ACE525C

300mA High PSRR, Linear Regulator

Description

ACE525C series are a group of positive voltage output, low power consumption, low dropout voltage regulators.

ACE525C can provide output value in the range of 1.0V~4.5V every 0.1V step. It also can be customized on command. ACE525C can also work under a wide input voltage ranging from 1.5V to 6V.

ACE525C includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.

ACE525C 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%.

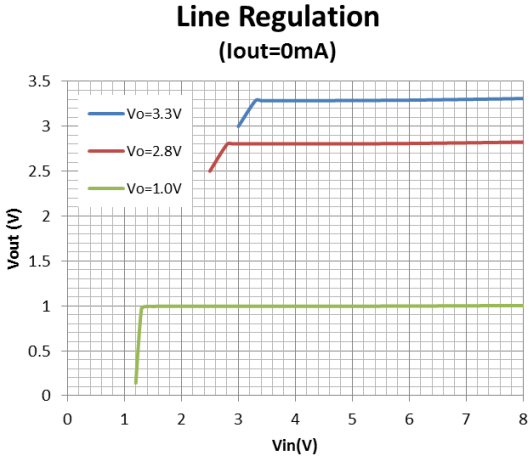
Features

- Input voltage range: 1.5~6V
- Output voltage range: 1.0V~4.5V (customized on command every 0.1V step)
- Low power consumption: 35uA (Typ.)
- Low output noise (47uVRMS)
- Shutdown mode: 0.1uA
- Low dropout voltage: 300mV@300mA (Typ.)
- High ripple rejection:70dB@1KHz (Typ.)
- Low temperature coefficient: ±100ppm/°C
- Excellent line regulation: 0.05%/V
- Build-in chip enable circuit
- Highly accurate: ±2%
- Output current limit
- Fold-back output short circuit protection

Application

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

Typical Performance Characteristic:



Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Max Input voltage	V_{IN}	8	V
Power Dissipation SC-70-5 SOT-23-3L SOT-23-5 DFN1*1-4		 250 250 250 600	mW
Junction temperature	T_J	125	°C
Storage temperature	T_S	- 45 to 150	°C
Output Current		300	mA
Ambient Temperature	T_A	-40 to 85	°C

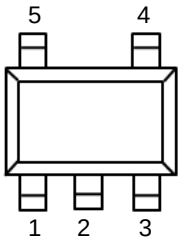
Note: Heat Sink Area of PCB for DFN1x1-4 is recommended at least 2.5mmx4mm.

Exceed these limits to damage to the device.

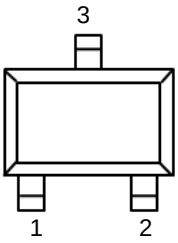
Exposure to absolute maximum rating conditions may affect device reliability.

