General Description

HMCP1700T series are a set of Low Dropout Linear Regulator ICs implemented in CMOS technology. They can withstand voltage 6V. And they are available with lowvoltage drop and low quiescent current, widely used in audio, video and communication appliances.

Features

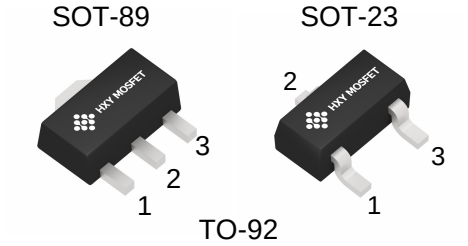
- Low Power Consumption
- Low Voltage Drop
- Low Temperature Coefficient
- Withstanding Voltage 6V
- Quiescent Current 1.5μA
- Output Voltage Accuracy: tolerance ±2%
- High output current: 300mA

Application

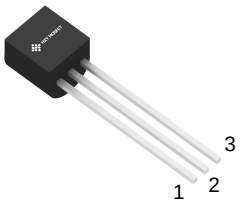
- Battery-powered Equipments
- Communication Equipments
- Audio/Video Equipments
- Smart Battery Packs
- Smoke Detectors
- CO2 DETECTORS

Pin Configuration And Descriptions

SOT-89 SOT-23



TO-92



No.	Name	Functions Description
1	GND	Ground
2	V_{IN}	Input
3	V_{OUT}	Output

Order Information

Orderable Device	Package	Output Voltage	Packing Option
HMCP1700T-xxxxE/TT	SOT-23	2.5V,2.8V,3.0V,3.3V,5.0V	3000/Reel
HMCP1700T-xxxxE/MB	SOT-89	2.5V,2.8V,3.0V,3.3V,5.0V	1000/Reel
HMCP1700T-xxxxE/TO	TO-92	2.5V,2.8V,3.0V,3.3V,5.0V	1000/Bag

Note: xxxx is 2502,2802,3002,3302,5002

Absolute Maximum Ratings

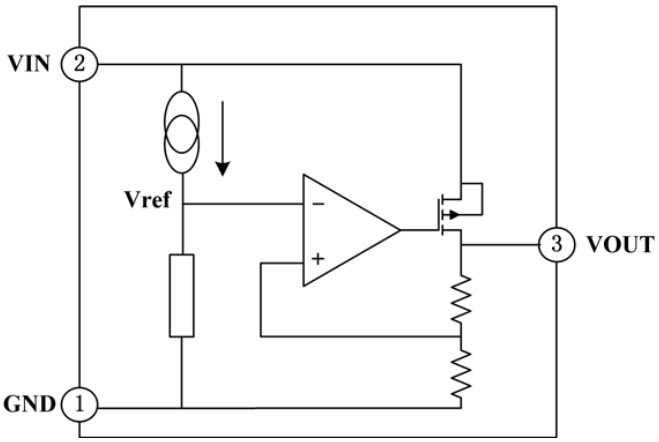
Description	Symbol	Value Range	Unit
Limit Power Voltage	V_{IN}	-0.3～+7	V
Storage Temperature Range	T_{STG}	-50～+125	℃
Operating Free-air Temperature Range	T_A	-40～+85	℃

Note:Stresses greater than those listed under "Absolute Maximum Ratingsmay" 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 Conditionsis" 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}	SOT-89	200	°C/W
		TO-92	200	°C/W
		SOT-23	500	°C/W
Power dissipation	P_W	SOT-89	500	mW
		TO-92	500	mW
		SOT-23	200	mW

Block Diagram



DC Characteristics (unless otherwise noted T_A= 25°C)

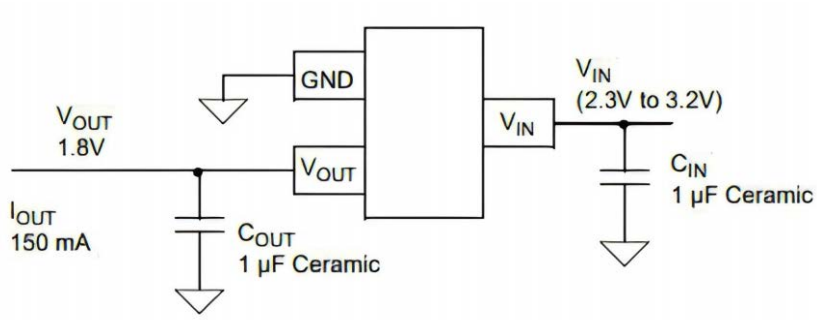
(V_{IN}= V_{OUT}+1.0V，$C_{IN=}C_L$=10uF，Ta=25°C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	V_{IN}=V_{OUT}+1.0V， I_{OUT}=10mA	2.5		5.0	V
Output Current	I_{OUT}	V $_{IN}$=V_{OUT}+1.0V	250			mA
Load Regulation	△ V_{OUT}	V_{IN}=V_{OUT}+1.0V 1mA≤I_{OUT}≤250mA		37	100	mV
Voltage Drop	V_{DIF}	I_{OUT}=100mA，△V_{OUT}=2%		195	300	mV
Quiescent Current	I_{SS}			1.5	3.0	uA
Line Regulation	△ V_{OUT}/ V_{OUT}* △V_{IN}	V_{OUT}+1.0V≤V_{IN}≤6V， I_{OUT}=1mA			0.6	%/V
Input Voltage	V_{IN}				6.0	V
Temperature Coefficient	△ V_{OUT}/ △ T_A*V_{OUT}	V_{IN}=V_{OUT}+1.0V，I_{OUT}=10mA，-40℃≤T_A≤85℃		±90		ppm/℃
Output Short Circuit Current	I_{lim}	V_{OUT}=0V		400		mA

Note: When V_{IN}=V_{OUT}+1.0V,as the output voltage declined 2%,the V_{DIF}=V_{IN}-V_{OUT}.

