ACE520C

Dual 300mA High PSRR Linear Regulator

Description

ACE520C dual, low-noise, low-dropout regulator delivers at least 300mA of continuous output current. The output voltage for each regulator is set independently by trimming. Output voltages are selectable in 100mV steps within a range of 1.0V to 4.5V. Typical output noise is 47uV$_{rms}$,and PSRR is 73dB at 100Hz. The ACE520C includes two independent logic-controlled shutdown inputs and allows the output of each regulator to be turned of independently.

The ACE520C includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.

The ACE520C 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

- Two low dropout voltage regulators
- 300mA output current for each LDO
- 35uA operating supply current per LDO
- Low 47uV$_{RMS}$ output noise
- Standby Mode: 0.1uA
- Low 300mV dropout at 300mA load
- 73dB PSRR at 100Hz
- Excellent Line regulation: 0.05%/V
- Independent Shutdown controls
- 1.0V to 4.5V Factory-Preset Output
- Output Current Limit
- Highly Accurate: ±2% (±1% customized)

Application

- Cellular phones
- Cordless phones and radio communication equipment
- Battery Powered equipment
- Notebook and hand-ole equipment
- Wireless LAN
- GPS receivers

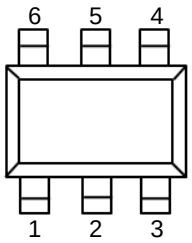
Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Input voltage	V_{IN}	8	V
Power Dissipation SOT-23-6		250	mW
Junction temperature	T_J	125	°C
Storage temperature	T_S	- 45 to 150	°C
Ambient Temperature	T_A	-40 to 85	°C

Note: Exceed these limits to damage to the device. Exposure to absolute maximum rating conditions may affect device reliability.

Packaging Type

SOT-23-6



SOT-23-6(D)	SOT-23-6(E)	Description	Function
6	6	V_{out1}	Output 1 pin
2	5	V_{dd}	Input pin
4	1	V_{out2}	Output 2 pin
3	3	CE2	Chip Enable pin2
5	2	GND	Ground pin
1	4	CE1	Chip Enable pin1

Ordering information

ACE520C *X* *XXX* + H

Halogen - free

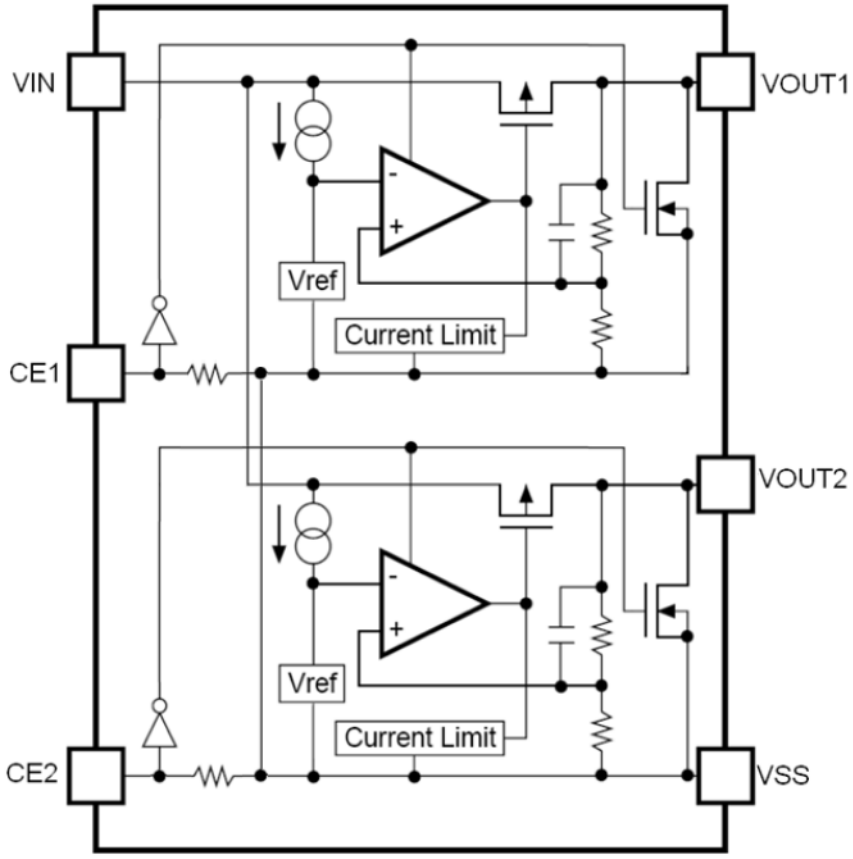
Pb - free

DGM : SOT-23-6(D)
EGM : SOT-23-6(E)

