ACE528C

16V 500mA Low Consumption Linear Regulator

Description

ACE528C series is a group of positive voltage output, low power consumption, low dropout voltage regulator. It can provide 300mA output current when input / output voltage differential drops to 600mV (Vout= 3.3V), and it also provides foldback short-circuit protection, thermal protection and output current limit function. The very low power consumption of ACE528C (Iq=10uA) can greatly improve natural life of batteries.

ACE528C can provide output value in the range of 1.2V~5.0V in 0.1V steps. It also can customize on command.

ACE528C includes high accuracy voltage reference, error amplifier, and current limit circuit and output driver module.

ACE528C 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: 10uA(Typ.)
- Maximum Output Current: 500mA
- Small Dropout Voltage
- 600mV@300mA (Vout=3.3V)
- 1.2V@500mA (Vout=3.3V)
- Input Voltage Range: 3V~16V
- Output Voltage Range: 1.2V~5.0V (customized on command in 0.1V steps)
- Highly Accurate:±2%(±1% customized)
- Output Current Limit: 650mA

Application

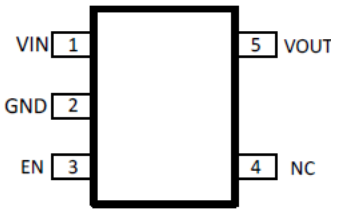
- Battery Powered equipment
- Power Management of MP3、PDA、DSC、 Mouse、PS2 Games
- Reference Voltage Source Regulation after Switching Power

Absolute Maximum Ratings

Parameter		Max
Max Input Voltage		16V
Operating Junction Temperature(Tj)		125°C
Ambient Temperature(Ta)		-40°C -85°C
Power Dissipation (P_D@Ta=25°C)	SOT-23-5	400mW
Storage Temperature(Ts)		-40°C -150°C
Lead Temperature & Time		260°C,10S

Packaging Type

SOT-23-5



Ordering Information

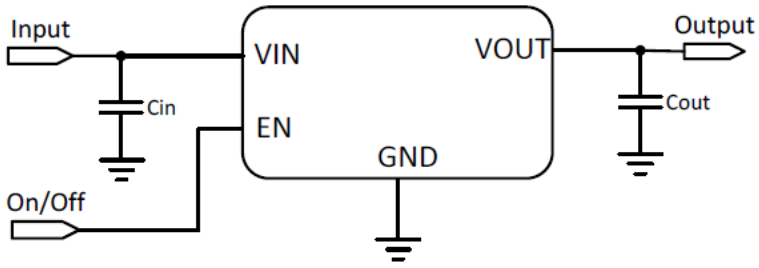
ACE528CX XX XX+ H

- Halogen - free
- Pb - free
- BN: SOT-23-5
- Output Voltage: 1.2V/1.3V/…../5.0V
- A: 1%
  B: 2%

Recommended Work Conditions

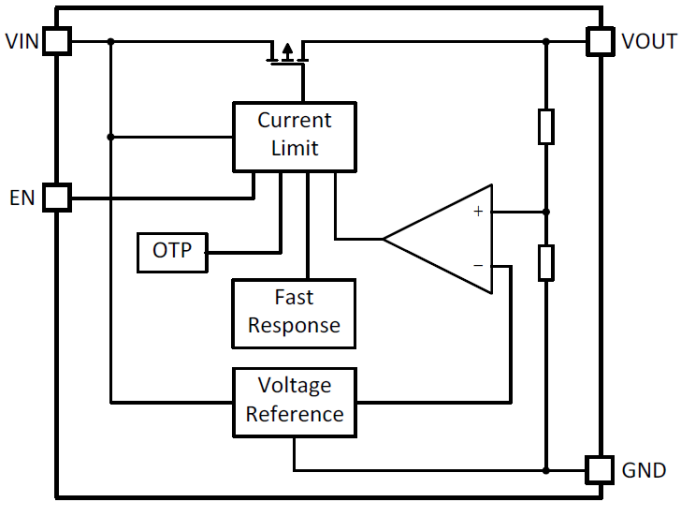
Item	Min	Max.	Unit
Input Voltage Range	3	16	V
Ambient Temperature	-40	85	°C

Typical Application



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

Block Diagram



Explanation

ACE528C is a series of low dropout voltage and low power consumption 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 500mA.

