ACE505

Low noise 150mA LDO regulator

Description

ACE505 series is a group of positive voltage output, low power consumption, low dropout voltage regulator.

ACE505 can provide output value in the range of 1.2V~5.0V every 0.1V step. It also can be customized on command.

ACE505 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.

ACE505 has 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

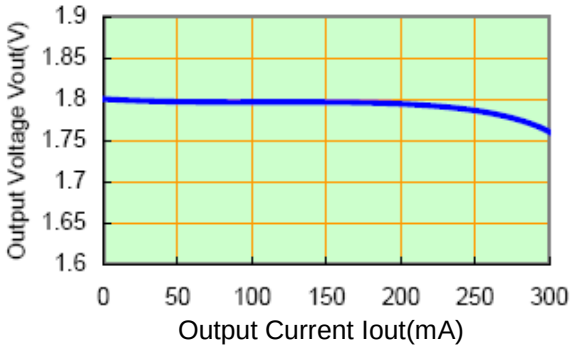
- Low Power Consumption: 25uA（Typ.）
- Low output noise (27uVRMS)
- Standby Mode: 0.1uA
- Low dropout Voltage: 0.2V@100mA (Typ.)
- High Ripple Rejection: 65dB@1kHz (Typ.)
- Low Temperature Coefficient: ±100ppm/°C
- Excellent Line regulation: 0.05%/V
- Build-in chip enable circuit
- Output Voltage Range: 1.2V~5.0V (customized on command every 0.1V step)
- Highly Accurate: ±2% (±1% customized)
- Output Current Limit

Application

- Power source for cellular phones and various kind of PCSs
- Battery Powered equipment
- Power Management of MP3, PDA, DSC, Mouse, PS2 Games
- Reference Voltage Source
- Regulation after Switching Power

Typical Performance Characteristic:

ACE505-1.8V Output

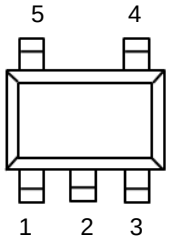


Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Input Voltage		10	V
Output Current		200	mA
Power Dissipation SOT-23-5 SC-70-5		 250 250	mW
Operating Junction temperature	T_J	125	°C
Storage temperature	T_S	- 45 to 150	°C

Packaging Type

SC-70-5 / SOT-23-5



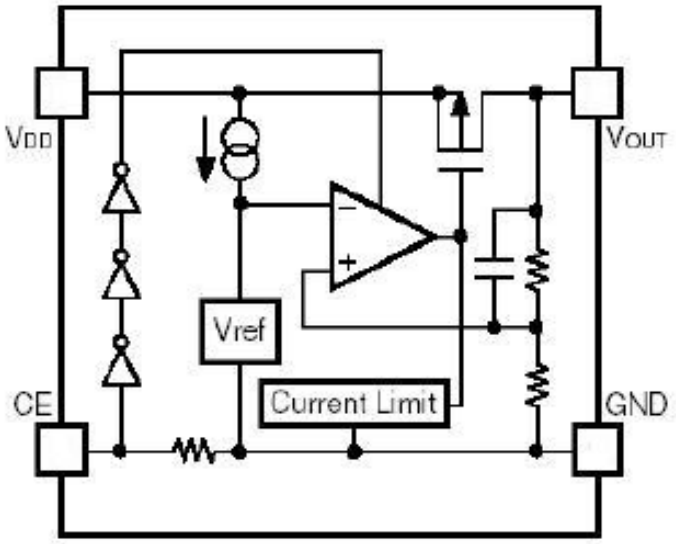
SC-70-5	SOT-23-5(A)	SOT-23-5(B)	Description	Function
5	5	1	V_{OUT}	Output pin
1	1	3	V_{DD}	Input Pin
2	2	2	GND	Ground Pin
3	3	4	CE	Chip Enable Pin
4	4	5	NC	No Connection

Ordering information

ACE505 XX XX + H

- Halogen - free
- Pb - free
- QM: SC-70-5
  BNA: SOT-23-5(A)
  BNB: SOT-23-5(B)
- Output Voltage：1.2V/1.5V…..5.0V

Block Diagram



Recommended Work Conditions

Item	Min	Max	Unit
Input Voltage Range		8	V
Ambient Temperature	-40	85	℃

Electrical Characteristics

(Test Conditions: Cin=1uF, Cout=2.2uF,T_A=25℃, unless otherwise specified.)