Output Voltage：

B:1.5V(Output1),2.8V(Output2)	S:3.0V(Output1),3.3V(Output2)
C:1.5V(Output1),3.0V(Output2)	T:3.3V(Output1),1.8V(Output2)
D:1.5V(Output1),3.3V(Output2)	U:3.3V(Output1),3.3V(Output2)
E:1.5V(Output1),4.0V(Output2)	Y:2.8V(Output1),3.3V(Output2)
G:1.8V(Output1),2.5V(Output2)	a:1.2V(Output1),2.5V(Output2)
H:1.8V(Output1),2.8V(Output2)	b:2.8V(Output1),1.2V(Output2)
I: 1.8V(Output1),3.0V(Output2)	c:2.8V(Output1),1.3V(Output2)
J:1.8V(Output1),3.3V(Output2)	d:2.5V(Output1),2.8V(Output2)
M:2.8V(Output1),1.8V(Output2)	e:2.5V(Output1),3.3V(Output2)
O:2.8V(Output1),2.8V(Output2)	g: 1.3V(Output1),2.8V(Output2)
P:2.8V(Output1),3.0V(Output2)	x: 2.8V(Output1),1.5V(Output2)
Q:3.0V(Output1),2.5V(Output2)	h: 3.3V(Output1),2.8V(Output2)
R:3.0V(Output1),3.0V(Output2)	

Block Diagram



Explanation

ACE520C series are highly accurate, dual, low noise, CMOS low dropout voltage regulators.

The output voltage for each regulator is set independently by trimming. Voltages are selectable in 100mV steps within a range of 1.2V to 4.5V. It also can be customized on command.

ACE520C includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.

ACE520C 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%.

Recommended Work Conditions

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

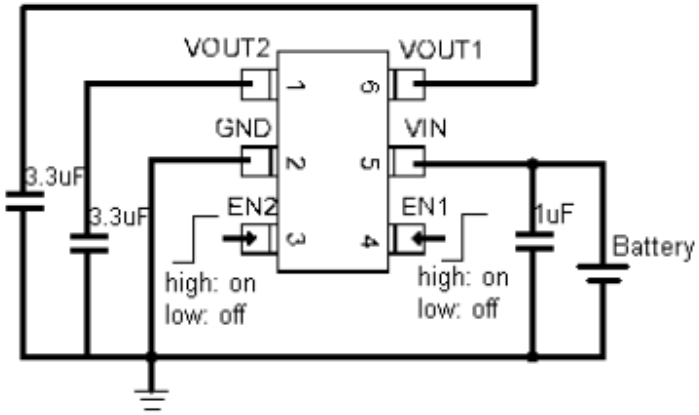
Electrical Characteristics

(Test Conditions: C1=1uF, Cout=3.3uF,T_A=25℃, unless otherwise specified.)

