ACE525

300mA High PSRR, Linear Regulator

Description

ACE525 series is a group of positive voltage output, low power consumption, low dropout voltage regulator.

ACE525 can provide output value in the range of 1.0V~4.4V every 0.1V step. It also can be customized on command.

ACE525 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.

ACE525 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 (47uVRMS)
- Standby Mode: 0.1uA
- Low Dropout Voltage 360mV@300mA (Typ.)
- High Ripple Rejection: 74dB @100Hz (Typ.)
- Low Temperature Coefficient: ±100ppm/℃
- Excellent Line Regulation: 0.05%/V
- Build-in chip enable
- Output Voltage Range: 1.0V~4.4V (customized on command every 0.1V step)
- High Accurate: ±2%
- 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

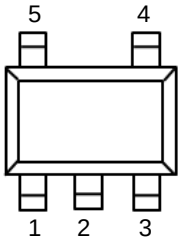
Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Max Input voltage	V_{IN}	8	V
Power Dissipation SC-70-5 SOT-23-5 DFN1*1-4 SOT-23-3		 250 250 600 250	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

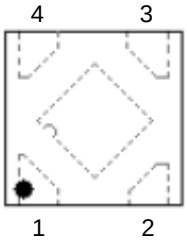
Note: Heat Sink Area of PCB for DFN1x1-4 is recommended at least 2.5mmx4mm. Exceed these limits to damage to the device. Exposure to absolute maximum rating conditions may affect device reliability.

Packaging Type

SC-70-5
SOT-23-5

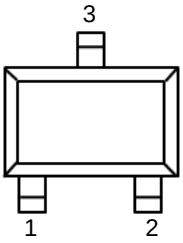


DFN1*1-4



Thermal Pad: V_{SS}

SOT-23-3



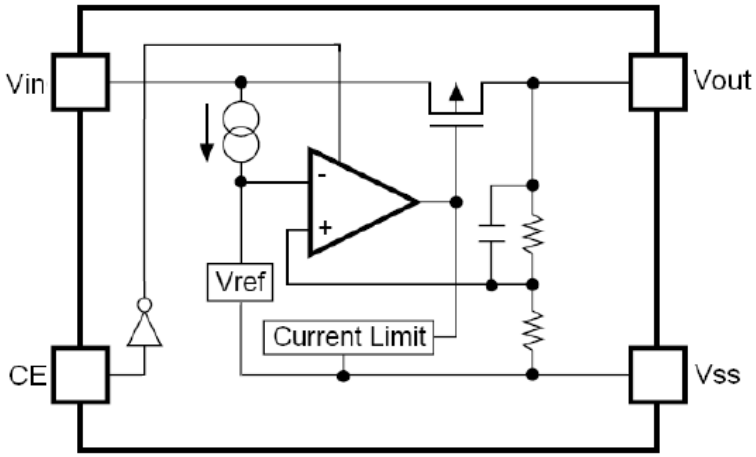
SC-70-5	SOT-23-5	DFN1*1-4	SOT-23-3	Description	Function
5	5	1	2	V_{OUT}	Output pin
1	1	4	3	V_{DD}	Input pin
2	2	2	1	GND	Ground pin
3	3	3		CE	Chip Enable pin
4	4			NC	No Connection

Ordering information

ACE525 XX XX + H

- H: Halogen - free
- +: Pb - free
- XX: HN: SC-70-5, BN: SOT-23-5, IN: DFN1*1-4, BM : SOT-23-3
- XX: Output Voltage：1.0V…..4.4V

Block Diagram



Explanation：

ACE525 series is a group of positive voltage output, low noise, low power consumption, low dropout voltage regulator.

ACE525 can provide output value in the range of 1.0V~4.5V every 0.1V step. It also can be customized on command.

ACE525 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.

