ACE507C

200mA Low Consumption Linear Regulator

Description

ACE507C 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 430mVVout=2.8V）, The very low power consumption of ACE507C（Iq=1.0uA）can greatly improve natural life of batteries.

ACE507C can provide output value in the range of 1.1V~5.5V in 0.1V steps. It also can customized on command.

ACE507C includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.

ACE507C has well load transient response and good temperature characteristic, And it uses trimming technique to guarantee output voltage accuracy within±2%.

Features

- Low Power Consumption: 1.0uA (Typ)
- Maximum Output Current: 200mA
- Small Dropout Voltage
- 210mV@100mA (Vout=2.8V)
- 430mV@200mA (Vout=2.8V)
- Input Voltage Range: 1.5V~6V
- Output Voltage Range: 1.1V~5.5V (customized on command in 0.1V steps)
- High Accurate: ±2% (±1% customized)e
- Output Current Limit

Application

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

Absolute Maximum Ratings

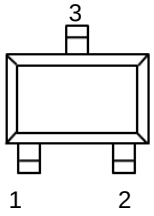
Parameter	Symbol	Max	Unit
Input supply voltage	V_{IN}	14	V
Power Dissipation SOT-23-3 TSOT-23-3 SOT-89-3 TO-92		 250 250 500 500	mW
Junction temperature	T_J	125	°C
Storage temperature	T_S	- 45 to 150	°C
Ambient Temperature	T_A	-40 ~85	°C

Note: Exceed these limits to damage to the device.

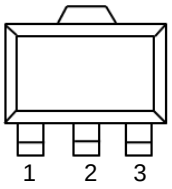
Exposure to absolute maximum rating conditions may affect device reliability.

Packaging Type

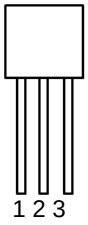
SOT-23-3
TSOT-23-3



SOT-89-3



TO-92



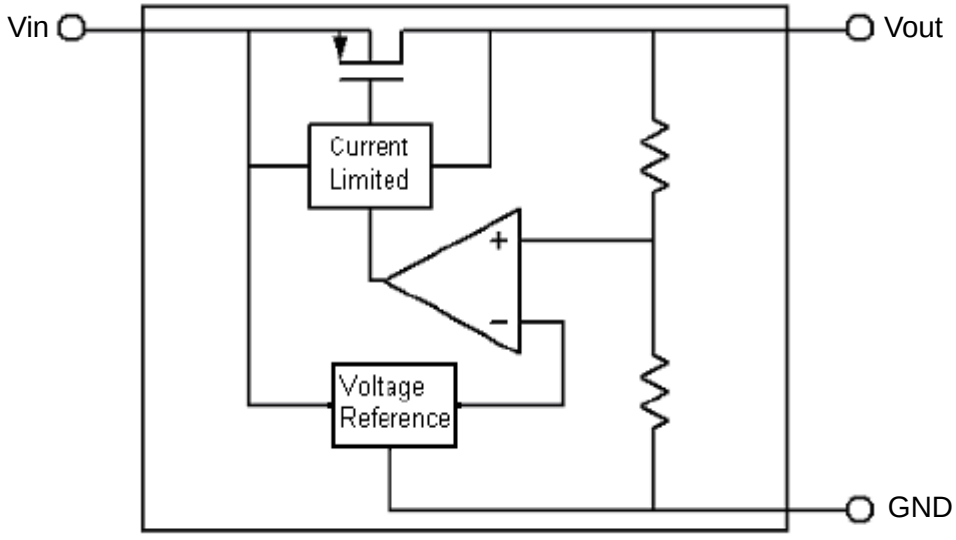
SOT-23-3/TSOT-23-3	SOT-89-3	TO-92	Description	Function
2	3	3	V_{OUT}	Output pin
3	2	2	V_{DD}	Input Pin
1	1	1	V_{SS}	Ground Pin

Ordering information

ACE507C XX XX + H

- Halogen - free
- Pb - free
- BM : SOT-23-3
  BMS : TSOT-23-3
  AM : SOT-89-3
  EP : TO-92
- Output Voltage：1.1V/1.5V…..5.5V