Packaging Type

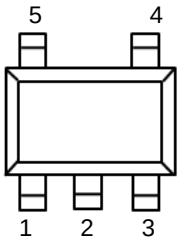
SC-70-5



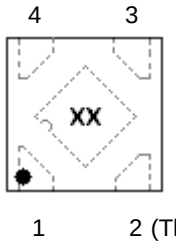
SOT-23-3L



SOT-23-5



DFN1*1-4



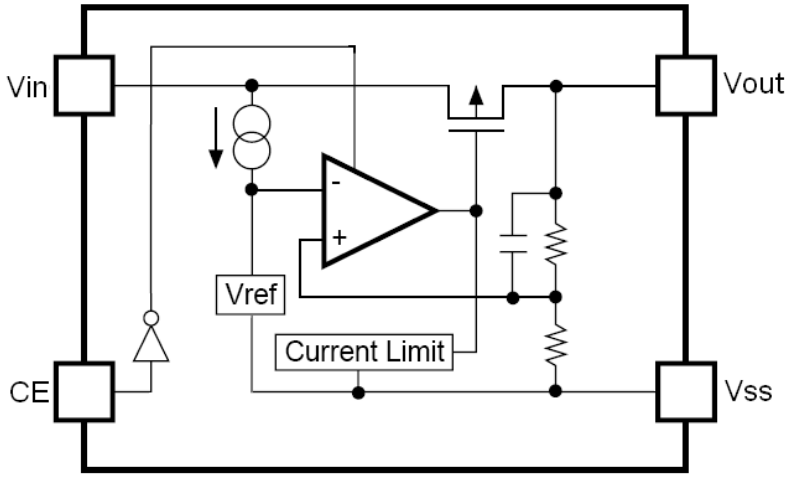
SC-70-5	SOT-23-3L	SOT-23-5	DFN1*1-4	Description	Function
5	2	5	1	Vout	Output pin
1	3	1	4	Vin	Input pin
2	1	2	2	V_{SS}	Ground pin
3		3	3	CE	Chip Enable pin
4		4		NC	No Connection

Ordering information

ACE525C XX XX + H

- Halogen - free
- Pb - free
- HN: SC-70-5
  BM: SOT-23-3L
  BN: SOT-23-5
  IN: DFN1*1-4
- Output Voltage: 1.0V/1.5V/1.8V…..4.5V

Block Diagram



Recommended Work Conditions

Item	Min	Max	Unit
Input Voltage Range	1.5	6	V
Ambient Temperature	-40	85	℃

Electrical Characteristics

ACE525C, For Arbitrary Output Voltage.(Test Conditions: Cin=1uF,Cout=1uF,T_A=25°C, unless otherwise specified.)

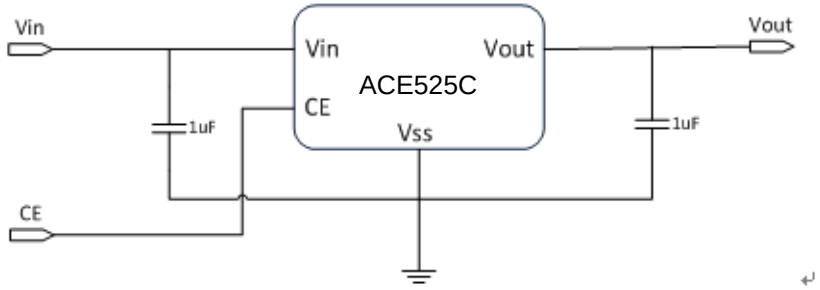
Symbol	Parameter		Conditions	Min	Typ	Max	Units
Vin	Input Voltage			1.5		6	V
Vout	Output Voltage	Vout>1.5V	Vin=Set Vout+1V 1mA≤Iout≤30mA	Vout x0.98	Vout	Vout x 1.02	V
		Vout<=1.5V		Vout -0.03		Vout +0.03	
Iout (Max.)	Maximun Output Current		Vin-Vout=1V	300			mA

Vdrop1	Dropout Voltage,Vout≥2.8V	Iout=100mA		100	150	mV
		Iout=300mA		300	400	mV
ΔVout / ΔVin x Vout	Line Regulation	Iout=40mA 2.8V≤Vin≤6V		0.05	0.2	%/V
ΔVout /ΔIout	Load Regulation	Vin=Set Vout+1V 1mA≤Iout≤300mA		50	80	mV
Iss	Supply Current	Vin=Set Vout+1V		35	80	uA
Istandby	Supply Current (Srandby)	Vin=Set Vout+1V Vce=Vss		0.1	1.0	uA
ΔVout / ΔT x Vout	Output Voltage Temperature Coefficient	Iout=30mA		±100		ppm /°C
PSRR	Ripple Rejection	F=1KHz, Ripple=0.5Vp-p Vin=Set Vout+1V		70		dB
Ilim	Current Limit		300			mA
Vceh	CE Input Voltage “H”		1.5		Vin	V
Vcel	CE Input Voltage “L”		0		0.25	V
en	Output Noise	BW=10Hz~100kHz		47		uVrms

Note: Vdrop=Vin1-(Vout2*0.98) Vout2 is the output voltage when Vin=Vout1+1.0V and Iout=300mA.