ACE525 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	2	6	V
Ambient Temperature	-40	85	℃

Electrical Characteristics

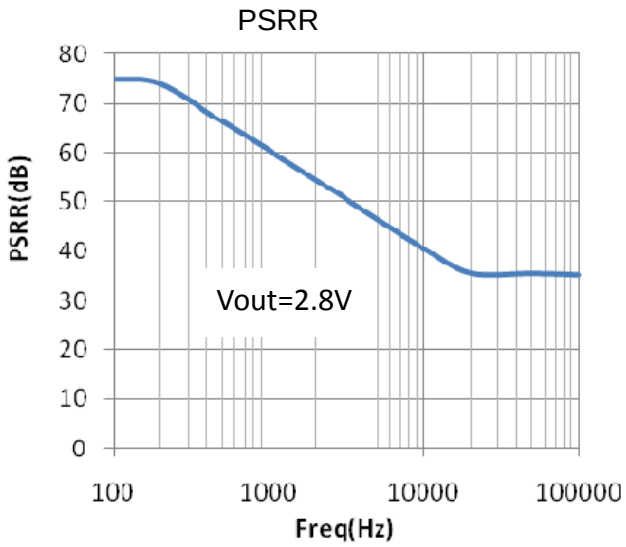
(Test Conditions: Cin=1uF, Cout=1uF,T_A=25℃, unless otherwise specified.)

ACE525 for arbitrary output voltage

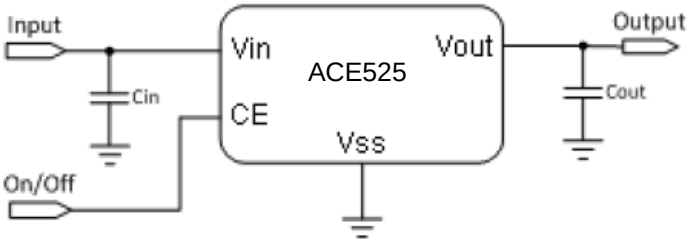
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Input Voltage	V_{IN}		2		6	V
Output Voltage	V_{OUT}>1.5V	V_{IN}=Set V_{OUT}+1V 1mA≦Iout≦30mA	V_{OUT} x0.98	V_{OUT}	V_{OUT} x 1.02	V
	V_{OUT}<=1.5V		V_{OUT} – 0.03	V_{OUT}	V_{OUT} + 0.03	
Maximum Output Current	I_{OUT}(Max.)	V_{IN} -V_{OUT}=1V	300			mA
Dropout Voltage, V_{OUT} ≧2.8V	Vdrop[1]	I_{OUT}=100mA		115	200	mV
		I_{OUT}=300mA		360	420	mV
Line Regulation	ΔV_{OUT} / ΔV_{IN}•V_{OUT}	I_{OUT}=40mA 2.8V≦V_{IN}≦6V		0.05	0.2	%/V
Load Regulation	ΔV_{OUT} / ΔI_{OUT}	V_{IN}=Set V_{OUT}+1V 1mA≦I_{OUT}≦300mA		60	100	mV
Supply Current	Iss	V_{IN}=Set V_{OUT}+1V		25	50	uA
Supply Current (Standby)	Istandby	V_{IN}=Set V_{OUT}+1V Vce=V_{SS}		0.1	1.0	uA
Output Voltage Temperature Coefficient	ΔV_{OUT} / ΔT•V_{OUT}	I_{OUT}=30mA		±100		ppm/℃
Ripple Rejection	PSRR	F=100Hz, Ripple=0.5Vp-p V_{IN}=Set V_{OUT}+1V		74		dB
Current Limit	Ilim			500		mA
CE Input Voltage “H”	Vceh		1.5		V_{IN}	V
CE Input Voltage “L”	Vcel		0		0.25	V
Output Noise	en	BW=10Hz~100kHz		47		uVrms

Note: Vdrop=Vin 1-(Vout2*0.98) Vout2 is the output voltage when Vin=Vout1+1.0V and Iout=300mA.

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



Typical Application Circuit

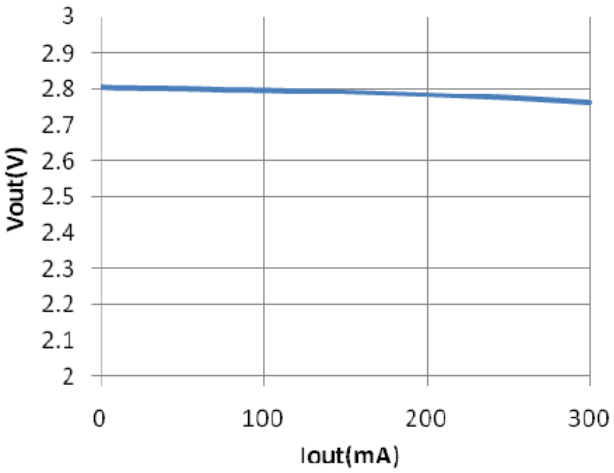


Note: Input capacitor (Cin=1uF) and Output capacitor (Cout=1uF) are recommended in all application circuit.

