ACE5227C

600mA Fast Response Linear Regulator

Description

ACE5227C series is a group of positive voltage output, low power consumption, low dropout voltage regulator.

ACE5227C can provide output value adjustable from0.8V to 5.0V.

ACE5227C includes high accuracy voltage reference, error amplifier, and current limit circuit and output driver module with discharge capability.

ACE5227C has excellent load and line transient response and good temperature characteristics, which can assure the stability of chip and power system. It uses trimming technique to guarantee output voltage accuracy within ±2%. And it also provides fold back short-circuit protection, thermal protection and output current limit function.

ACE5227C is available in SOT23-5 and SC70-5 packages which are lead free.

Features

- Low Power Consumption: 40uA (Typ.)
- Maximum output current: 600mA
- Low dropout Voltage:
  170mV@Iout=300mA,Vout=3.3V
  355mV@Iout=600mA,Vout=3.3V
- Build-in chip enable and discharge circuit
- Input voltage range: 2.5~6V
- Adjustable Output from 0.8V to 5.0V
- Output Voltage Accuracy: ±2%
- Output current limit: 800mA (Typ.)
- OCP/SCP/TSD protection

Application

- Battery-Powered Equipment's
- Hand-Held Electrical Appliances
- Portable Communication Equipment's

Recommended Work Conditions

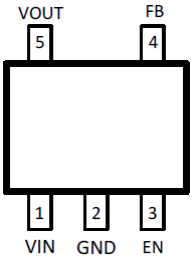
Parameter	Value
Input Voltage Range	2.5V to 6V
Ambient Temperature	-40℃ –85℃

Absolute Maximum Ratings

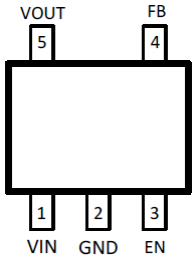
Parameter		Value
Max Input Voltage		8V
Operating Junction Temperature(Tj)		150℃
Ambient Temperature(Ta)		-40℃–85℃
Power Dissipation	SOT-23-5	400mW
	SC-70-5	400mW
Storage Temperature(Ts)		-40℃-150℃
Lead Temperature & Time		260℃,10S

Packaging Type

SOT-23-5



SC-70-5



Pin Configuration

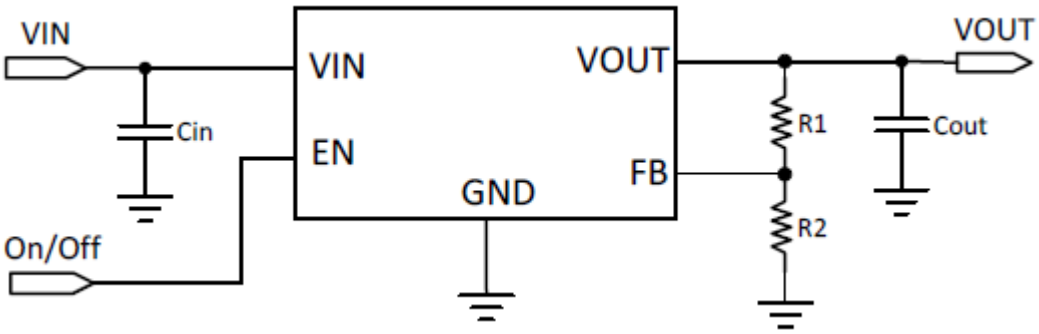
Pin	Name	Description
1	VIN	Supply Voltage Input. Supply voltage can range from 1.8V to 6V. Bypass with a 1μF capacitor to GND.
2	GND	Ground Pin
3	EN	Enable Pin. This pin has an internal pull-down resistor. A logic low reduces the supply current to less than 1μA. Connect to IN for normal operation.
4	FB	Feedback Pin (adjustable only). This is used to set the output voltage of the device.
5	VOUT	Output Voltage