Vin1 is the input voltage at which the output voltage becomes 98% of Vout1 after gradually decreasing the input voltage.

Typical Application Circuit



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

Explanation：

ACE525C series is a group of positive voltage output, low noise, low power consumption, low dropout voltage regulator.

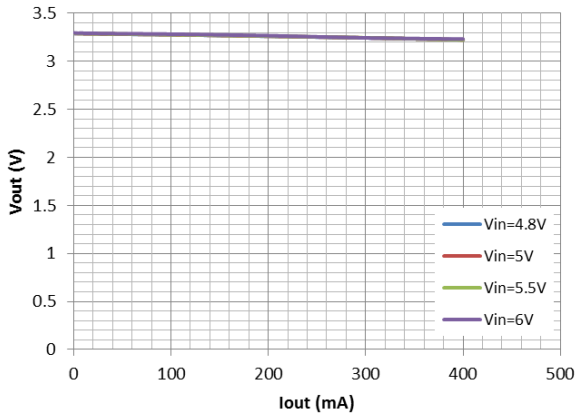
ACE525C can provide output value in the range of 1.0V~4.5V every 0.1V step. It also can be customized on command.

ACE525C includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.

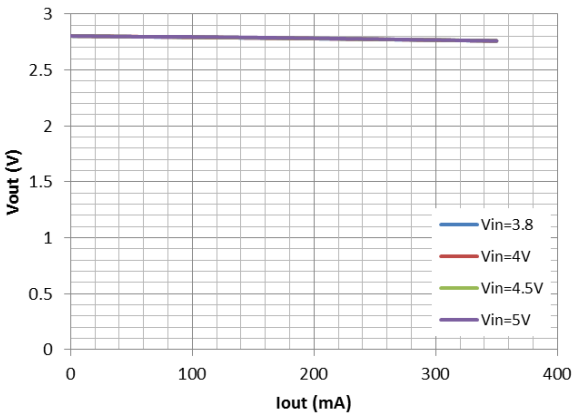
ACE525C has excellent load and line transient response and good temperature characteristics, which can assure the stability of chip and power system. And it uses trimming technique to guarantee output voltage accuracy within±2%.

Typical Performance Characteristics (T_A=25℃)

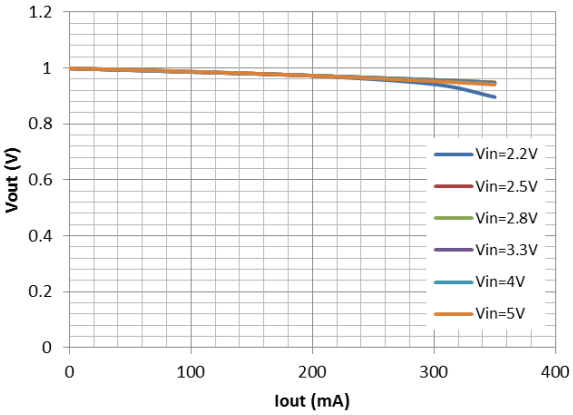
Load Regulation
(Vout=3.3V)



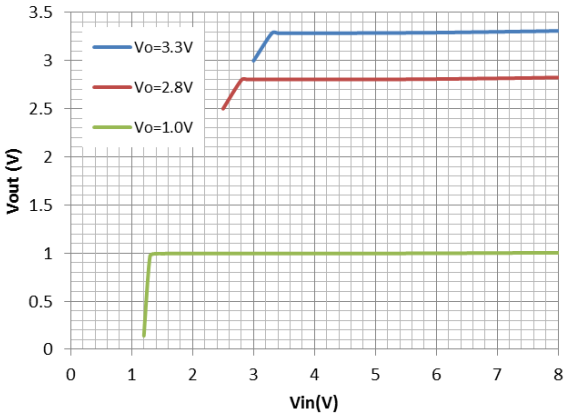
Load Regulation
(Vout=2.8V)