Typical Performance Characteristics

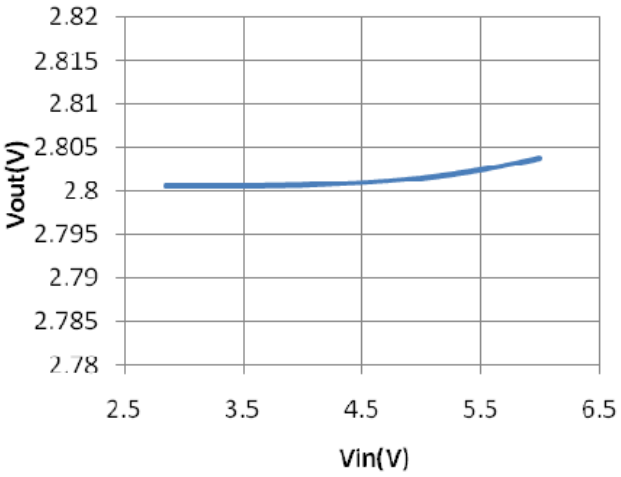
1.Output Voltage vs. Output Current

Load Regulation

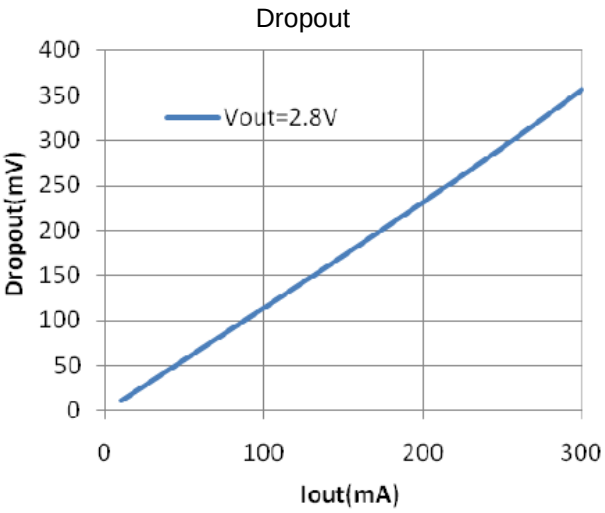


2.Output Voltage vs. Input Voltage

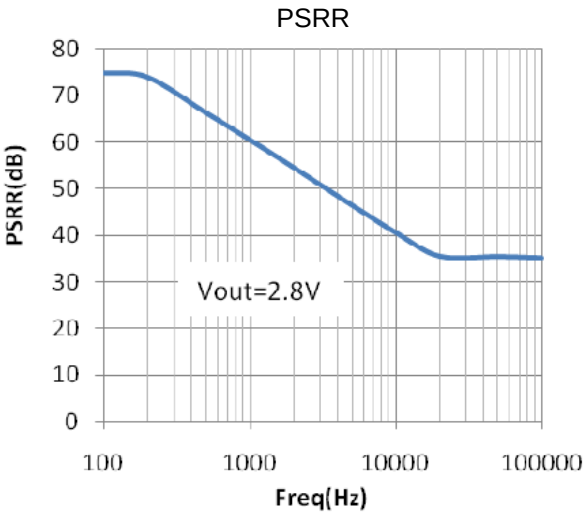