ACE528C uses trimming technique to assure the accuracy of output value within±2%, at the same time, temperature compensation is elaborately considered in this chip, which makes ACE528C's temperature coefficient within ±100ppm/℃。

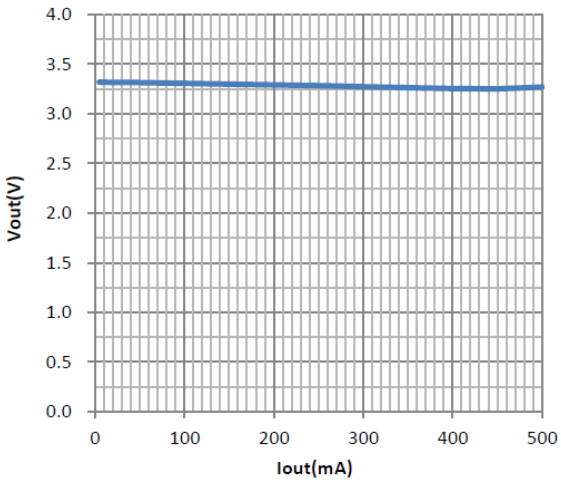
Electrical Characteristics

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

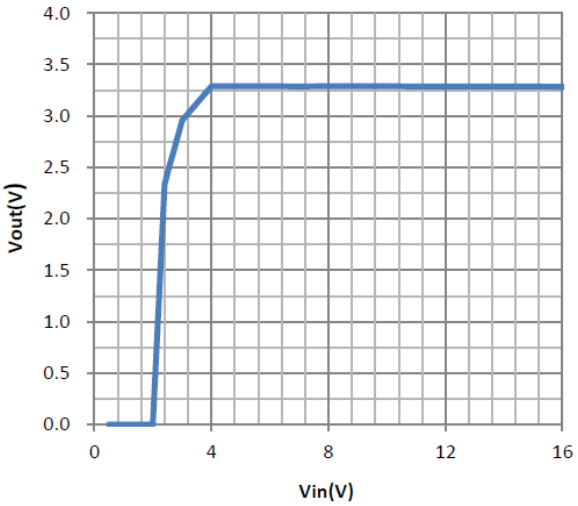
Symbol	Parameter		Conditions	Min	Typ	Max	Units
V_{DD}	Input Voltage			3		16	V
V_{OUT}	Output Voltage	V_{OUT}>1.5	Vin-Vout=1.2V 1mA≤Iout≤30mA	V_{OUT} X0.98	V_{OUT}	V_{OUT} X1.02	V
		V_{OUT}<=1.5		V_{OUT} -0.03		V_{OUT} +0.03	
I_{OUT} (Max.)	Maximum Output Current		Vin-Vout=1.2V	500			mA
Dropout Voltage	Input-Output Voltage Differential		Iout=300mA, Vout = 3.3V		600		mV
$\frac{\Delta Vout}{\Delta Vin*Vout}$	Line Regulation		Iout=10mA, 4V≤Vin≤16V		0.2	0.3	%/V
ΔVout	Load Regulation		Vin=Set Vout+1V 1mA≤Iout≤100mA		20	40	mV
Iq	Quiescent Current		Vin=Set Vout+1V		10	20	uA
$\frac{\Delta Vout}{\Delta T*Vout}$	Output Voltage Temperature Coefficient		I_{OUT}=10mA		±100		ppm/°C
	Thermal Shutdown				150		°C