ACE520C, For arbitrary output voltage

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Input Voltage	V_{IN}				6	V
Output Voltage	V_{OUT}	Vin=Set Vout+1V 1mA≦Iout≦30mA	Vout x0.98	Vout1	Vout x1.02	V
Maximum Output Current	I_{OUT}(Max.)	Vin-Vout=1V	300			mA
Dropout Voltage, Vout≧2.8V	Vdrop	Iout=100mA		100	150	mV
		Iout=300mA		300	400	
Line Regulation	ΔV_{OUT} / $\Delta V_{IN} \bullet V_{OUT}$	Iout=40mA 2.8V≦Vin≦6V		0.05	0.2	%/V
Load Regulation	ΔV_{OUT}	Vin=Set Vout+1V 1mA≦Iout≦300mA		50	80	mV
Supply Current	Iss	Vin=Set Vout+1V		35	800	uA
Supply Current (Srandby)	Istandby	Vin=Set Vout+1V Vce=Gnd		0.1	1.0	uA
Output Voltage Temperature Coefficiency	ΔV_{OUT} / $\Delta T \bullet V_{OUT}$	Iout=30mA		±100		ppm/℃
Ripple Rejection	PSRR	F=100Hz Ripple=0.5Vp-p Vin=Set Vout+1V		70		dB
Short Current Limit	Llim	Vout=0V	300			mA
CE Input Voltage “H”	Vceh		1.5		Vin	V
CE Input Voltage “L”	Vcel		0		0.25	V
Output Noise	en	BW=10Hz~100kHz		47		uVrms
Discharge Resistor	Rdischarge	CE=0V, Vout=3.0V		1.5K		Ω
CE pin pull down resistor	Rcepd	CE=Vin=5V		500K		Ω

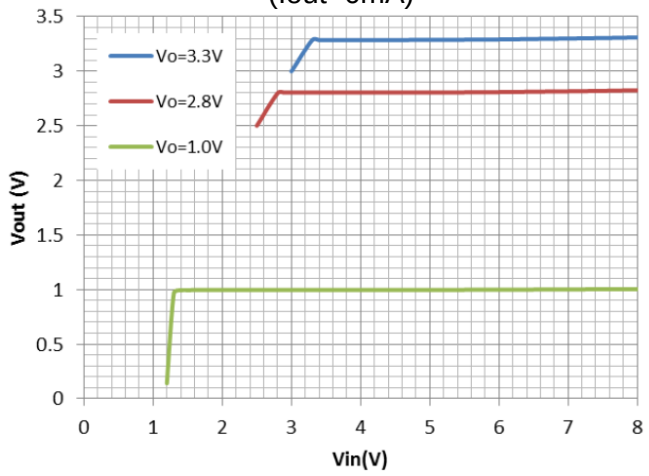
Typical Application Circuit



Note: Input capacitor(Cin=1uF) and Output capacitor(Cout=1uF/3.3uF) are recommended in all application circuit.

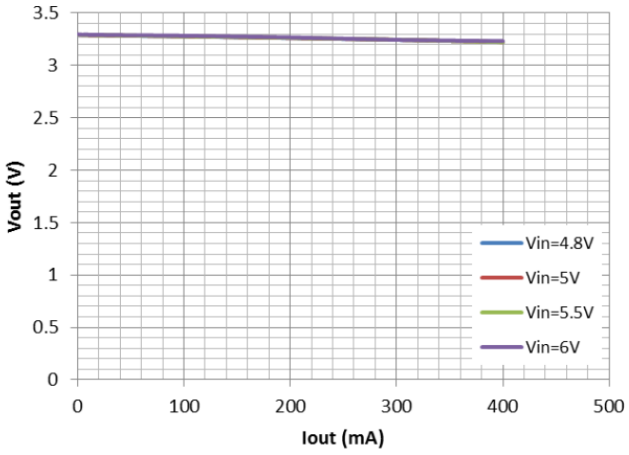
Electrical Characteristics

Line Regulation
(Iout=0mA)

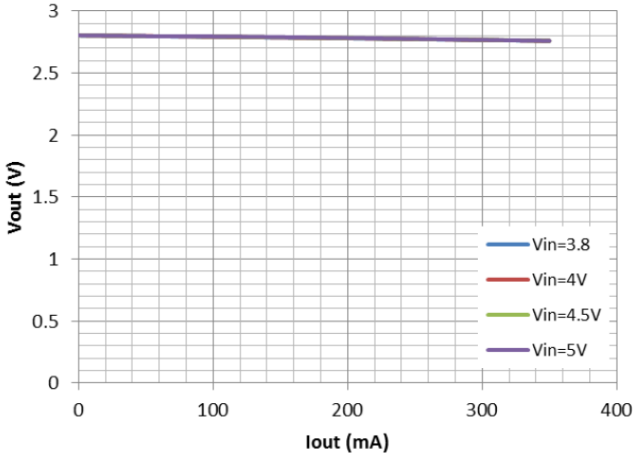


Typical Performance Characteristics(T_A=25℃)

