TP172C Series

250mA LOW Quiescent Current LDO Regulators

Features

- Low Power Consumption: 3uA(Typ.)
- Maximum Output Current: 250mA
- Small Dropout Voltage
  211mV@100mA (Vout=3.3V)
  418mV@200mA (Vout=3.3V)
- Input Voltage Range: 2.5V~16V
- Output Voltage Range: 1.2V~5.0V
  (customized on command in 0.1V steps)
- Highly Accurate:±2%(±1% customized)
- Output Current Limit: 500mA
- Foldback Short-circuit Current: 85mA

Applications

- Battery Powered equipment
- Power Management of MP3、PDA、DSC、Mouse、PS2 Games
- Reference Voltage Source Regulation after Switching Power

General Description

TP172C series is a group of positive voltage output, low power consumption, low dropout voltage, three terminal regulator. It can provide 200mA output current when input / output voltage differential drops to 418mV (Vout= 3.3V), And it also provides foldback short-circuit protection and output current limit function. The very low power consumption of TP172C (Iq=3uA)can greatly improve natural life of batteries.

TP172C can provide output value in the range of 1.2V~5.0V in 0.1V steps. It also can customized on command.

TP172C includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.

TP172C has well load transient response and good temperature characteristic, And it uses trimming technique to guarantee output voltage accuracy within ± 2%.

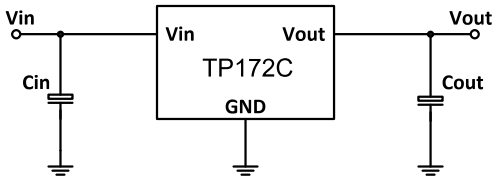
Ordering Information

TP172C33T3

T3=SOT89-3
S3=SOT23

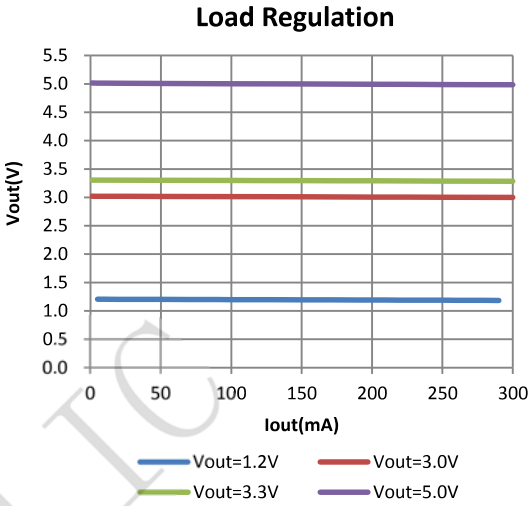
Output Versions :
50=5.0V
33=3.3V
15=1.5V
18=1.8V
30=3.0V
XX=X.XV

TYPICAL APPLICATION



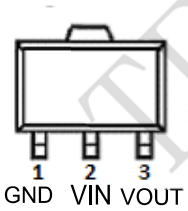
NOTE: Input capacitor (Cin=1uF) and Output capacitor (Cout=1uF) are recommended in all application circuit. *Ceramic capacitor is recommended.*

ELECTRICAL CHARACTERISTICS

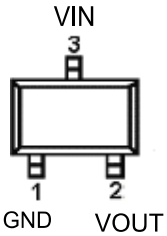


PIN CONFIGURATION

SOT89-3



SOT23-3



Pin Name	Function
V_{IN}	Power Input Voltage
GND	Ground
V_{OUT}	Output Voltage.

Absolute Maximum Rating (T_A=25°C unless otherwise noted)

Parameter		Value
Max Input Voltage		20V
Operating Junction Temperature(Tj)		125°C
Ambient Temperature(Ta)		-40°C -85°C
Power Dissipation	SOT-23-3	250mW
	SOT-89-3	500mW
Storage Temperature(Ts)		-40°C -150°C
Lead Temperature & Time		260°C,10S

Note:
Exceed these limits to damage to the device.
Exposure to absolute maximum rating conditions may affect device reliability.