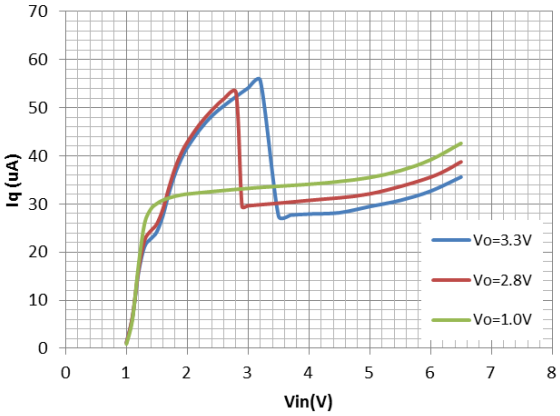
Load Regulation
(Vout=1.0V)



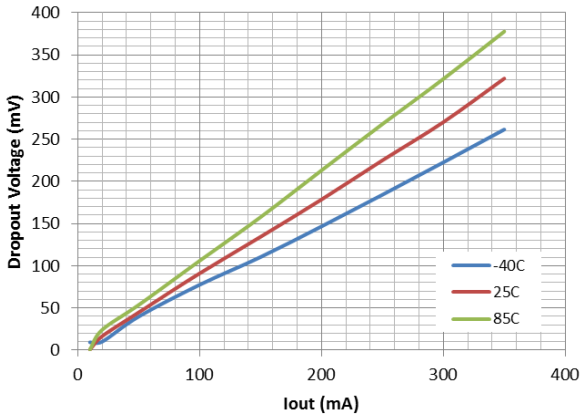
Line Regulation
(Iout=0mA)



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

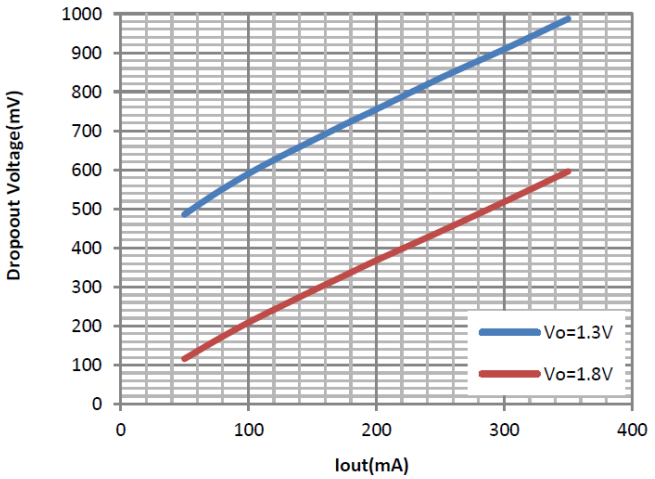


Dropout Voltage
(Vout=3.3V)