Ordering Information

ACE5227C XX+ H

- Halogen - free
- Pb - free
- BN: SOT-23-5
  HN: SC-70-5

Typical Application Circuit

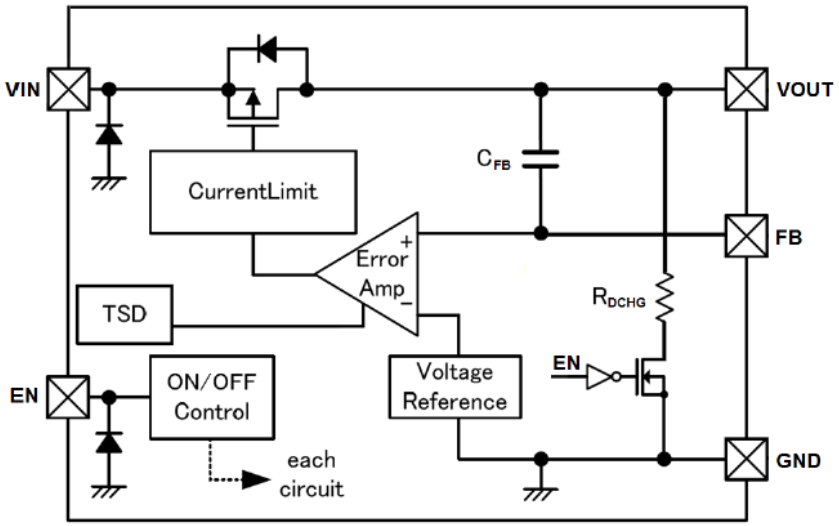


Note:

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

2) $V_{OUT}=V_{FB}*(1+\frac{R1}{R2})$, $V_{FB}=0.8V$

Block Diagram



Explanation

ACE5227C series is a group of positive voltage output, low noise, low power consumption, low dropout voltage regulator.

ACE5227C can provide output value adjustable from 0.8V to 5.0V.

ACE5227C includes high accuracy voltage reference, error amplifier, and current limit circuit and output driver module.

ACE5227C has excellent load and line transient response and good temperature characteristics, which can assure the stability of chip and power system. It uses trimming technique to guarantee output voltage accuracy within±2%. And it also provides fold-back short-circuit protection, thermal protection and output current limit function.

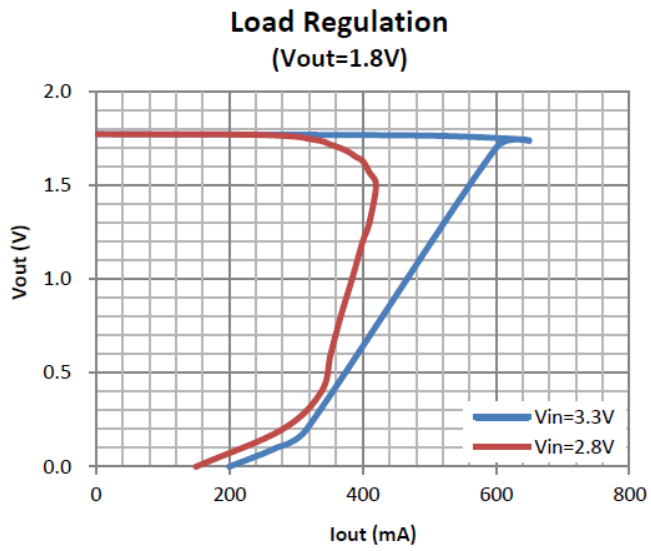
Electrical Characteristics

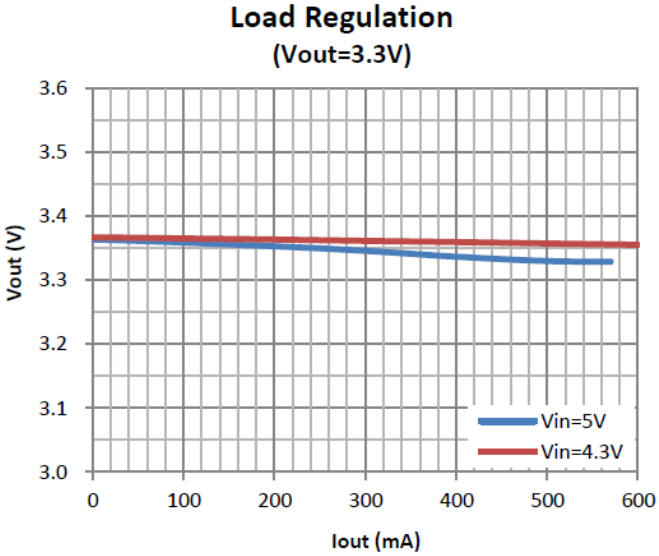
(Test Conditions: Cin=1uF, Cout=1uF, Ta=25℃, Unless Otherwise Specified)