ACE505, for arbitrary output voltage

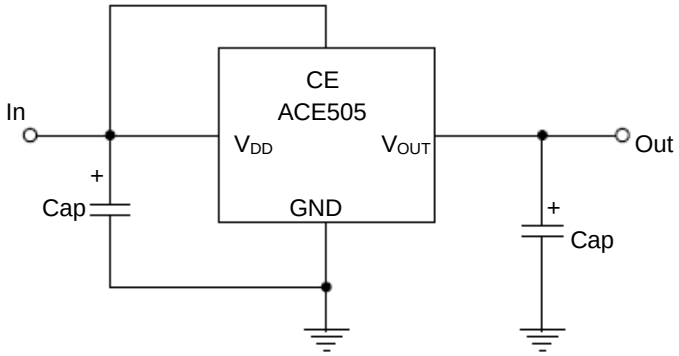
Symbol	Parameter		Conditions	Min	Typ	Max	Units
Vin	Input Voltage			1.8		8	V
Vout	Output Voltage	Vout>1.5V	Vin=Set Vout+1V 1mA≤Iout≤30mA	Vout x0.98		Vout X1.02	V
		Vout<=1.5V		Vout-0.03		Vout+0.03	
Iout (Max.)	Maximun Output Current		Vin-Vout=1V	150			mA
Dropout Voltage	Input-Output Voltage Differentia		Refer to the Electrical Characteristics by Output Voltage				
△Vout / △Vin·Vout	Line Regulation		Iout=40mA 1.6V≤Vin≤8V		0.05	0.2	%/V
△Vout / △Iout	Load Regulation		Vin=Set Vout+1V 1mA≤Iout≤80mA		12	40	mV
Iss	Supply Current		Vin=Set Vout+1V		25	50	uA
Istandby	Supply Current (Srandby)		Vin=Set Vout+1V Vce=Gnd		0.1	1.0	uA

△Vout/ △T·Vout	Output Voltage Temperature Coefficiency	Iout=30mA		±100		ppm /°C
PSRR	Ripple Rejection	F=1kHz, Ripple=0.5Vp-p Vin=Set Vout+1V		65		dB
Ilim	Short Current Limit	Vout=0V		20		mA
Rpd	CE Pull down Resistance		2.0	5.0	10.0	MΩ
Vceh	CE Input Voltage “H”		1.5		Vin	V
Vcel	CE Input Voltage “L”		0		0.25	V
en	Output Noise	BW=10Hz~100kHz		27		uVrms

Electrical Characteristics by Output Voltage

Output Voltage Vout (V)	Dropout Voltage, V_{DIF} (V)		
	Condition	Typ.	Max.
Vout =1.5V	Iout = 120mA	0.38	0.70
Vout = 1.6V		0.36	0.65
Vout = 1.7V		0.34	0.60
1.8 ≤ Vout ≤ 2.0		0.32	0.55
2.1 ≤ Vout ≤ 2.7		0.28	0.50
2.8 ≤ Vout ≤ 4.0		0.22	0.35

Typical Application Circuit



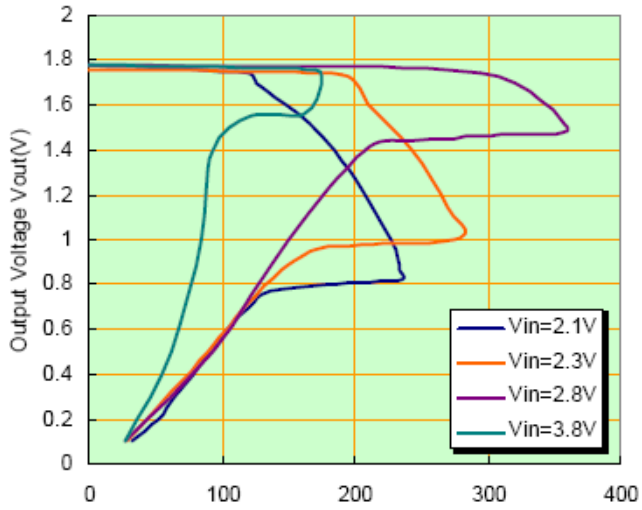
Application hints:

Note: Input capacitor (Cin=1uF) and Output capacitor (Cout=1uF/2.2uF) are recommended in all application circuit.

