ACE506C

300mA Low Consumption Linear Regulator

Description

ACE506C series are a group of positive voltage output, high precise, and high PSRR and low power consumption voltage regulator. Voltages are selectable in 100mV steps within a range of 1.2V to 3.6V. It also can be customized on command.

ACE506C series have excellent load and line transient response and good temperature characteristics, which can assure the stability of chip and power system. And it uses trimming technique to guarantee output voltage accuracy within ±2%.

Features

- Low Quiescent Current: 2uA at 5V
- 60dB PSRR at 100Hz
- Low Output Noise: 44uVRMS
- Low Dropout: 280mV at 150mA load
- Low Temperature Coefficient: ±100ppm/°C
- Excellent Line Regulation: 0.05%/V
- Highly Accurate: ±2%

Application

- Reference Voltage Source
- Battery Powered Equipment
- Hand-Hold Equipment
- Wireless LAN
- GPS Receivers

Absolute Maximum Ratings

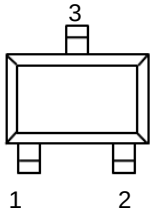
Parameter		Value
Max Input Voltage		8V
Operating Junction Temperature (TJ)		125°C
Ambient Temperature (TA)		-40°C ~85°C
Power Dissipation	SOT-23-3, SOT-23-5	250mW
	SOT-89-3	500mW
Storage Temperature (TS)		-40°C~150°C
Lead Temperature & Time		260°C, 10 Sec

Note: Exceed these limits to damage to the device.

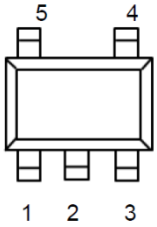
Exposure to absolute maximum rating conditions may affect device reliability.

Packaging Type

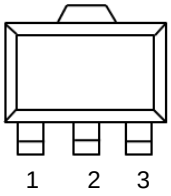
SOT-23-3L
TSOT-23-3



SOT-23-5



SOT-89-3



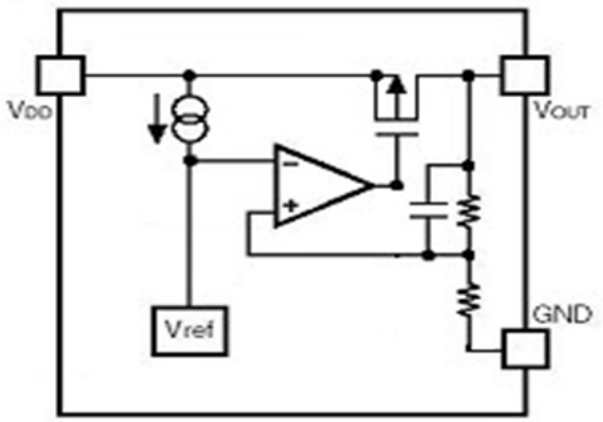
SOT-23-3L/TSOT-23-3	SOT-23-5	SOT-89-3	Description	Function
2	3	3	V_{OUT}	Output pin
3	2	2	V_{DD}	Input Pin
1	1	1	V_{SS}	Ground Pin
	4		NC	
	5		NC	

Ordering information

ACE506C XX XX + H

- Halogen - free
- Pb - free
- BMS: TSOT-23-3
  BM : SOT-23-3L
  BN : SOT-23-5
  AM: SOT-89-3
- Output Voltage：1.2V/1.5V…..3.6V