Lin Regulation



3.Dropout Voltage vs. Output Current

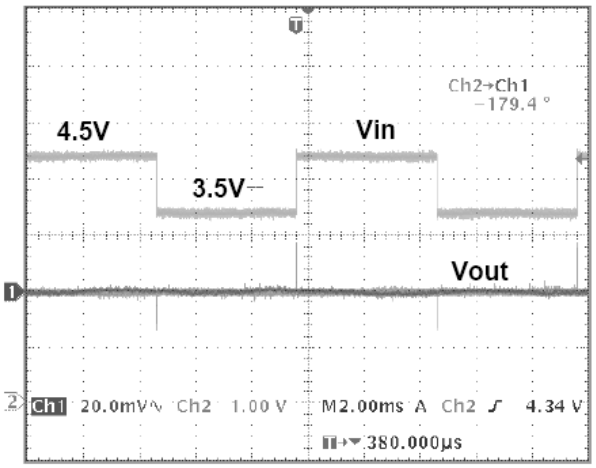


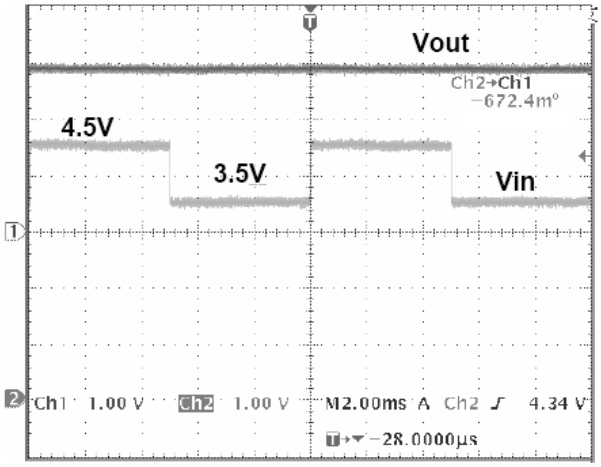
4.Ripple rejection vs. Frequency



5.Line transient response