Typical Performance Characteristics

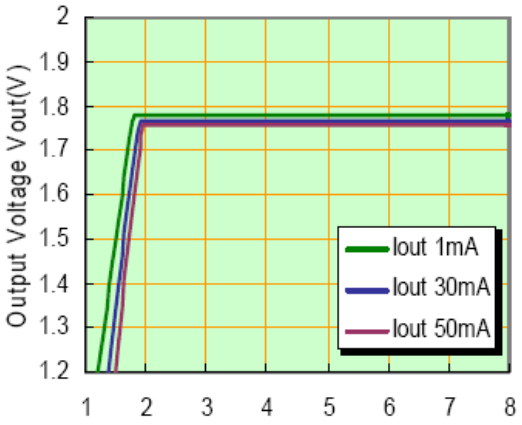
1.Output Voltage vs. Output Current
(with output short protection)

ACE505-1.8V

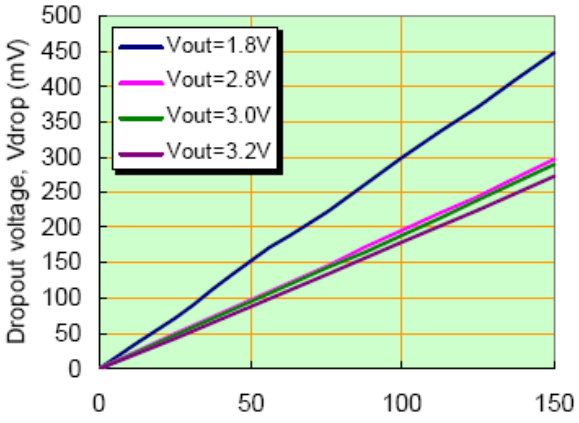


2.Output Voltage vs. Input Voltage

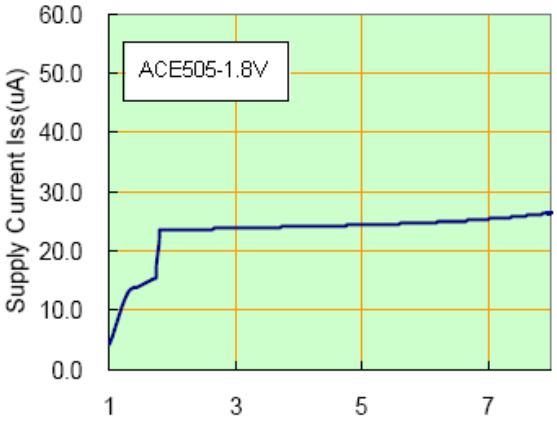