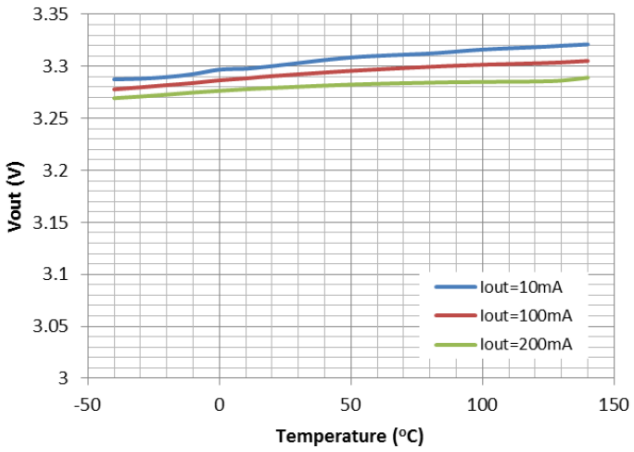
Typical Performance Characteristics

Dropout Voltage



Vout Temperature Coefficient

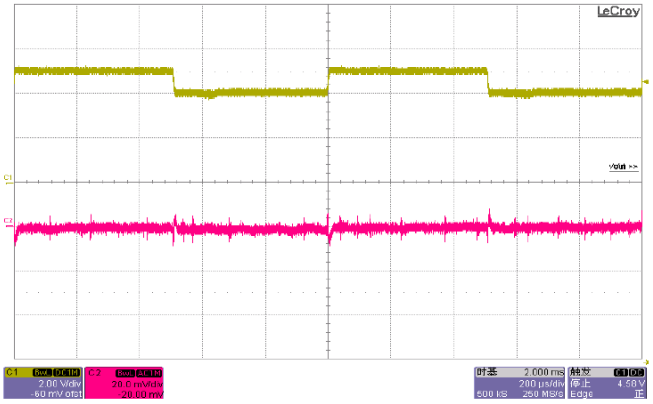
(Vout=3.3V)



Line Transient Response

Vout=3.3V, Iout=20mA

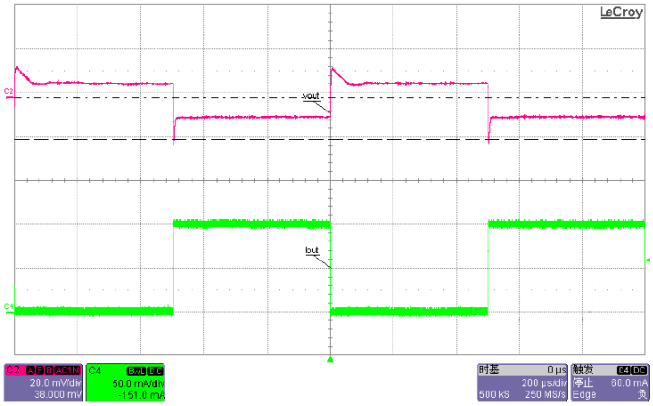
(brown: Vin; Red: Vout)



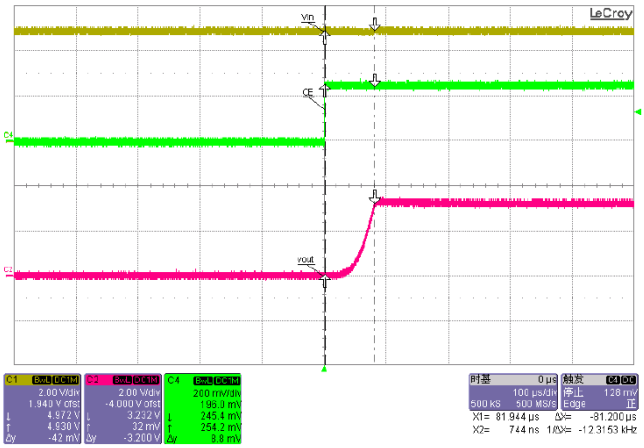
Load Transient Response

Vin=5V, Vout=3.3V, Iout=1-100mA

(Green: Iout; Red: Vout)