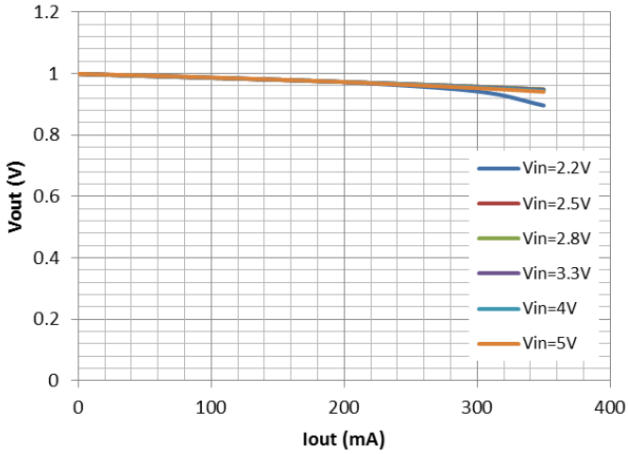
Load Regulation
(Vout=3.3V)



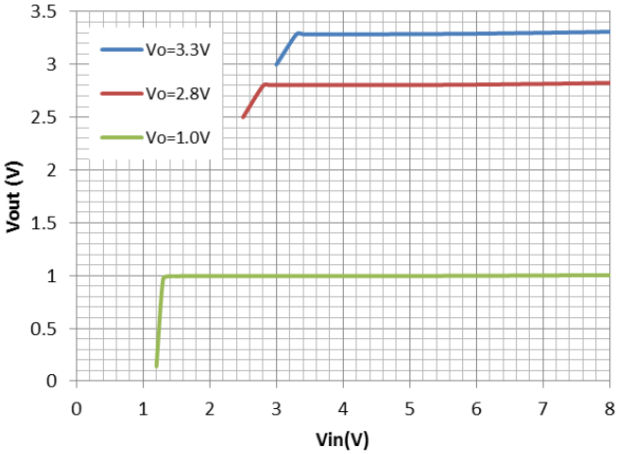
Load Regulation
(Vout=2.8V)



Load Regulation
(Vout=1.0V)

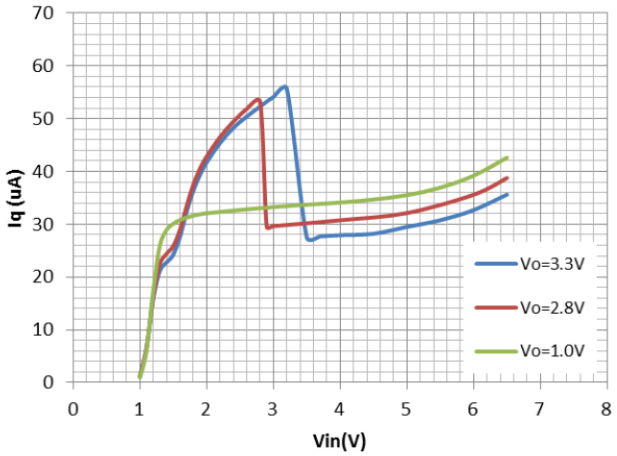


Line Regulation
(Iout=0mA)

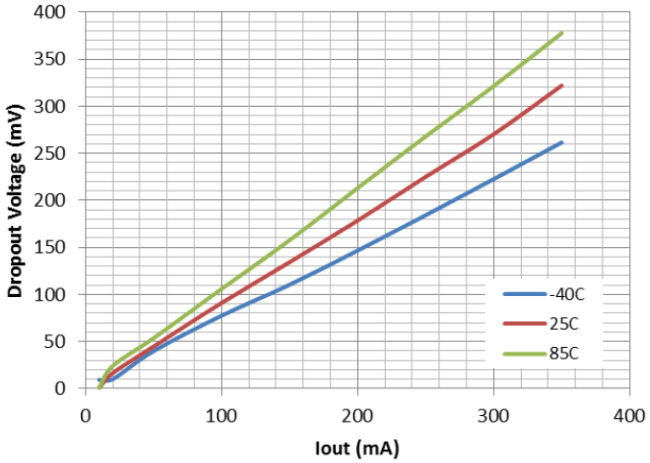


Typical Performance Characteristics(T_A=25℃)