Typical Performance Characteristics

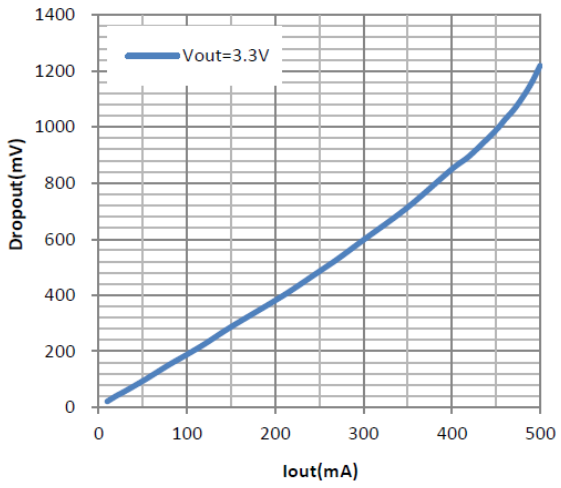
Load Regulation



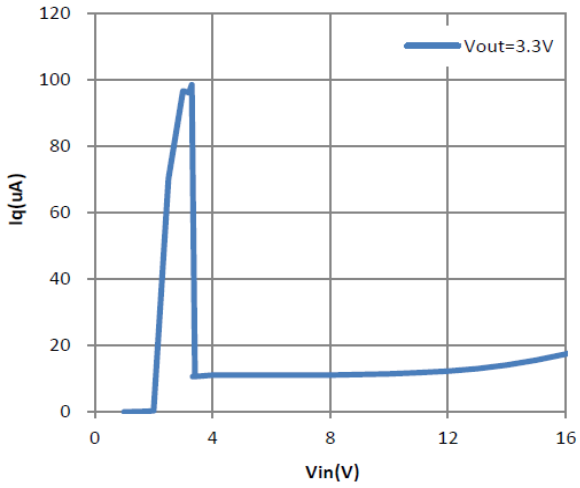
Line Regulation



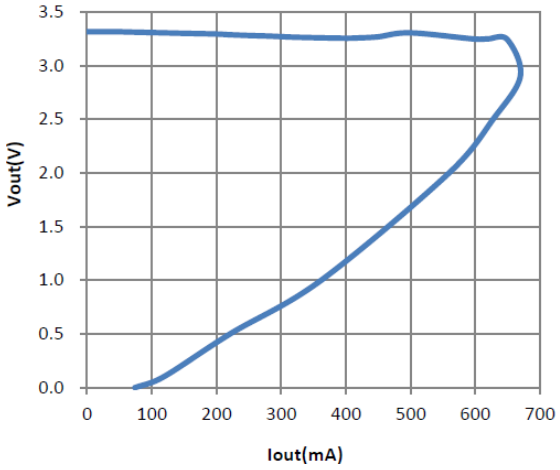
Dropout



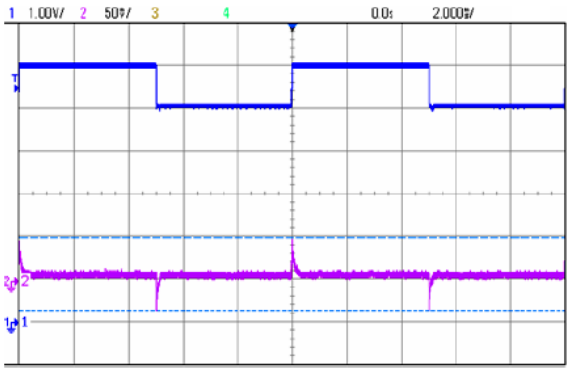
Iq



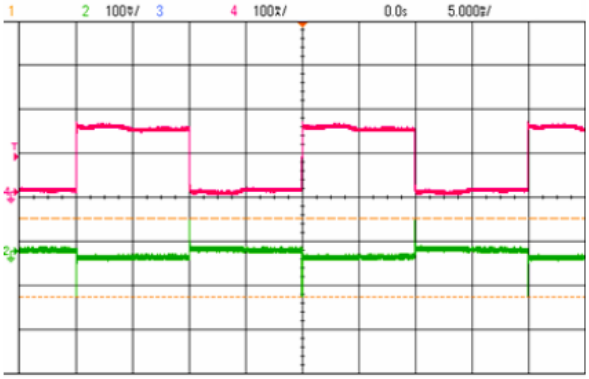
Current Limit



