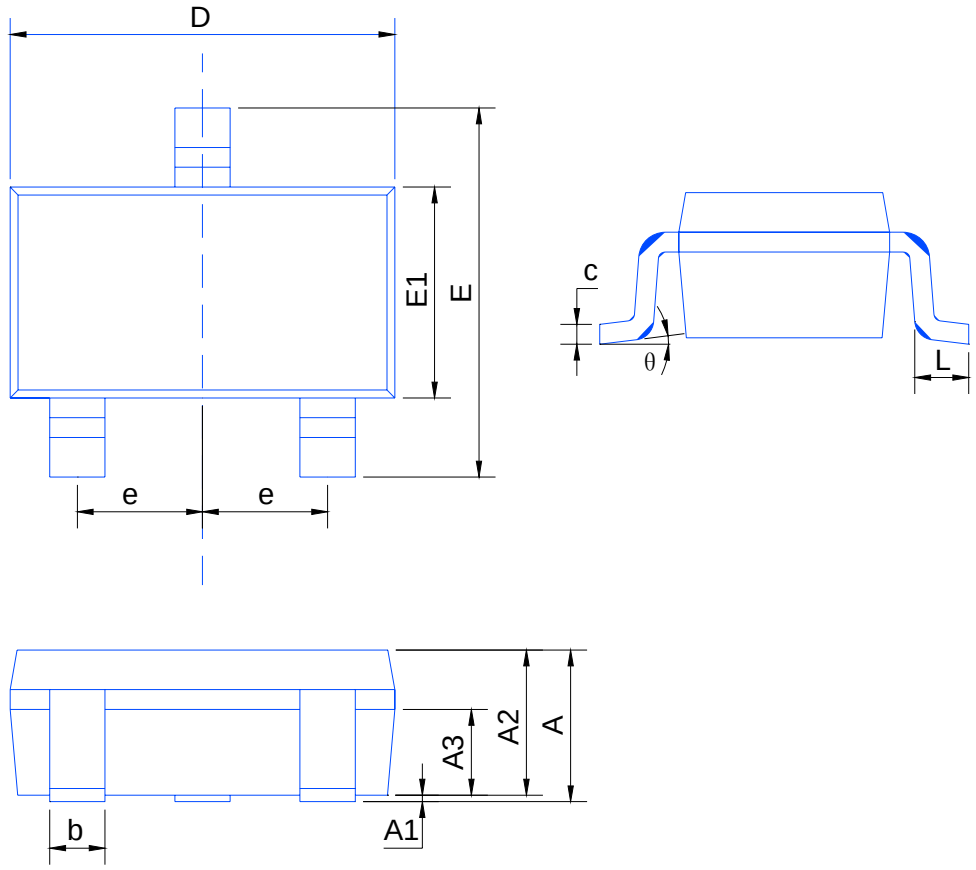
PACKAGE INFORMATION

SOT89



SYMBOL	mm	
	min	max
A	1.40	1.60
b1	0.35	0.50
b2	0.45	0.60
c	0.36	0.46
D	4.30	4.70
D1	1.40	1.80
E	4.00	4.40
E1	2.30	2.70
e	1.50BSC	
L	0.80	1.20

SOT23A



SYMBOL	mm	
	min	max
A		1.35
A1	0.04	0.15
A2	1.00	1.20
A3	0.55	0.75
b	0.38	0.48
c	0.10	0.25
D	2.72	3.12
E	2.25	2.55
E1	1.20	1.40
e	0.95BSC	
L	0.30	0.60
θ	0	8°