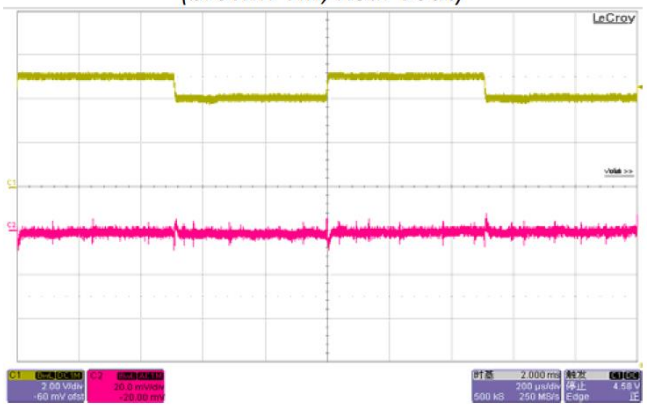
Quienscent Current
(Iout=0mA and CE=high)



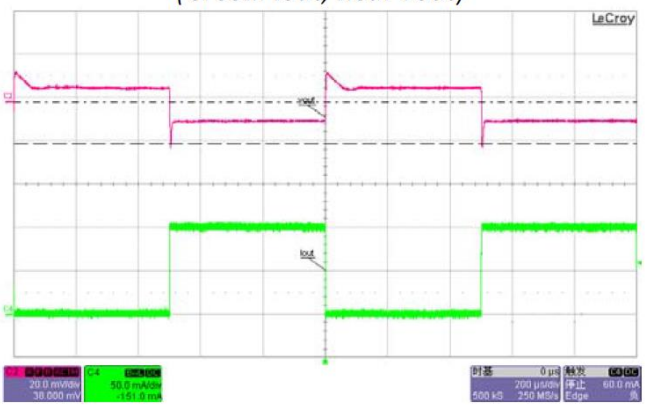
Dropout Voltage
(Vout=3.3V)



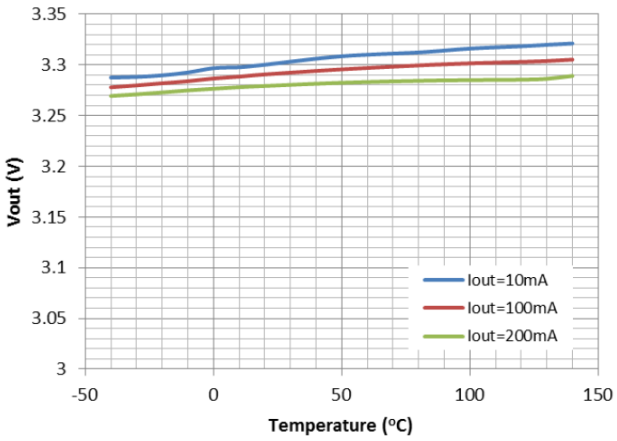
Line Transient Response
Vout=3.3V, Iout=20mA
(brown: Vin; Red: Vout)



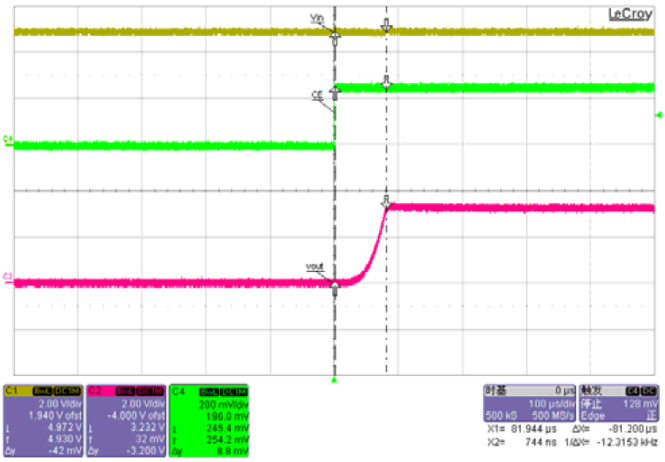
Load Transient Response
Vin=5V, Vout=3.3V, Iout=1-100mA
(Green: Iout; Red: Vout)