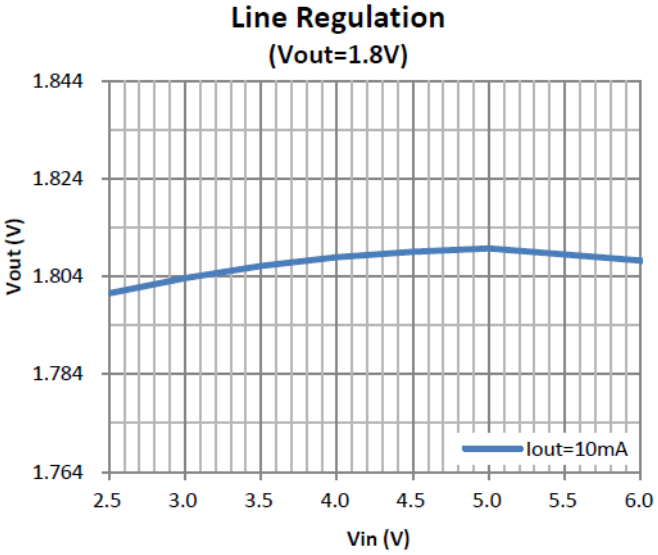
Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{IN}	Input Voltage		2.5		6	V
V_{FB}	Regulated Feedback Voltage	V_{IN} =3.3V, I_{OUT}=10mA	0.784	0.8	0.816	V
V_{DROP}*	Dropout Voltage	V_{OUT}=1.8V, I_{OUT} =300mA		900	1350	mV
		V_{OUT}=2.5V, I_{OUT} =600mA		550	825	mV
		V_{OUT}=3.3V, I_{OUT} =600mA		355	500	mV
$\frac{\Delta Vout}{\Delta Vin \bullet \Delta Vout}$	Line Regulation	I_{OUT} =10mA, 2.5V≤VIN≤6V		0.05	0.2	%/V
ΔVout /ΔIout	Load Regulation	V_{IN} =4.3V, V_{OUT} =3.3V 0mA≤I_{OUT}≤600mA		50	80	mV
I_Q	Supply Current	V_{IN} = V_{OUT} +1V		40	100	uA
$I_{STANDBY}$	Supply Current (Srandby)	V_{IN} = V_{OUT} +1V, V_{EN}=GND		0.1	1.0	uA
$\frac{\Delta Vout}{\Delta T \bullet Vout}$	Output Voltage Temperature Coefficiency	I_{OUT} =10mA		±100		ppm/°C
P_{SRR}	Ripple Rejection	F=1KHz, Ripple=1Vp-p V_{IN} = V_{OUT} +1V		60		dB
I_{LIM}	Current Limit	V_{IN} =4.3V, V_{OUT} =3.3V		800		mA
I_{SHORT}	Short Current Limit	V_{OUT} =0V		200		mA
$R_{DISCHARGE}$	Discharge Resistor	EN=0, V_{OUT} =3V		280		ohm
V_{ENH}	EN Input Voltage “H”		1.3		Vin	V
V_{ENL}	EN Input Voltage “L”		0		0.35	V
T_{SD}	Thermal Shutdown Temp			160		°C
T_{SH}	Thermal Shutdown Hysteresis			30		°C

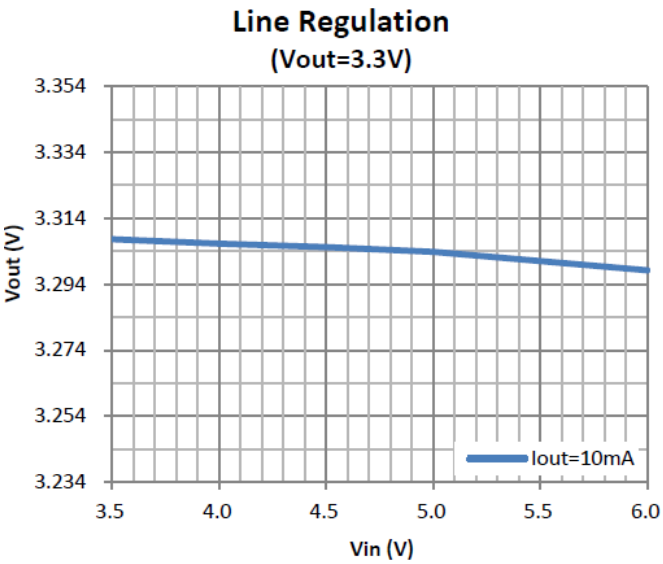
Note: * V_{DROP}=V_{IN}1-(V_{OU}T2*0.98) V_{OUT} 2 is the output voltage when V_{IN} = V_{OUT} 1+1.0V and I_{OUT} =600mA. V_{IN} 1 is the input voltage at which the output voltage becomes 98% of Vout1 after gradually decreasing the input voltage.