Block Diagram



Recommended Work Conditions

Item	Min
Input Voltage Range	Max. 8V
Ambient Temperature	-40°C ~85°C

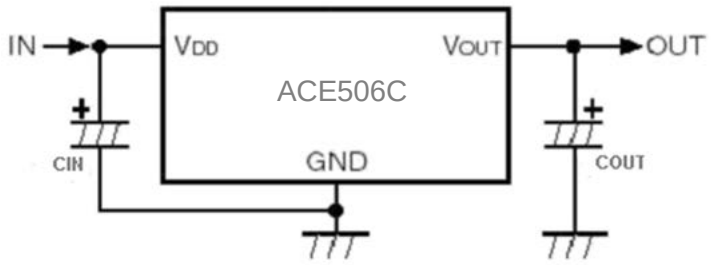
Electrical Characteristics

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

Parameter		Symbol	Conditions	Min	Typ	Max	Units
Input Voltage		V_{DD}				8	V
Output Voltage	V_{OUT} >1.5V	V_{OUT}	V_{DD}=Set V_{OUT}+1V 1mA≤I_{OUT}≤10mA	V_{OUT} X0.98	V_{OUT}	V_{OUT} X1.02	V
	V_{OUT}<=1.5V			V_{OUT} -0.03	V_{OUT}	V_{OUT} +0.03	V
Maximum Output Current		I_{OUT} (Max.) (Note 4)	V_{DD}-V_{OUT}=1V	300			mA
Dropout Voltage		VDROP	I_{OUT}=150mA V_{OUT}=3.0V		280		mV
Line Regulation		□ ΔV_{OUT} / ΔV_{IN}•V_{OUT}	I_{OUT}=10mA 4V≤V_{DD}≤6V		0.05	0.2	%/V
Load Regulation		ΔV_{OUT}	V_{DD}=Set V_{OUT}+1V 1mA≤I_{OUT}≤300mA		150		mV
Supply Current		I_S	V_{DD}=Set V_{OUT}+1V V_{OUT} Floating		2	3	uA
Output Voltage Temperature Coefficient		ΔV_{OUT} / ΔT•V_{OUT}	I_{OUT}=10mA		±100		ppm/°C
Ripple Rejection		PSRR	f=100Hz, Ripple=0.5Vp-p, V_{DD}=Set V_{OUT}+1V		60		dB
Output Noise		en	BW=10Hz~100KHz		44		uVrms

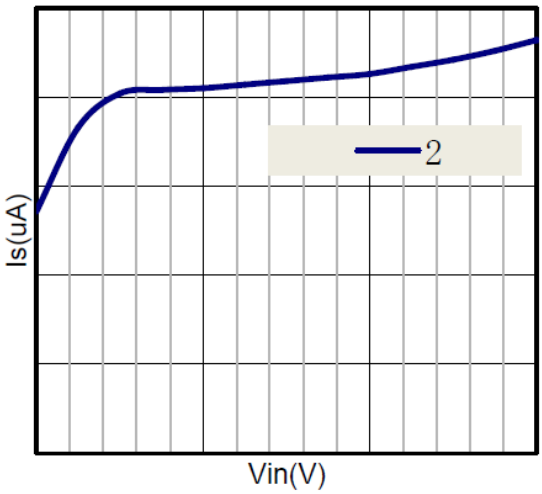
Note: The maximum power rating of each package is a constant, so along with the change of ILOAD, the V_{DD} -V_{OUT} should be controlled to a certain range to ensure the normal operation.