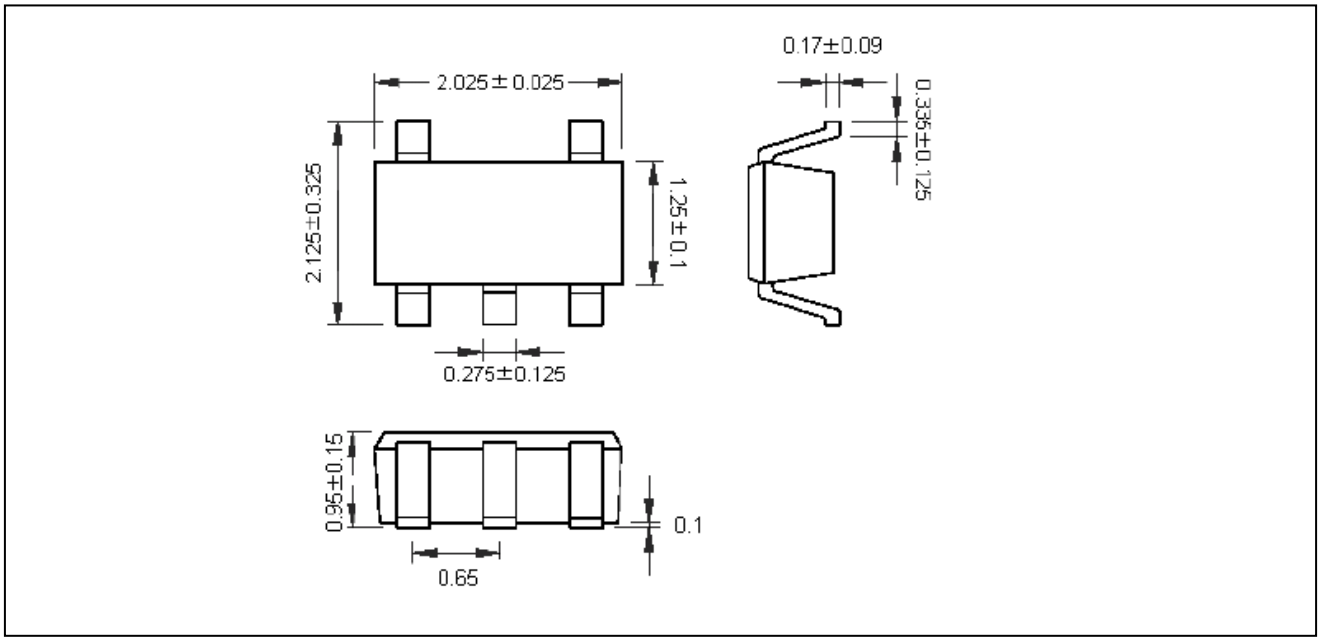


CE Chip Enable Response

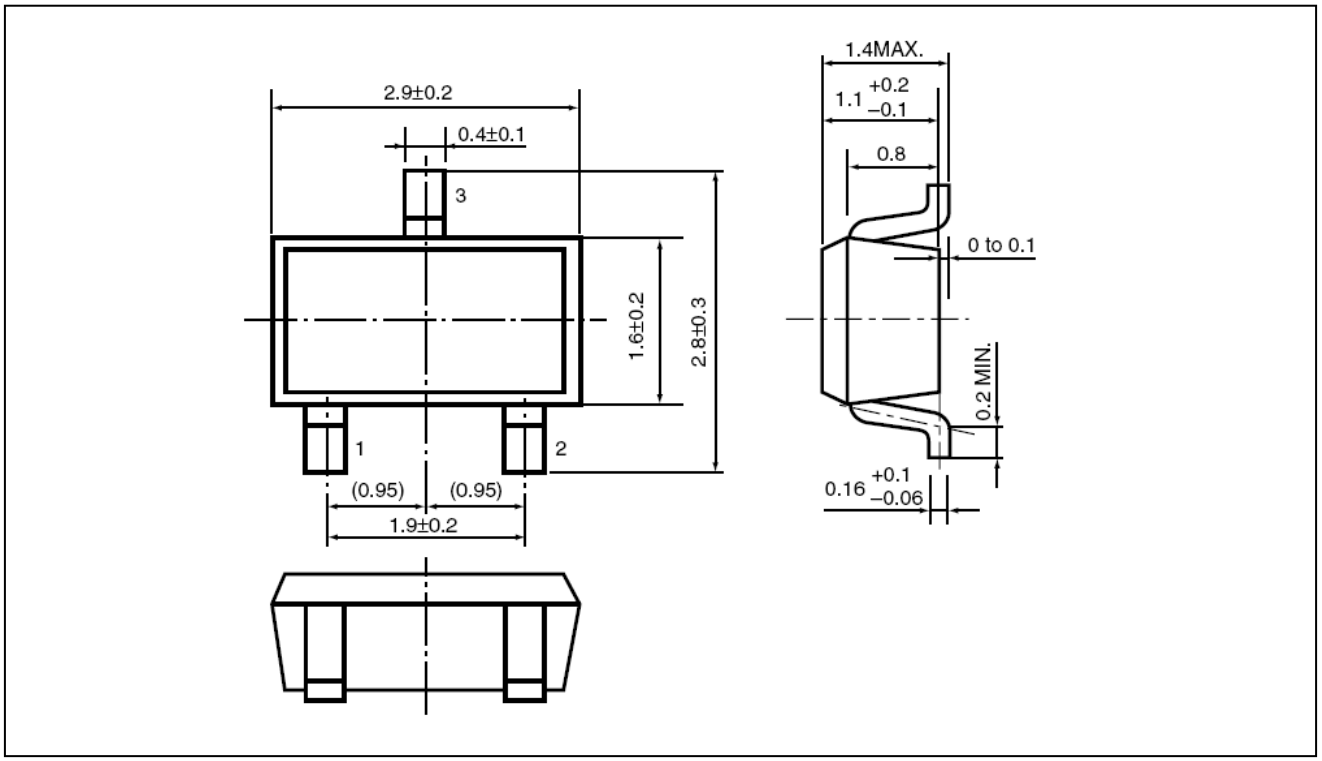


Packing Information