RECOMMENDED WORK CONDITIONS

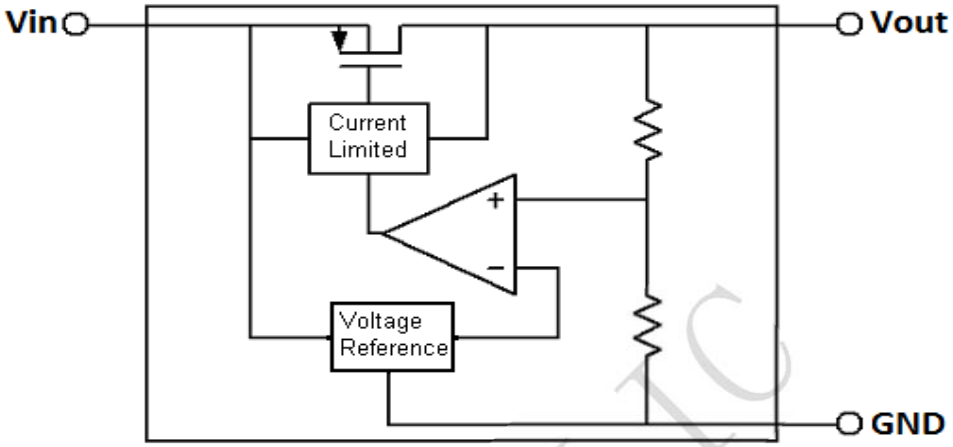
Item	Min	Recom-mended	Max.	Unit
Input Voltage Range			16	V
Ambient Temperature	-40		85	°C

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

(Test Conditions: Cin=1uF, Cout=1uF, TA=25°C, Unless Otherwise Specified)

Symbol	Parameter	Conditions	Min	Type	Max	Units
Vin	Input Voltage				16	V
Vout	Output Voltage		Vout x0.98		Vout X1.02	V
Iout(Max.)	Maximum Output Current	Vin-Vout=1V	250			mA
Dropout Voltage	Input-Output Voltage Differential	Iout=100mA Vout = 3.3V		210	400	mV
$\frac{\Delta Vout}{\Delta Vin \cdot Vout}$	Line Regulation	Iout=10mA 2V≤Vin≤16V		0.2	0.3	%/V
$\Delta Vout$	Load Regulation	Vin=Set Vout+1V 1mA≤Iout≤100mA		20	40	mV
Iq	Quiescent Current	Vin=Set Vout+1V		3	5	uA
$\frac{\Delta Vout}{\Delta T \cdot Vout}$	Output Voltage Temperature Coefficient	Iout=10mA		100		ppm/°C