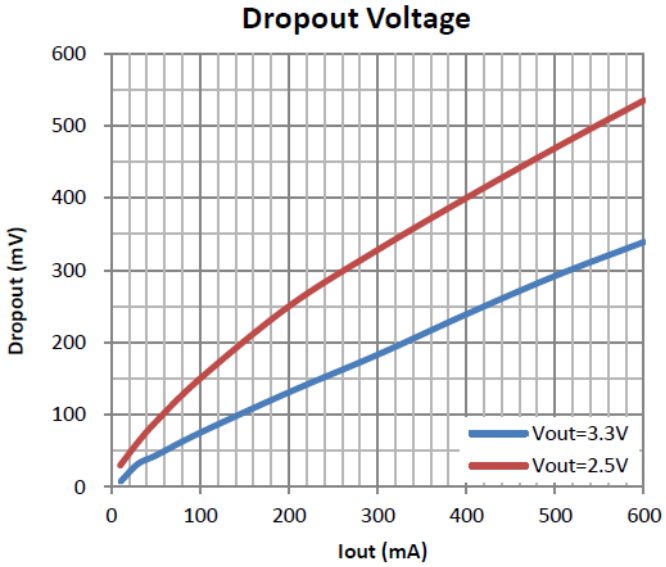
Typical Performance Characteristics

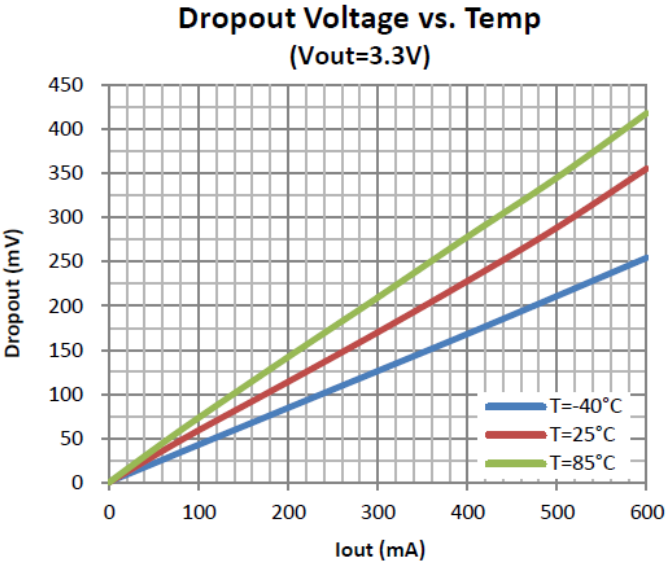




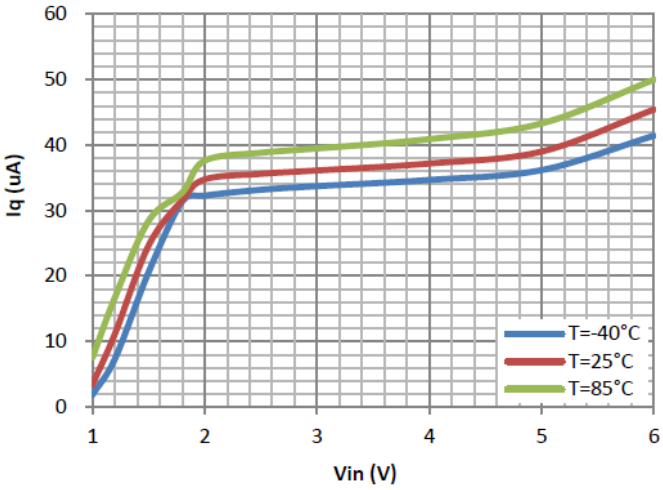




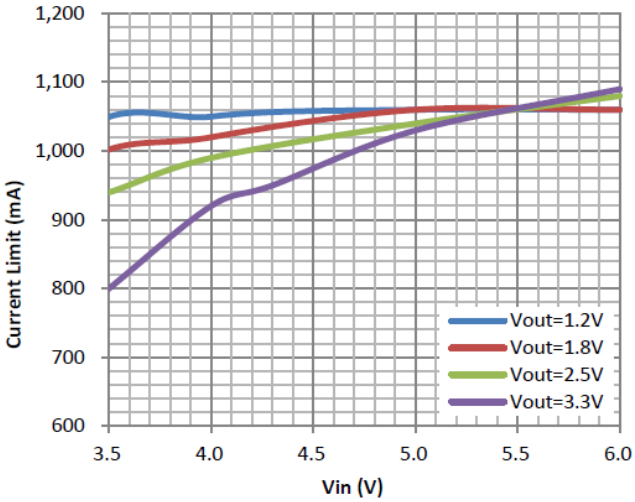