Block Diagram



Recommended Work Conditions

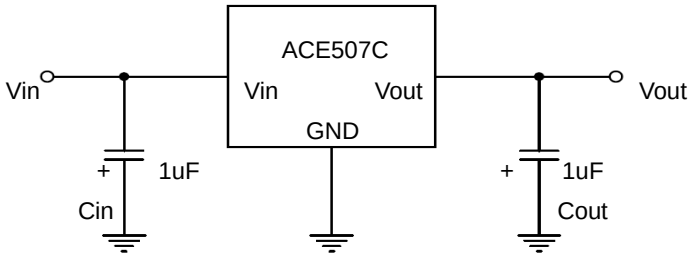
Item	Min	Max	Unit
Input Voltage Range		6	V
Ambient Temperature	-40	85	℃

Electrical Characteristics

(Test Conditions: Cin=1uF, Cout=1uF,T_A=25℃, unless otherwise specified.)

Parameter	Symbol	Conditions		Min	Typ	Max	Units
Input Voltage	V_{IN}					6	V
Output Voltage	V_{OUT}			Vout* 0.98		Vout* 1.02	V
Maximum Output Current	I_{OUT}(Max.)	V_{IN}-V_{OUT}=1V		200			mA
Input-Output Voltage Differential	Dropout Voltage	I_{OUT}=100 mA	Vout≦1.8V		600	1000	mV
			Vout≧1.8V		300	600	
Line Regulation	ΔV_{OUT} / ΔV_{IN}•V_{OUT}	I_{OUT}=10mA 1.5V≦V_{IN}≦8A			0.2	0.3	%/V
Load Regulation	ΔV_{OUT}	V_{IN}=Set Vout+1V 1mA≦I_{OUT}≦100mA			20	40	mV
Quiescent Current	Iq	V_{IN}=Set Vout+1V			1.0	5.0	uA
Output Voltage Temperature Coefficient	ΔV_{OUT} / ΔT•V_{OUT}	I_{OUT}=10mA			100		ppm/℃

Typical Application Circuit



Note 1. Input capacitor (Cin=1uF) is recommended in all application circuit. Tantalum capacitor is recommended.

2. Output capacitor (Cout=1uF) is recommended in all application to assure the stability of circuit. Tantalum capacitor is recommended.

Explanation：

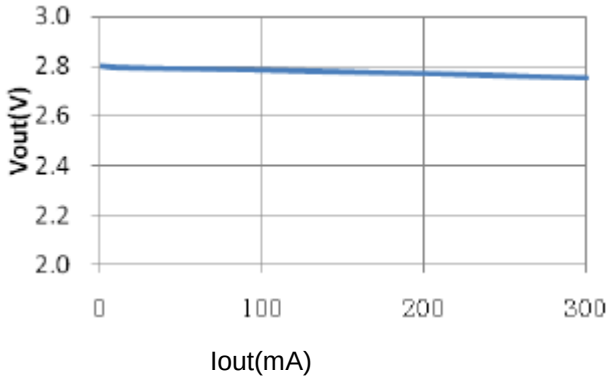
ACE507C is a series of low dropout voltage and low power consumption three pins regulator. Its application circuit is very simple, which only needs two outside capacitors. It is composed of these modules: high accuracy voltage reference, current limit circuit, error amplifier, output driver and power transistor.

Current Limit module can keep chip and power system away from danger when load current is more than 200mA.

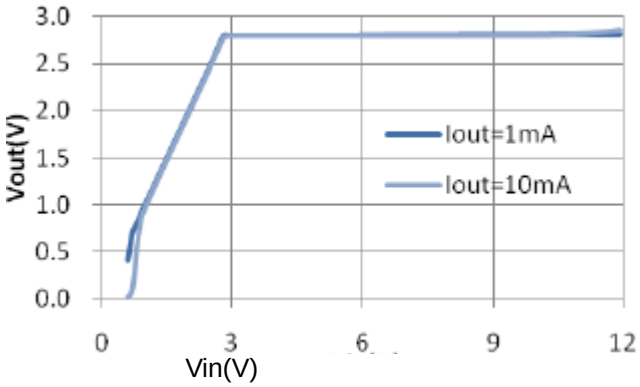
ACE507C uses trimming technique to assure the accuracy of output value within±2%, at the same time, temperature compensated is elaborately considered in this chip, which makes ACE507C's temperature coefficient within 100ppm/℃.