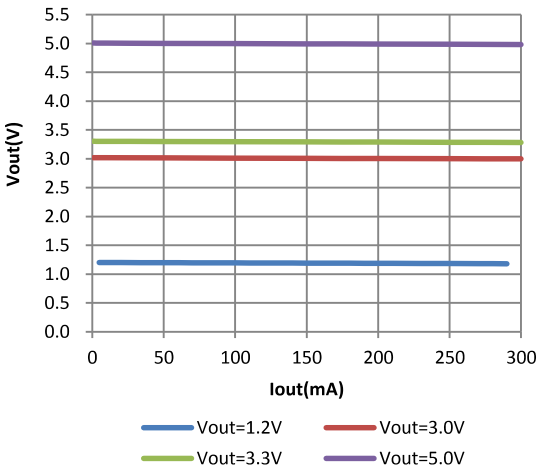
BLOCK DIAGRAM



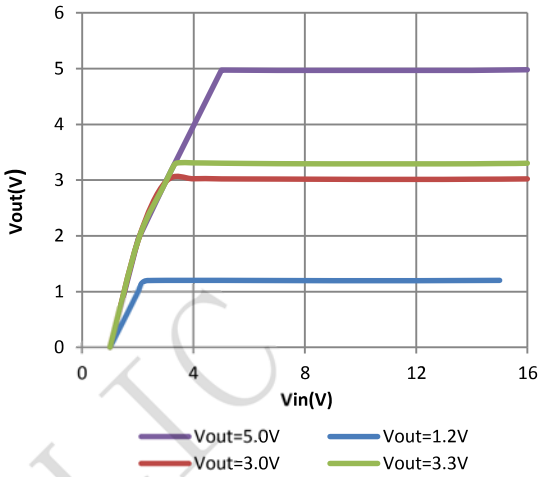
TYPICAL PERFORMANCE CHARACTERISTICS

(T_A=25°C, unless otherwise noted) ,

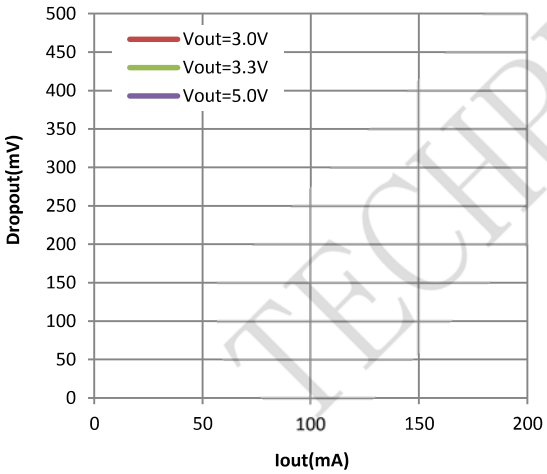
Load Regulation



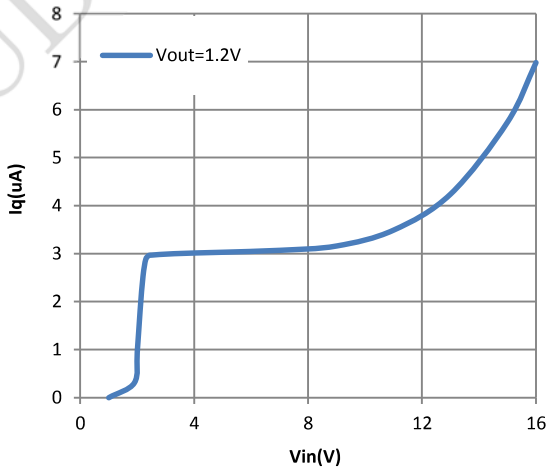
Line Regulation



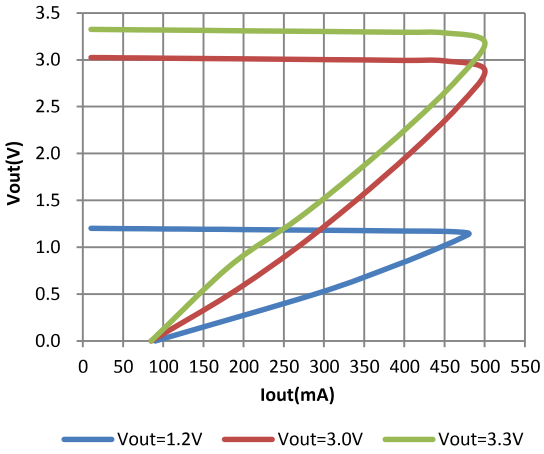
Dropout



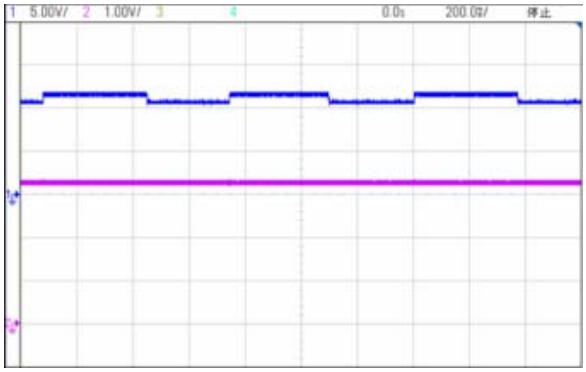
Iq