Typical Application Circuit

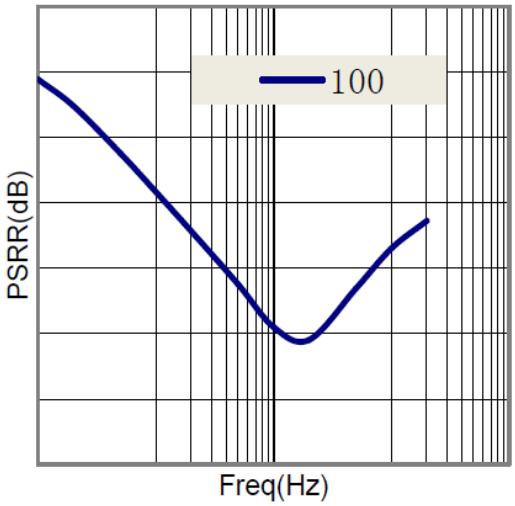


Typical Performance Characteristics

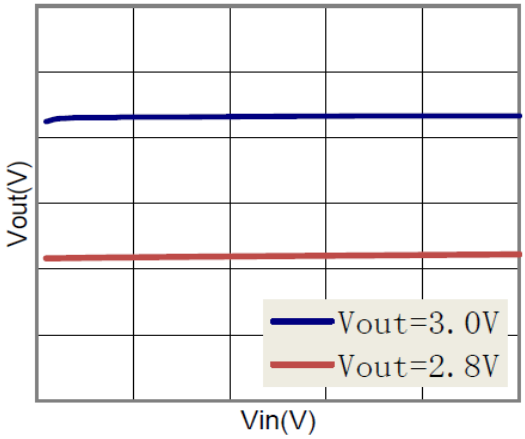
Supply Current vs. Input Voltage



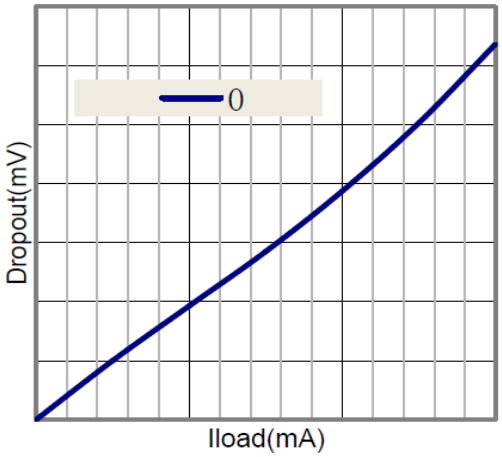
PSRR



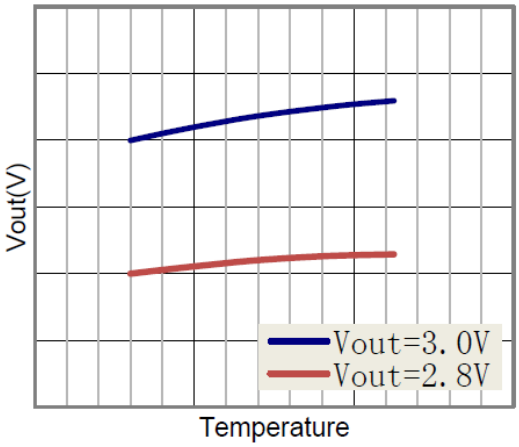
Output Voltage vs. Input Voltage



Dropout Voltage vs. Output Current



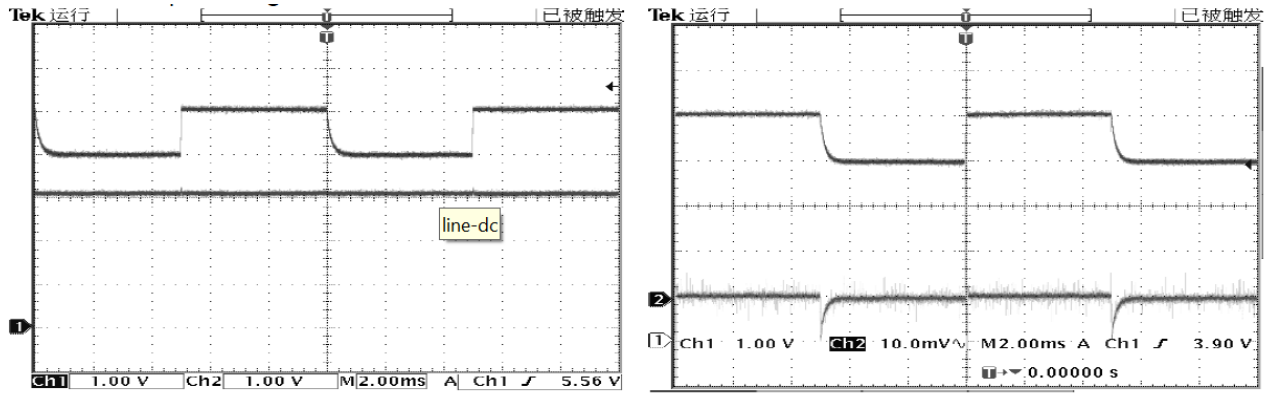
Output Voltage vs. Temperature



TEST WAVEFORMS

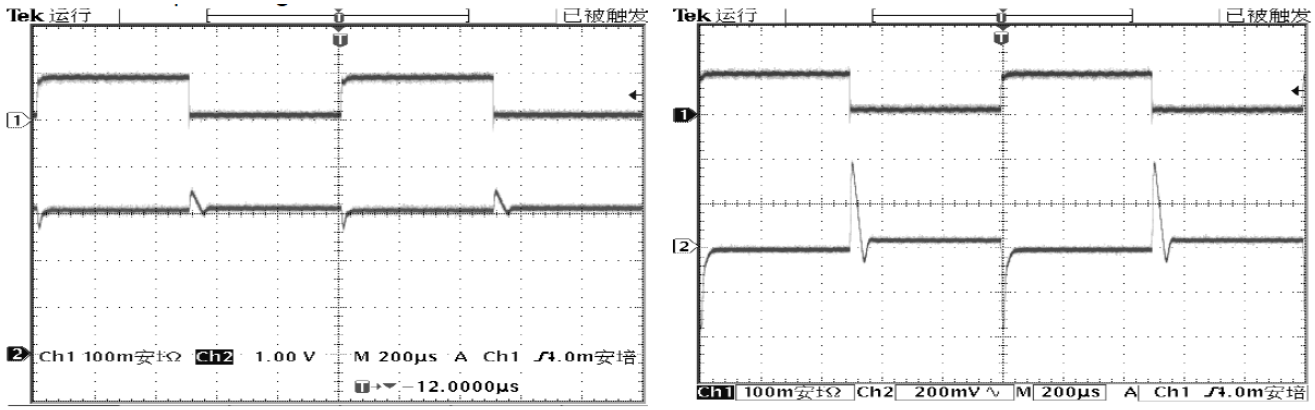
Line Transient Response (CIN=COUT=1uF, VIN=4↔5V, VOUT=3V)