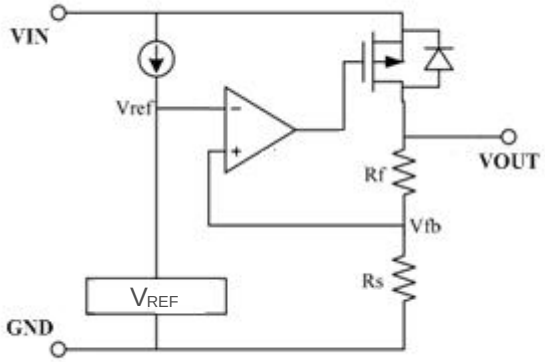
Application Circuit

Basic Circuits



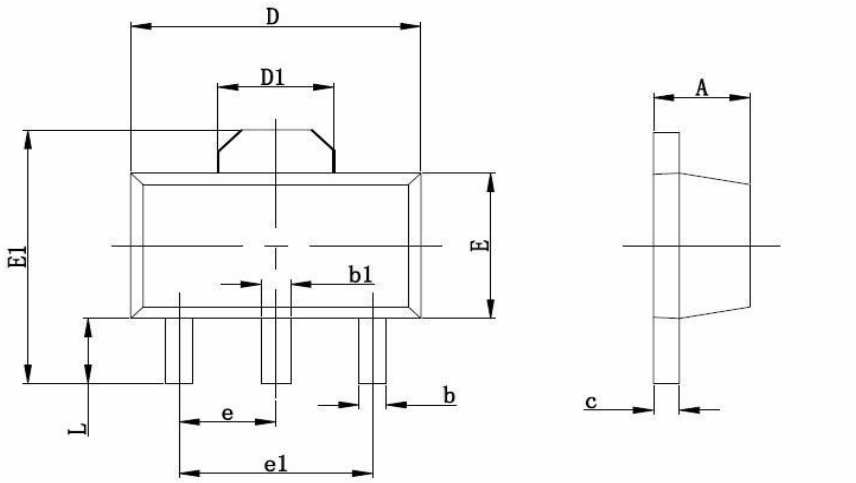
Function Description

The error amplifier compares the input voltage Vtb of the voltage dividing resistor formed by the feedback resistors Rs and Rf with the reference voltage (vref). This error amplifier provides the necessary gate voltage to the output transistor so that the output voltage remains constant regardless of input voltageor temperature changes.



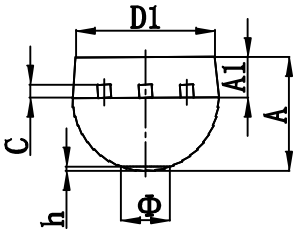
1、When applying, try to connect the capacitor near the VIN and VOUT pins. Pay attention to the usage.
2、conditions of input/output voltage and load current to avoid the internal power consumption of the IC exceeding the maximum power consumption allowed by the package.

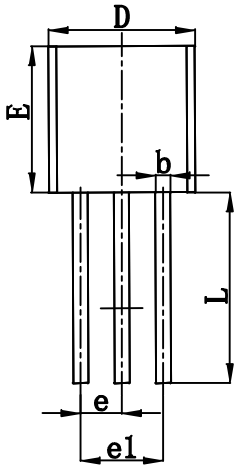
SOT-89 Package Outline Dimensions



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

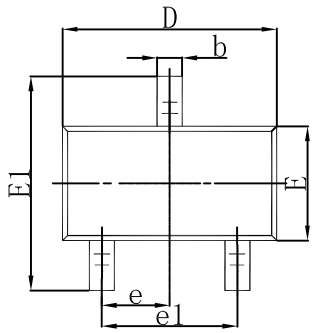
TO-92 Package Outline Dimensions

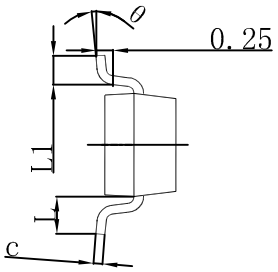


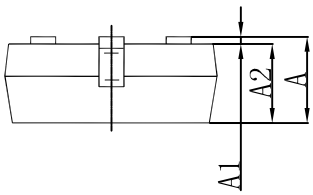


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.300	3.700	0.130	0.146
A1	1.100	1.400	0.043	0.055
b	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.300	4.700	0.169	0.185
D1	3.430		0.135	
E	4.300	4.700	0.169	0.185
e	1.270 TYP		0.050 TYP	
e1	2.440	2.640	0.096	0.104
L	14.100	14.500	0.555	0.571
Φ		1.600		0.063
h	0.000	0.380	0.000	0.015

SOT-23 Package Outline Dimensions

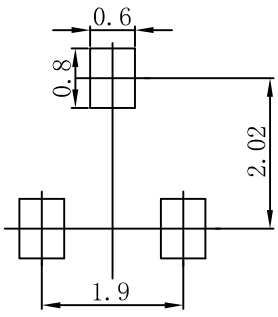






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 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-23 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

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