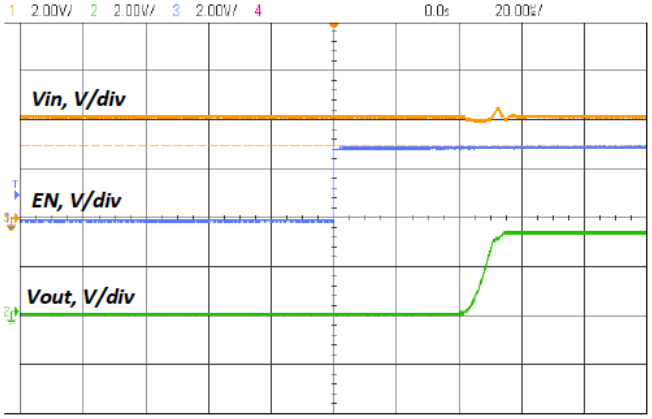
Iq
(Vout=1.8V)



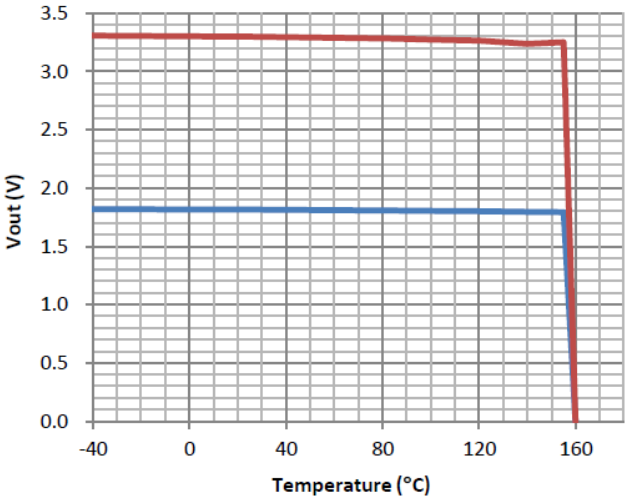
Current Limit vs. VIN



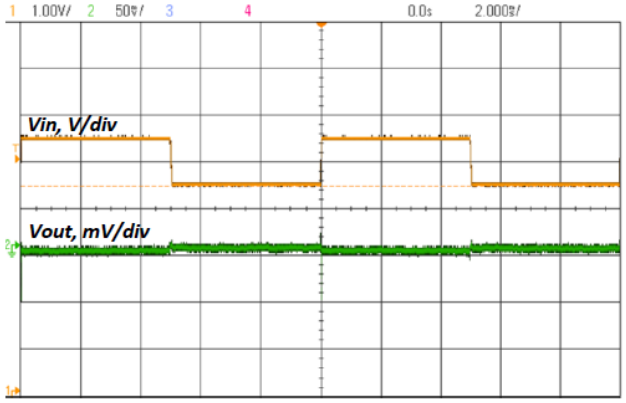
EN Chip Enable Response
(Orange: Vin; Blue: EN; Green: Vout)