ACE505-1.8V



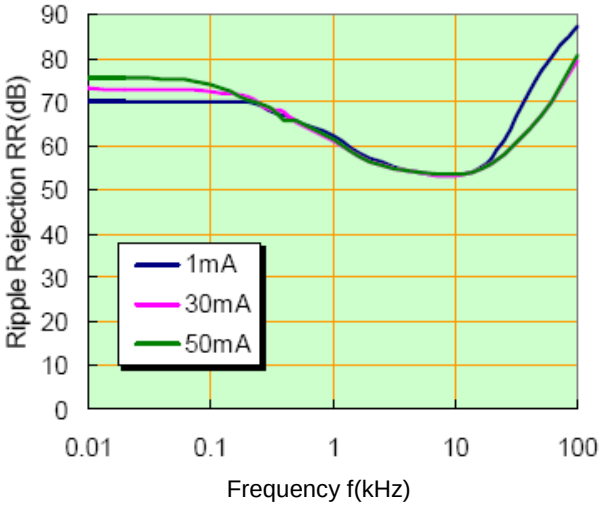
3.Droput Voltage vs. Output Current



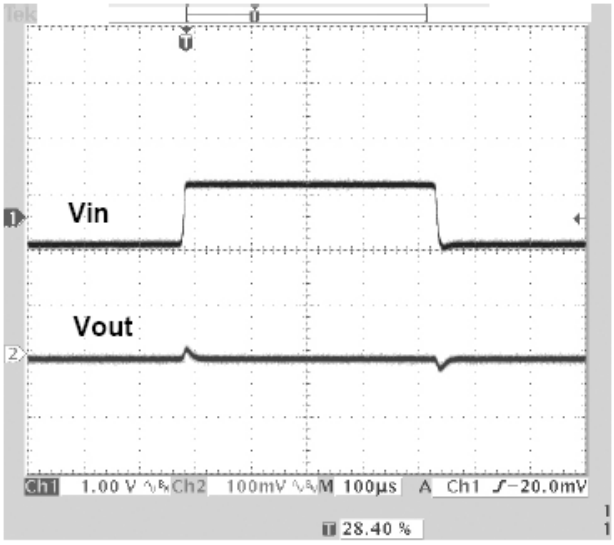
4.Supply Current vs. Input Voltage



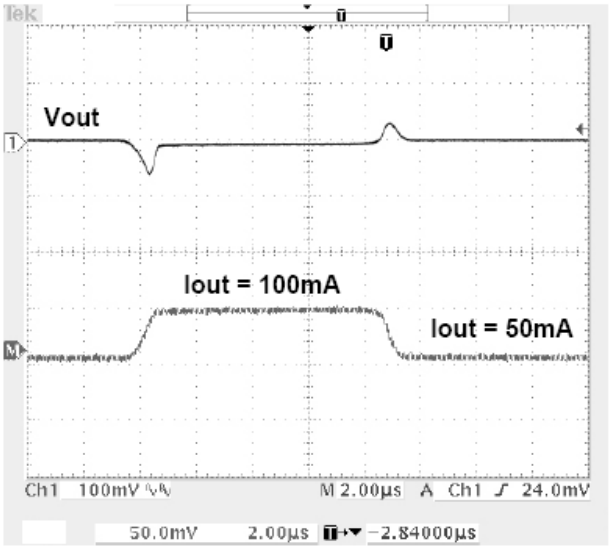
5.Ripple rejection vs. Frequency



6.Line transient response