SC-70-5

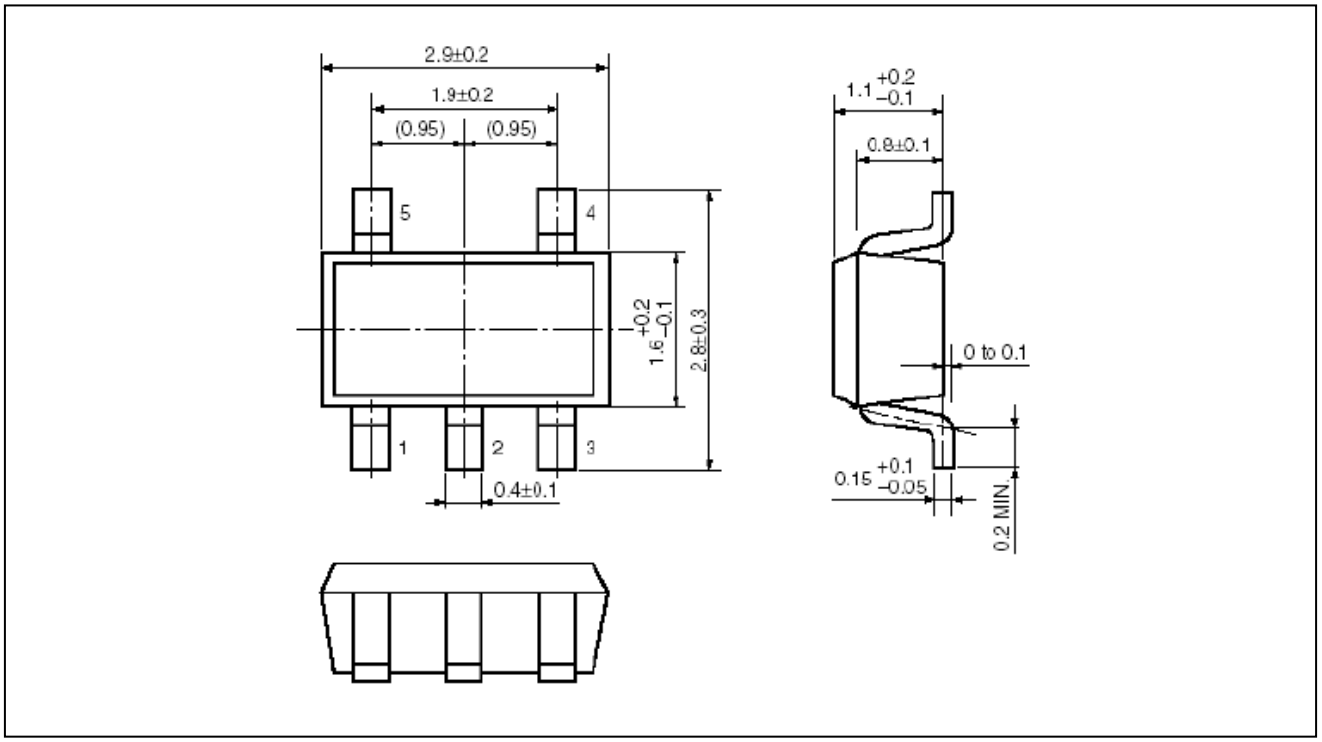


SOT-23-3L

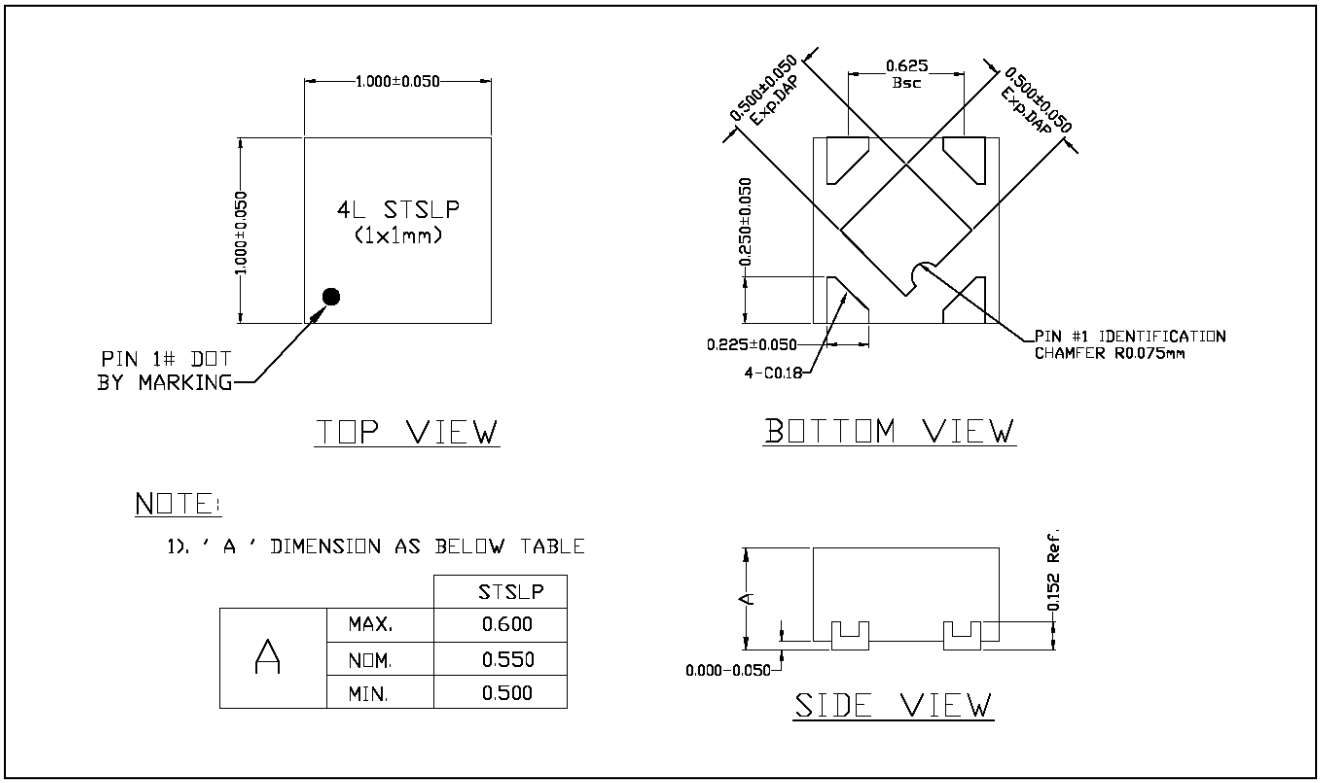


Packing Information

SOT-23-5



DFN1*1-4



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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