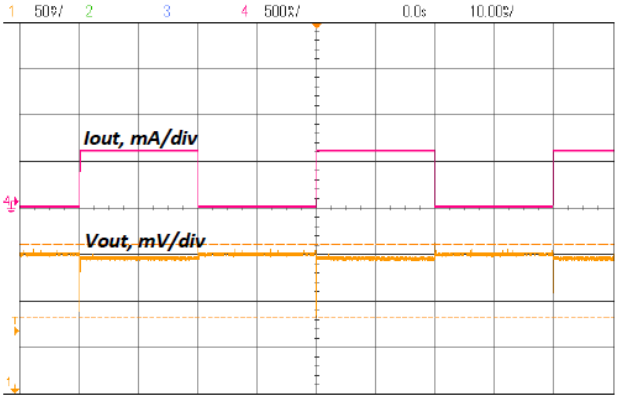
Vout vs. Temperature



Line Transient Response
Vout=3.3V, Iout=10mA
Vin=4.3-5.3V, Vout p-p=78mV
(Orange: Vin; Green: Vout)

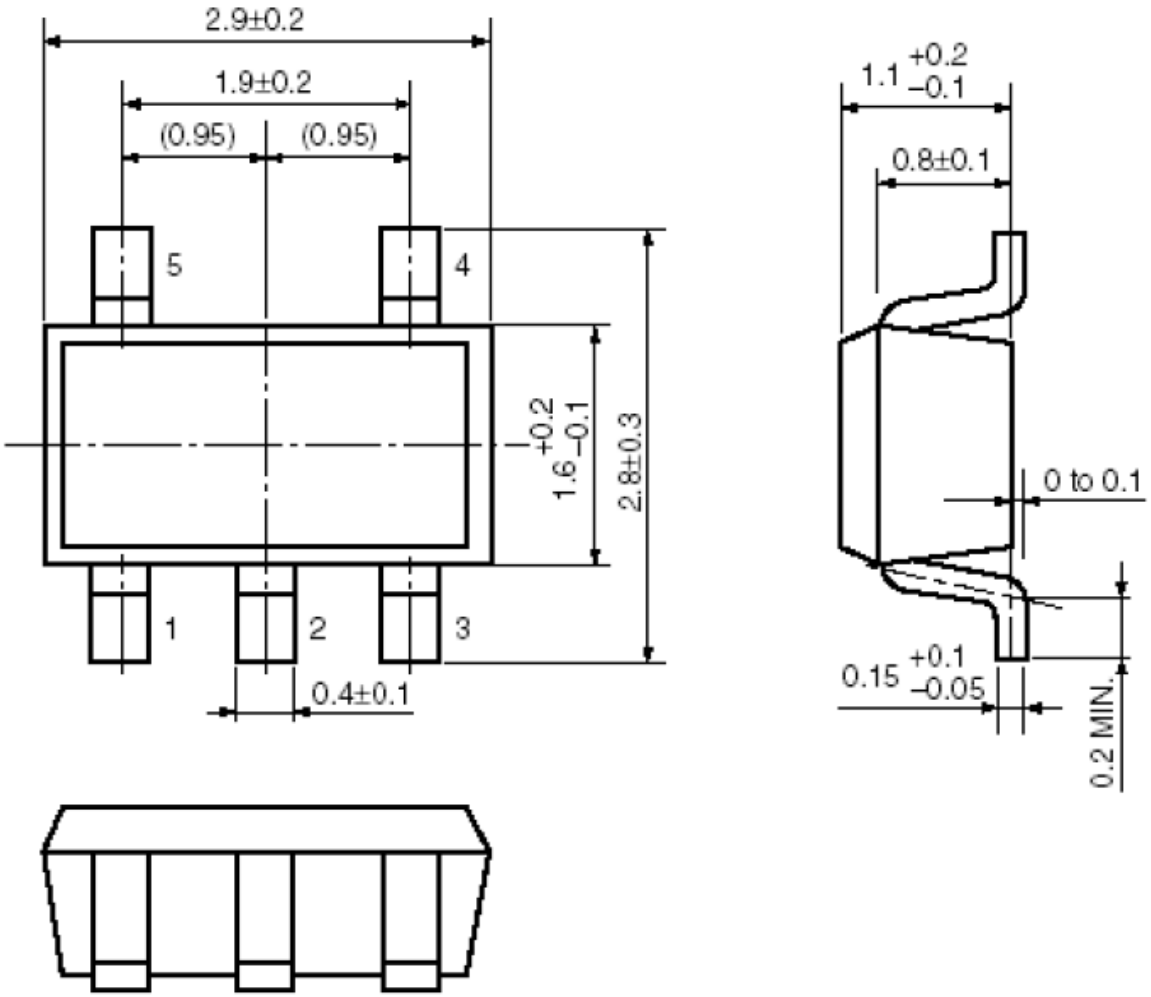


Load Transient Response
Vin=4.3V, Vout=3.3V, Iout=10-600mA
Trise=1uS, Tfall=1uS , Vout p-p=74mV
(Pink: Iout; Orange: Vout)