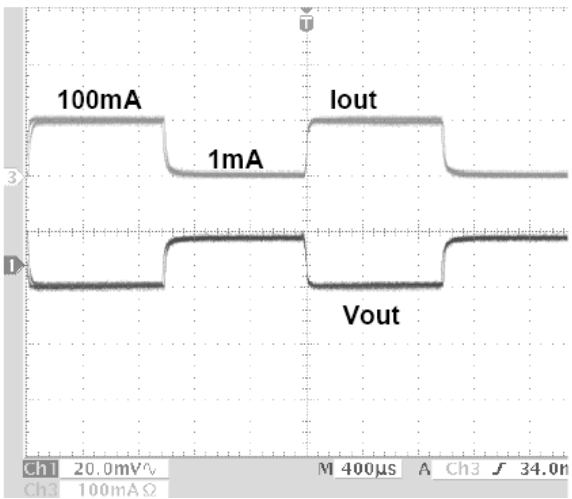
Cin=Cout=1uF Iout=10mA Vout=2.8V

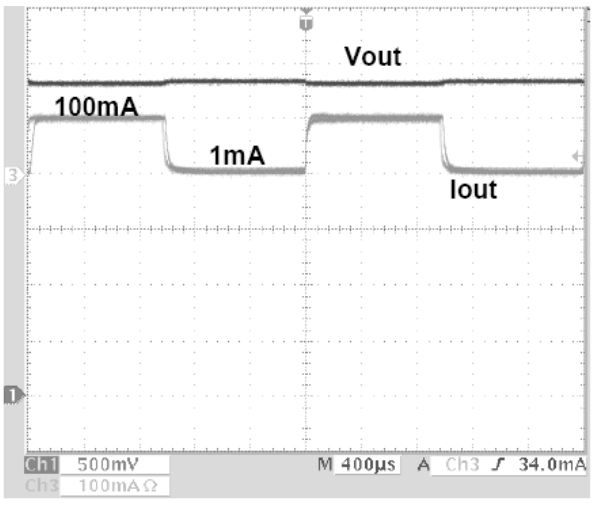




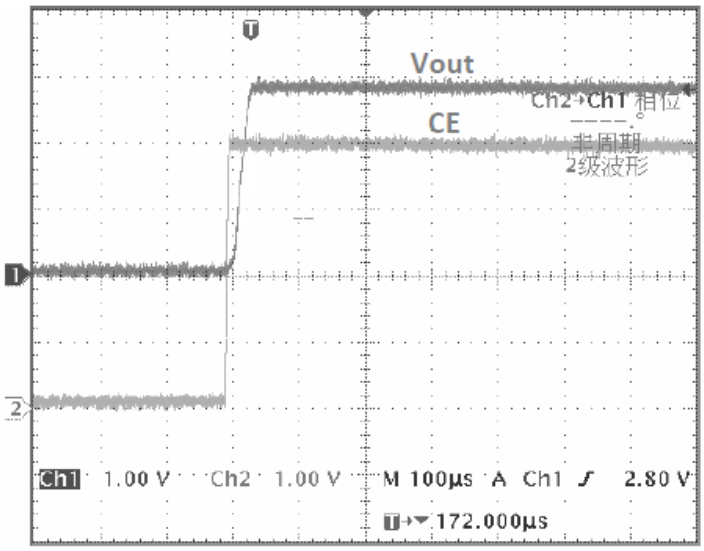
6.Load transient response

Cin=Cout=1uF Vin=4.0V Vout=2.8V



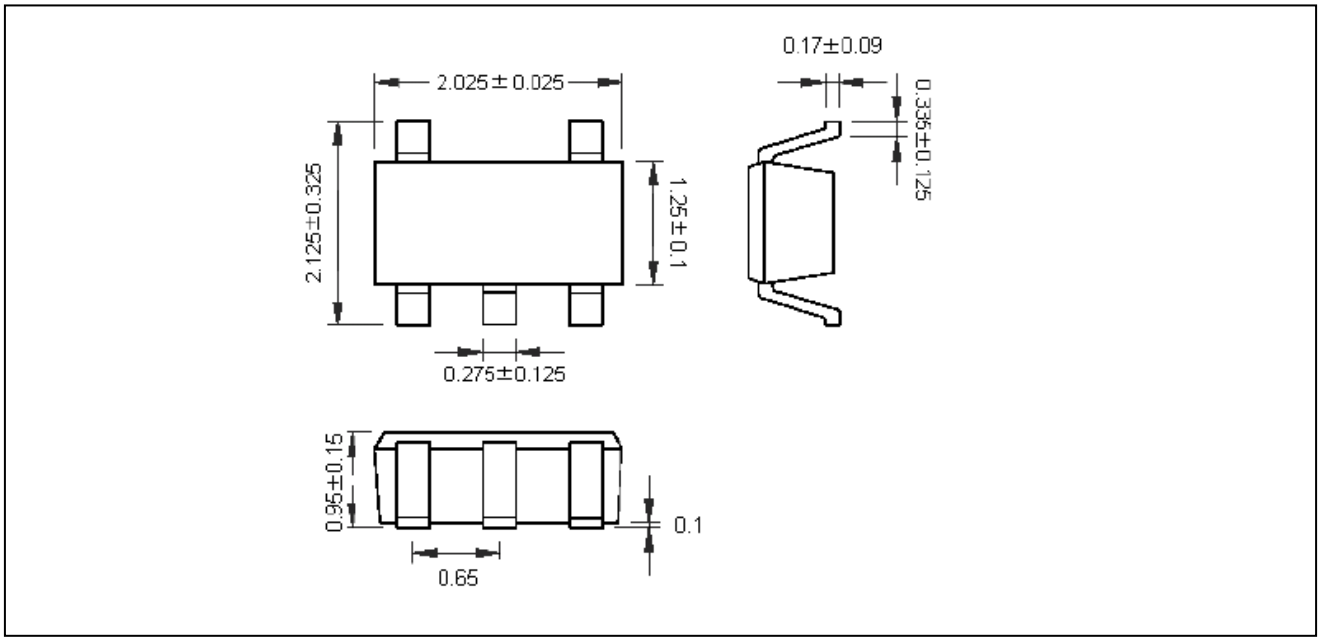