Line transient response
Vin=5V~6V, Iout=10mA
Ch1—Vin, Ch2—Vout

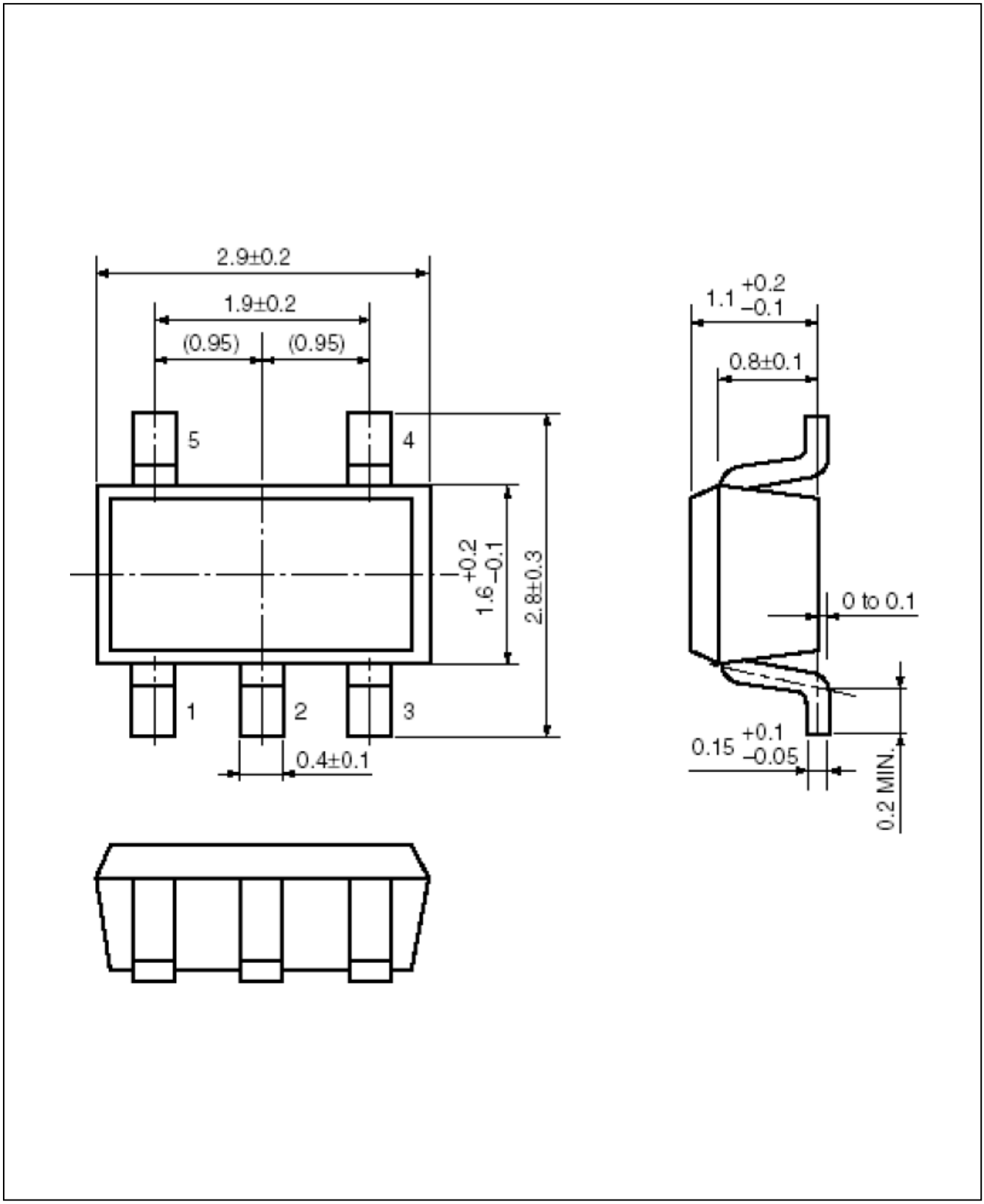


Load transient response
Vin=5V, Iout=5mA~150mA
Ch2—Vout, Ch4—Iout



Packing Information

SOT-23-5



Notes

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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.