Vout Temperature Coefficient
(Vout=3.3V)

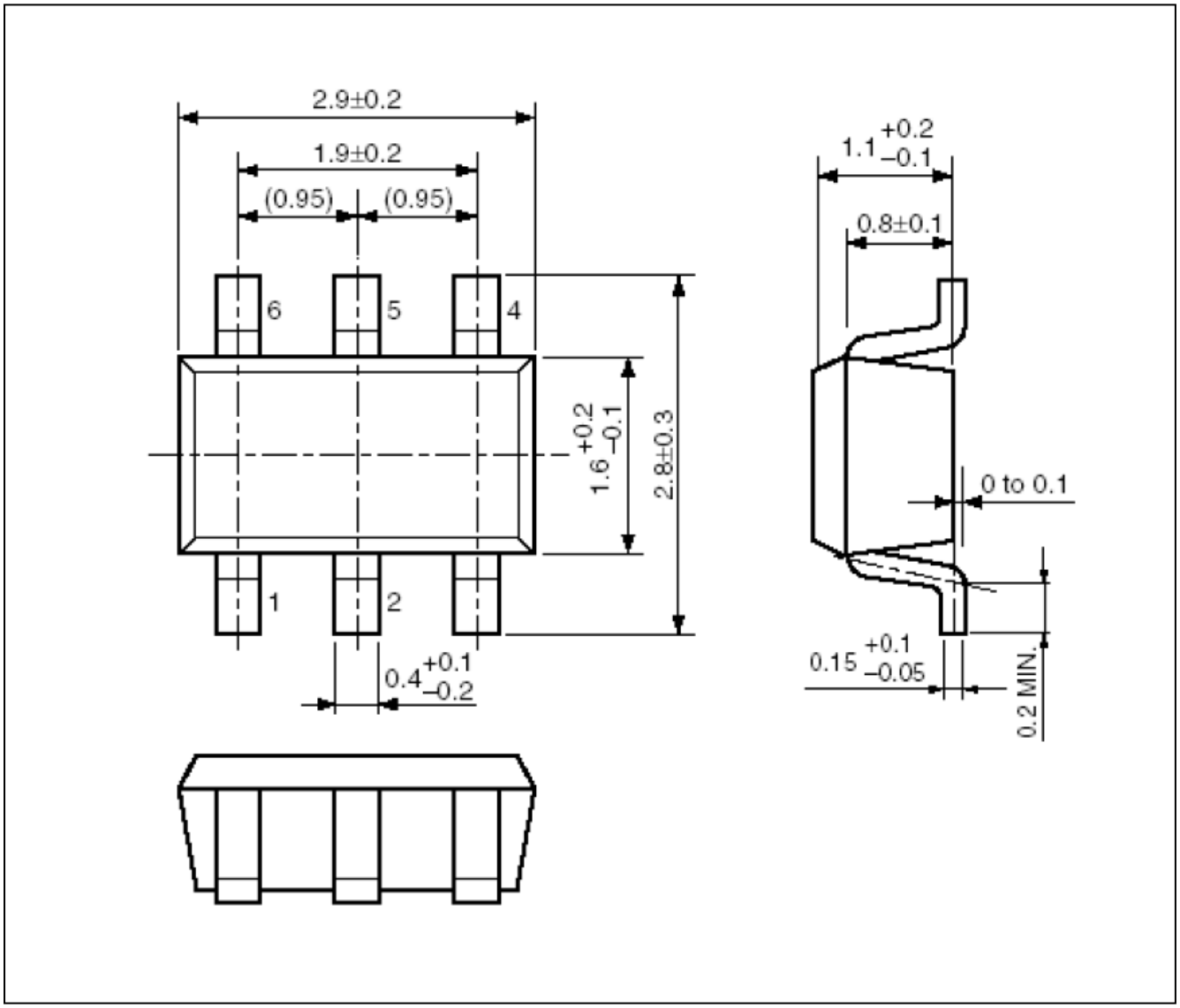


CE Chip Enable Response



Packing Information

SOT-23-6



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/