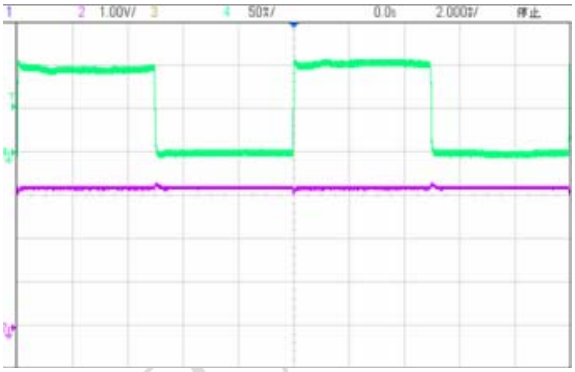
Current Limit



Line transient response
Vin=11V~12V, Ch1—Vin, Ch2—Vout

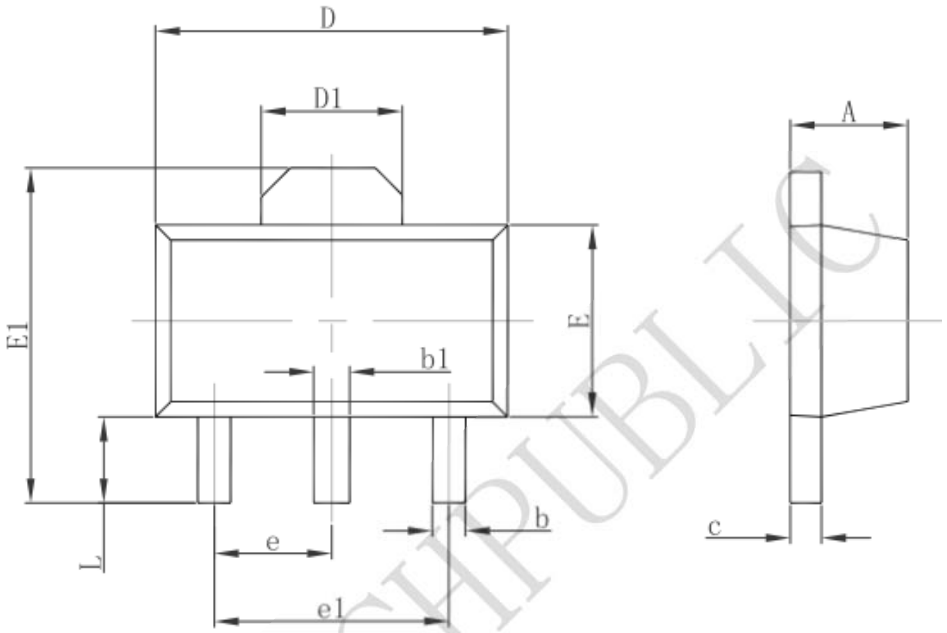


Load transient response
Iout=1mA~100mA, Ch2—Vout, Ch4—Iout



Package information

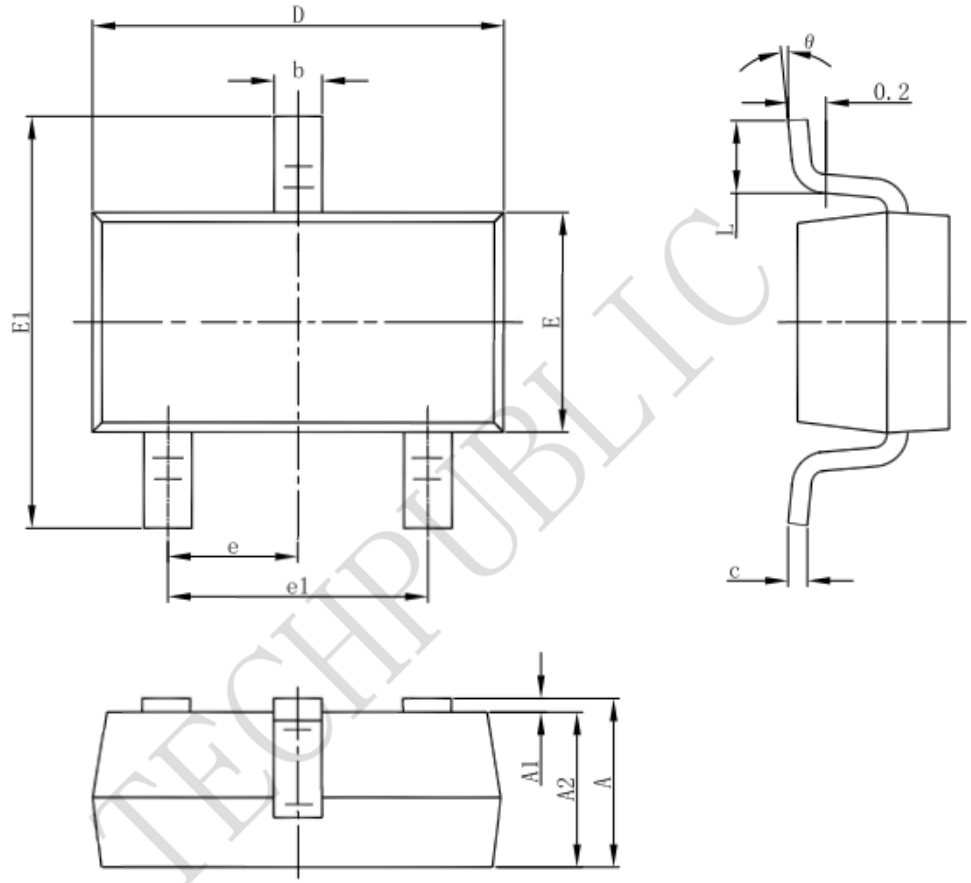
SOT89-3



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 information

SOT23-3



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°