Typical Performance Characteristics

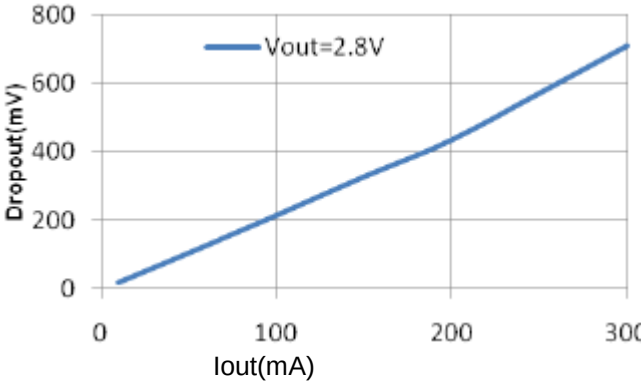
1.Load regulation



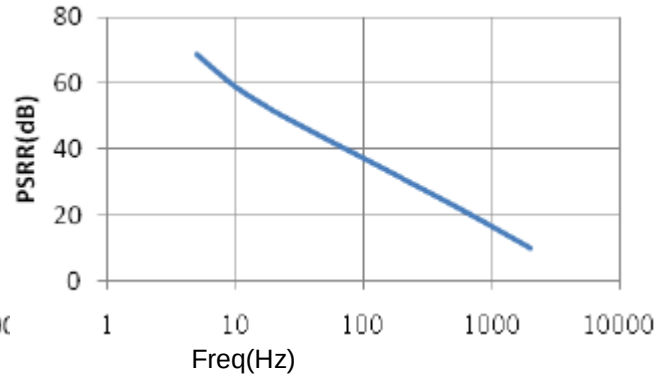
2. Line regulation



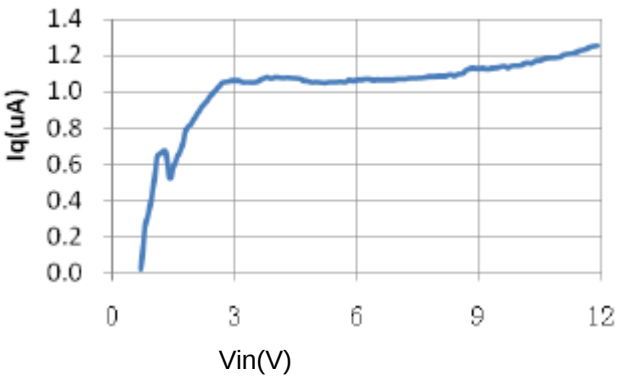
3.Dropout Voltage



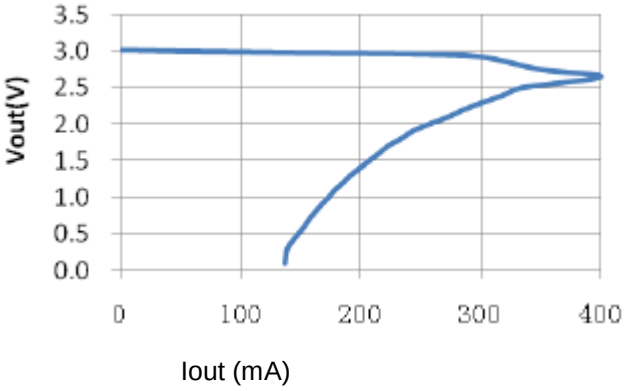
4.PSRR



5.Iq (Vout=2.8V)