Channel 1: Input Voltage
Channel 2: Output Voltag



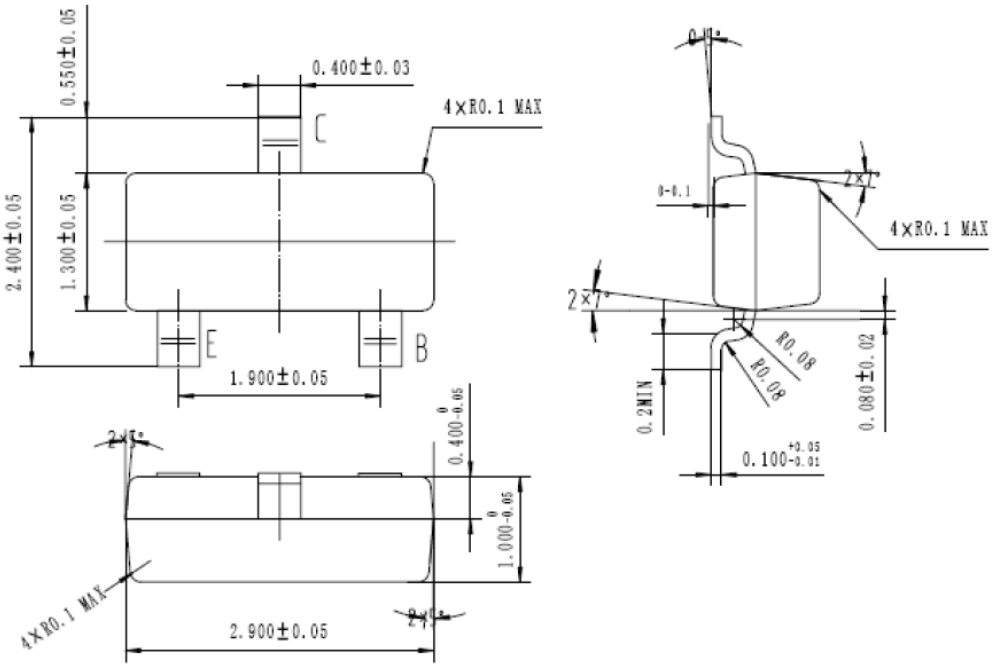
Load Transient Response (CIN=COUT=1uF, IOUT=1↔100mA, VOUT=3V)