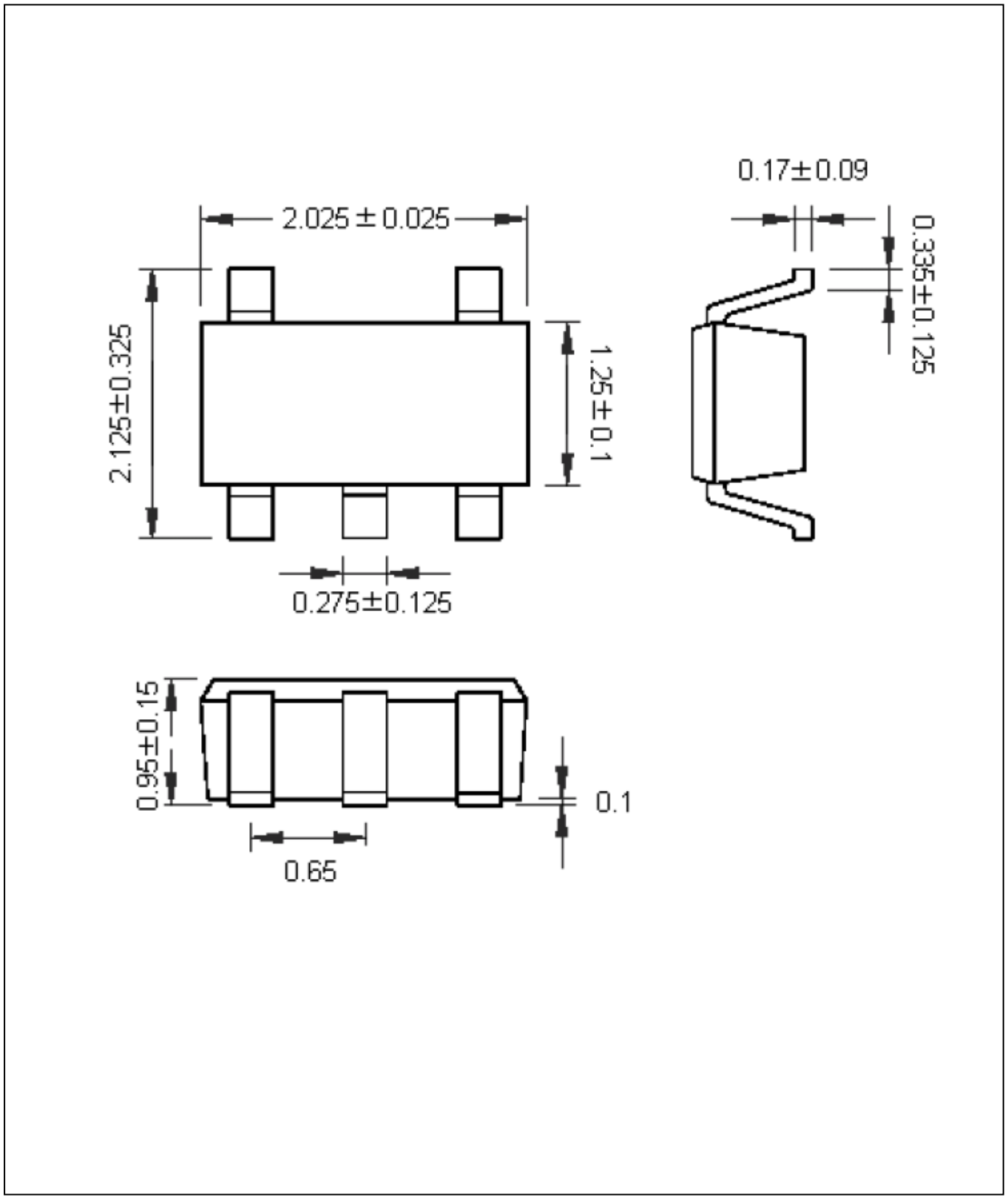
Packing Information

SOT-23-5



Packing Information

SC-70-5



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.