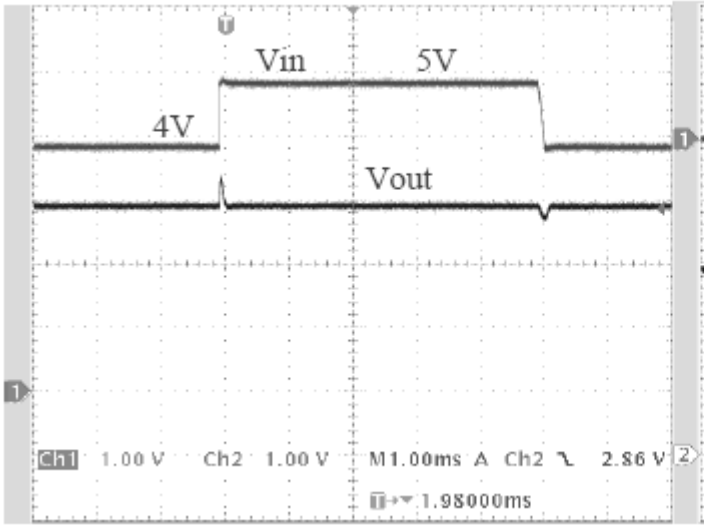


6.Current limit



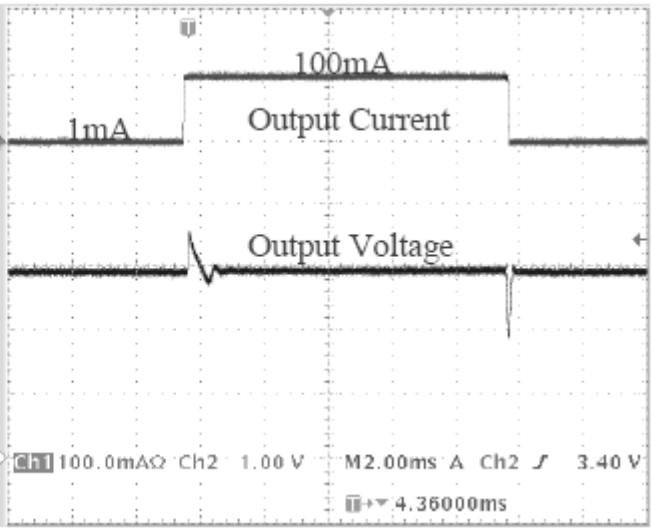
7.Line transient response

Cin=Cout=1uF Iout=10mA Vout=2.8V

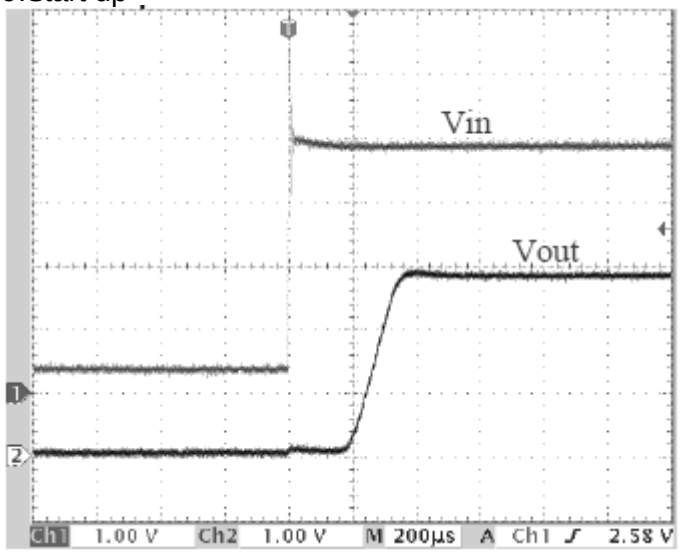


8.Load transient response

Cin=Cout=1uF Vin=4V Vout=2.8V

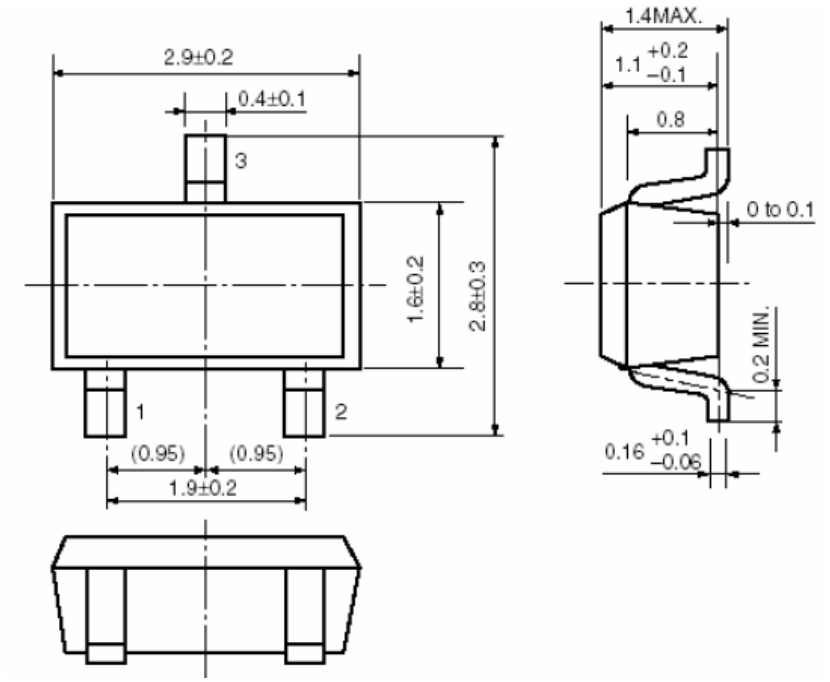


9.Start up