Channel 1: Output Current
Channel 2: Output Voltage

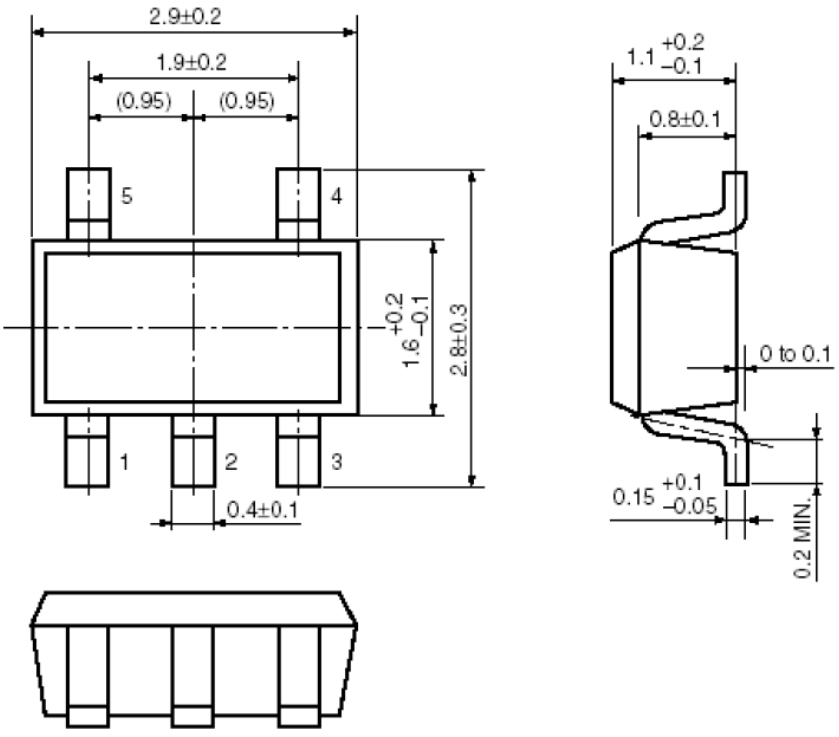


Packing Information

SOT-23-3

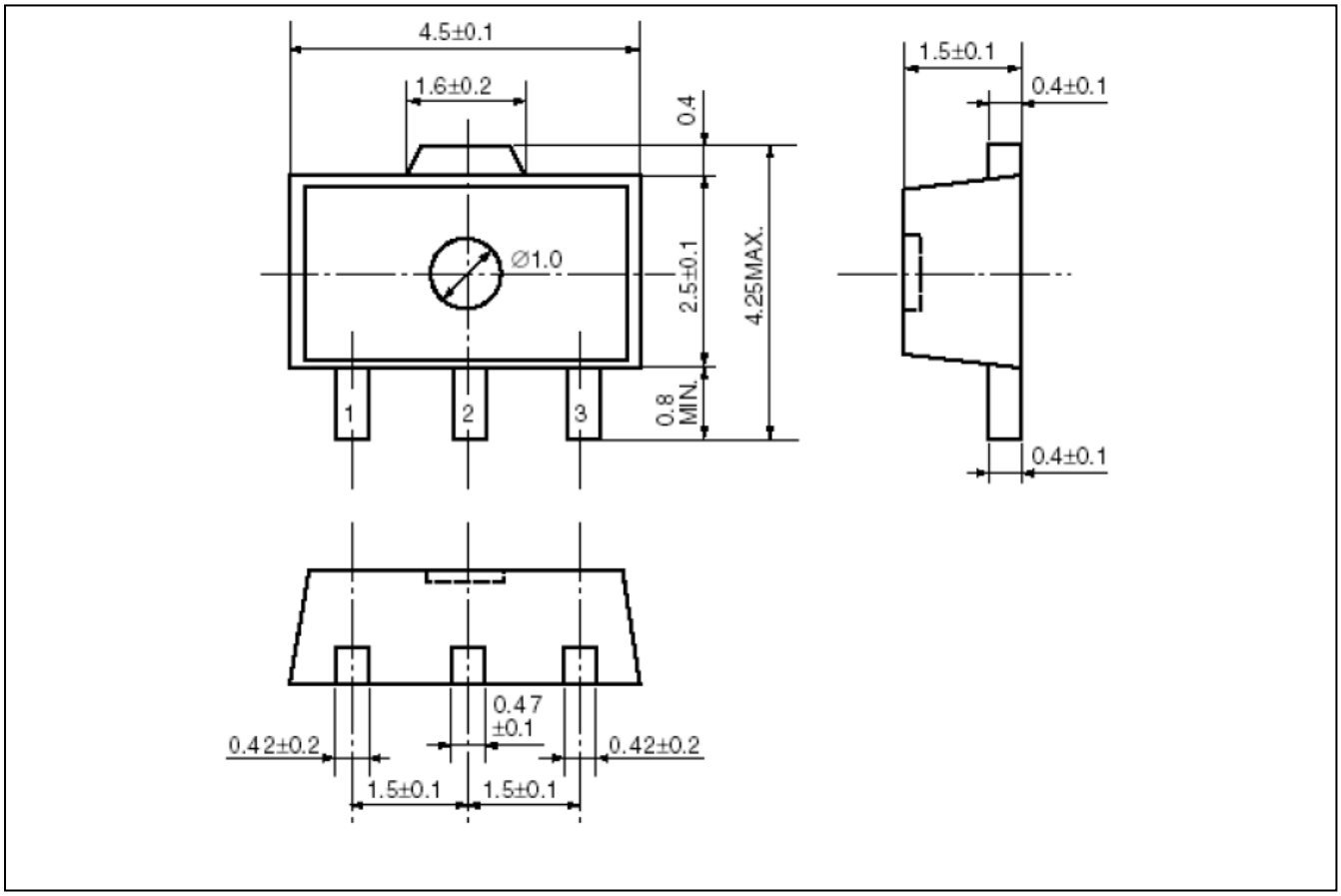


TSOT-23-5



Packing Information

SOT-89-3



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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