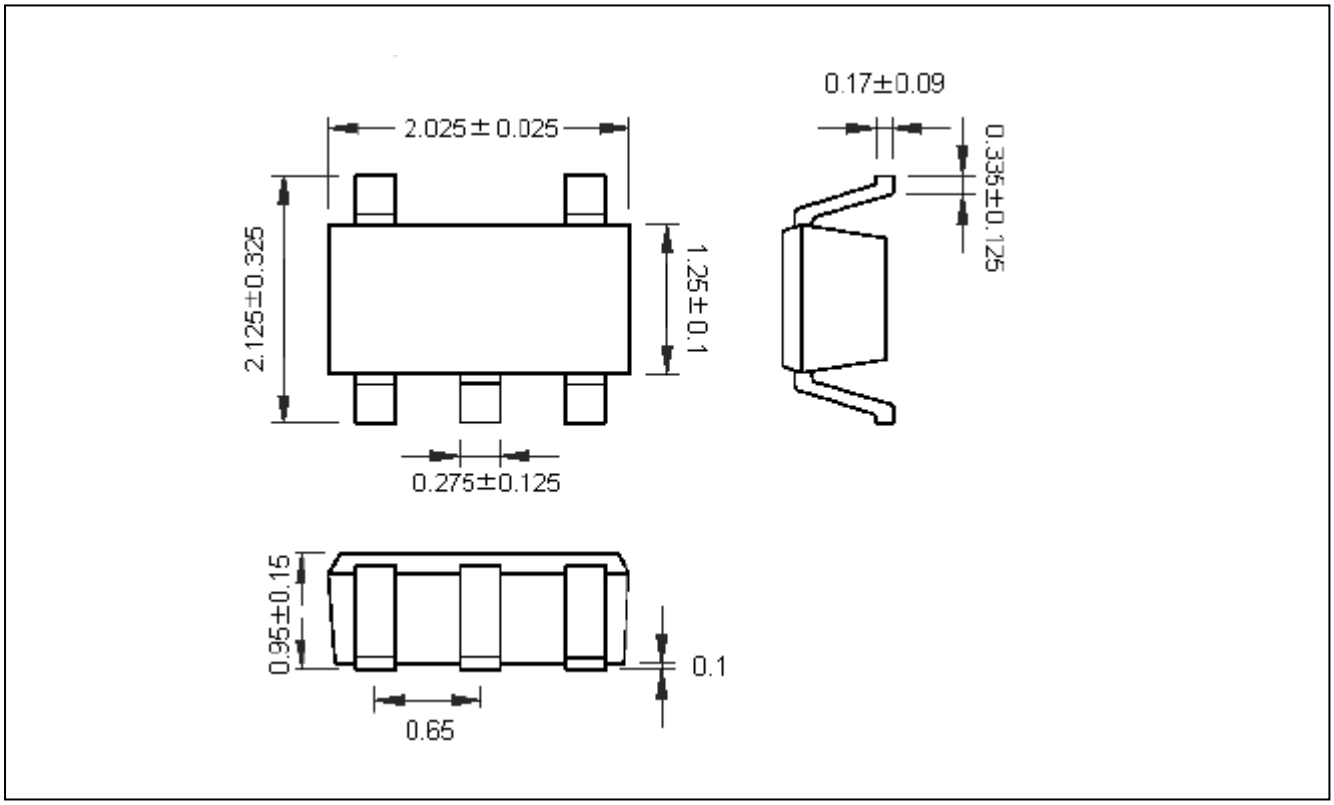


7.Load transient response



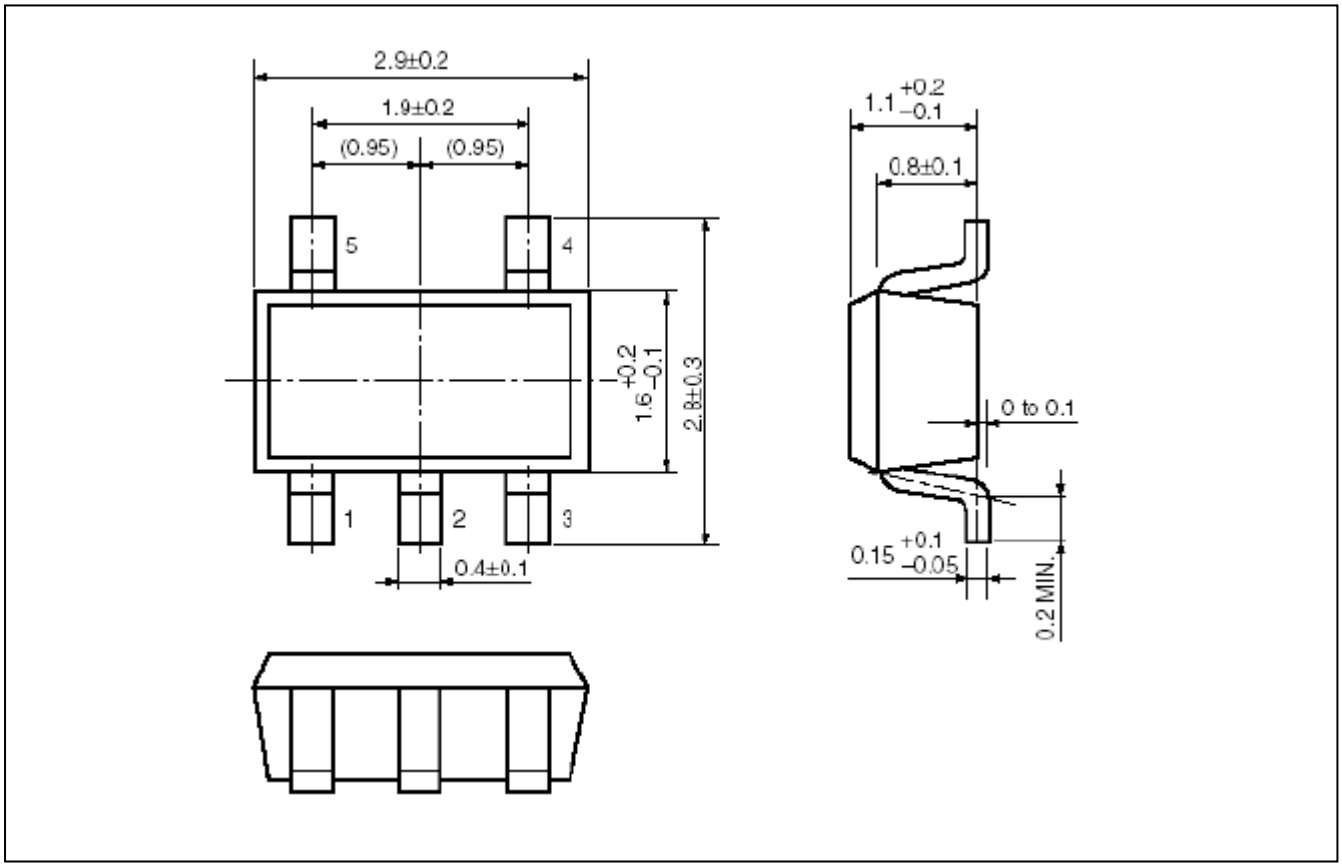
Packing Information

SC-70-5



Packing Information

SOT-23-5



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.

ACE Technology Co., LTD.
http://www.ace-ele.com/