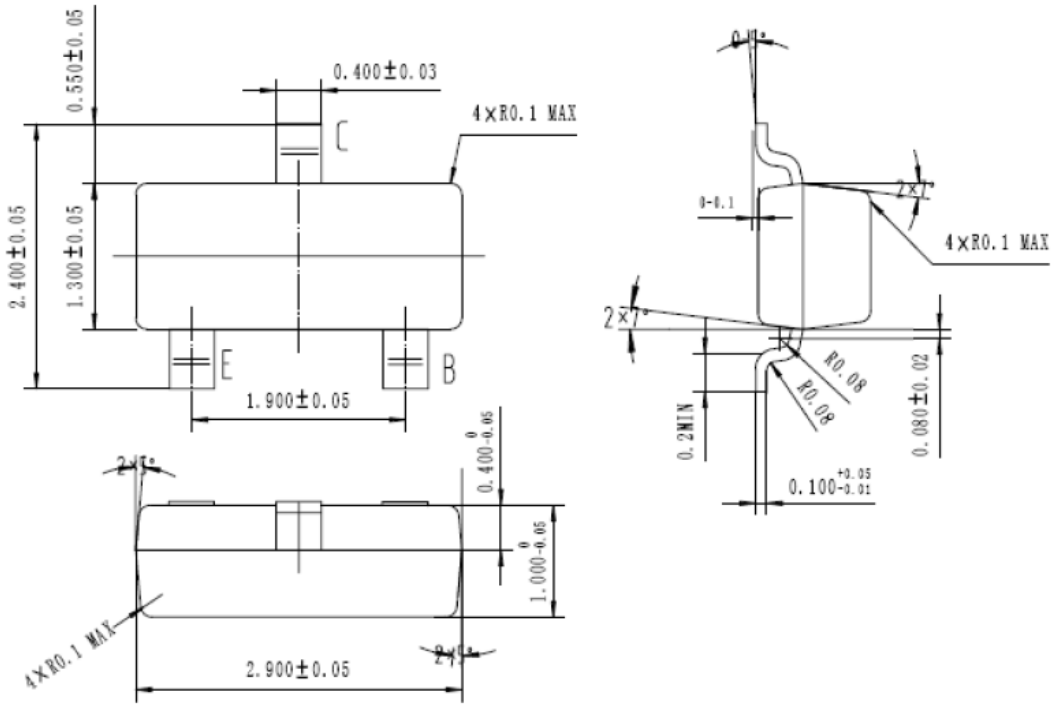


Packing Information

SOT-23-3

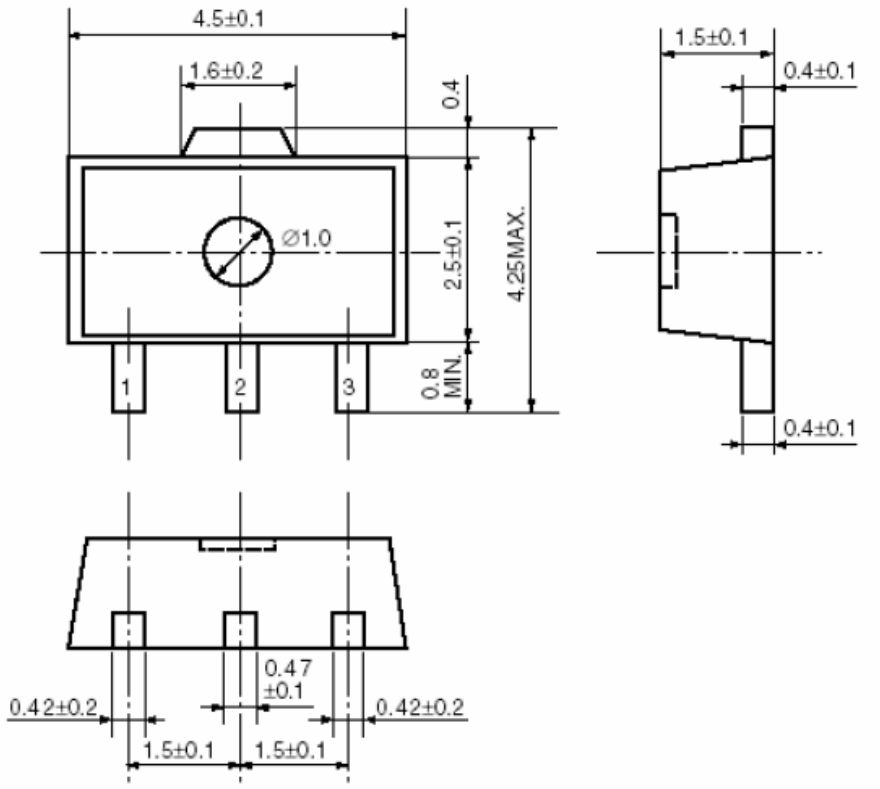


TSOT-23-3



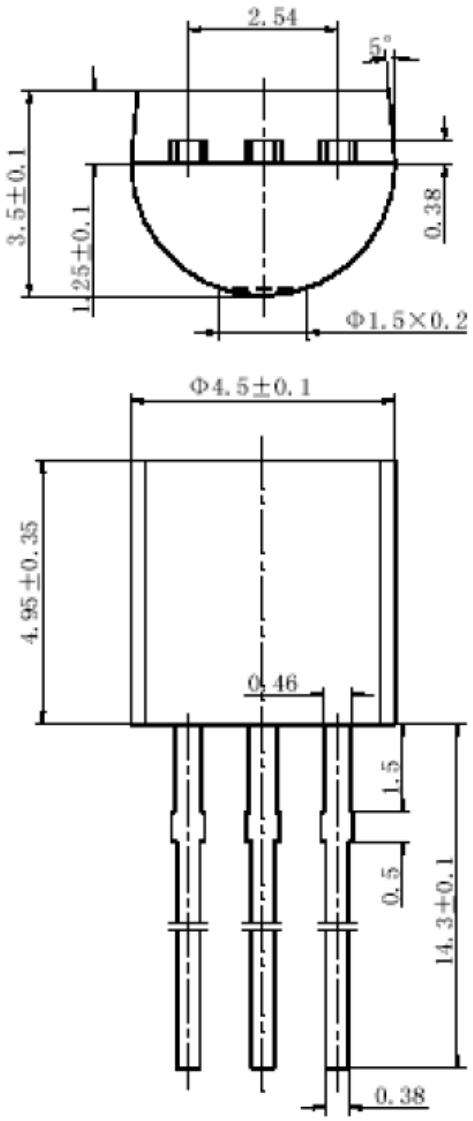
Packing Information

SOT-89-3



Packing Information

TO-92



Notes

ACE does not assume any responsibility for use as critical components in life support devices or systems without the express written approval of the president and general counsel of ACE Electronics Co., LTD. As sued herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and shoes failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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