7.Startup from CE

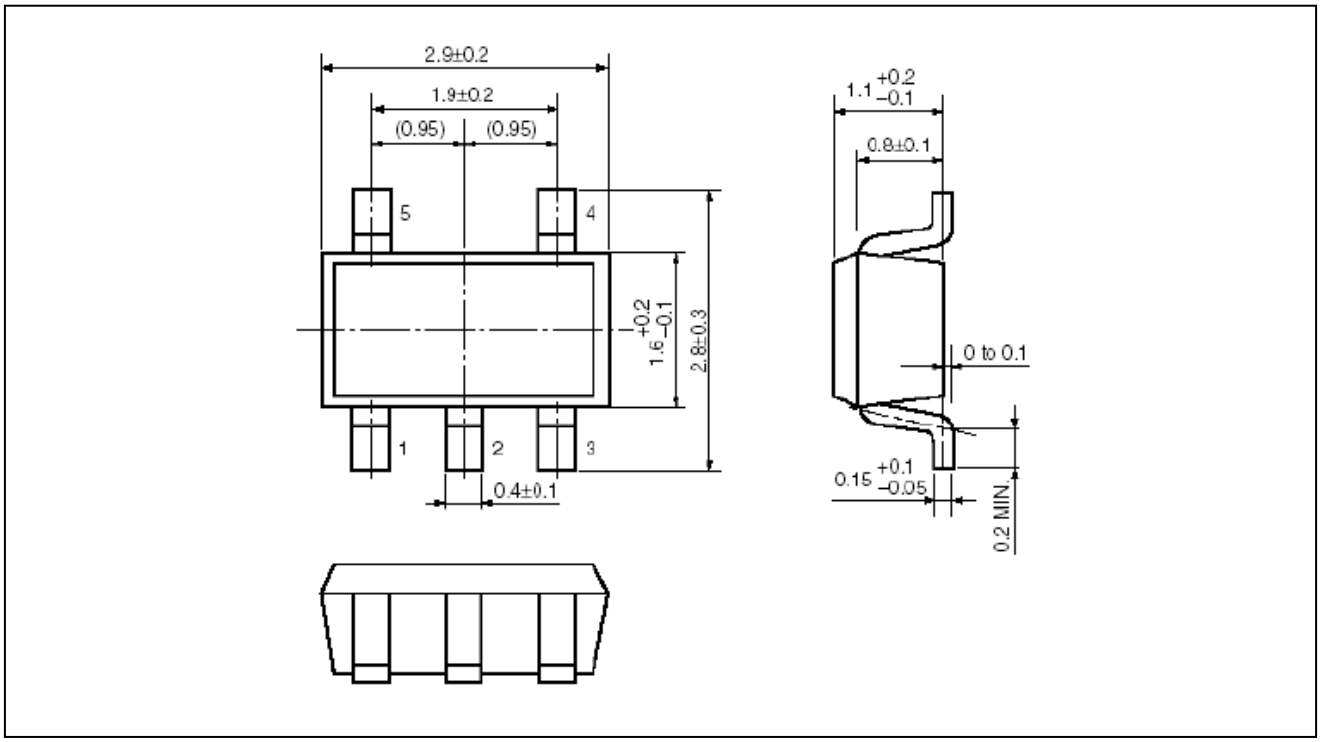


Packing Information

SC-70-5

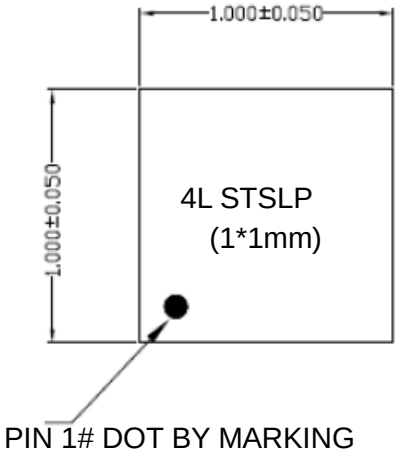


SOT-23-5

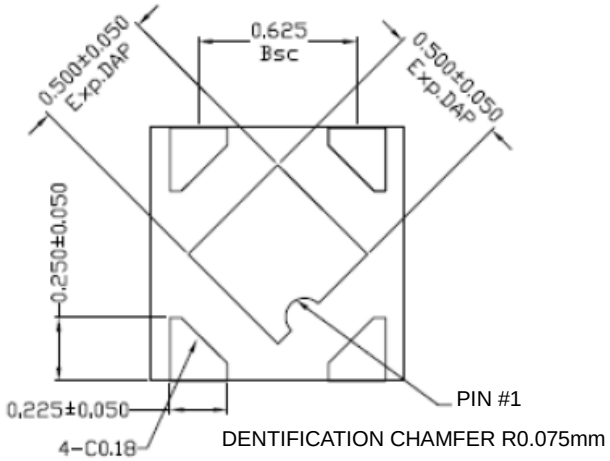


Packing Information

DFN1*1-4



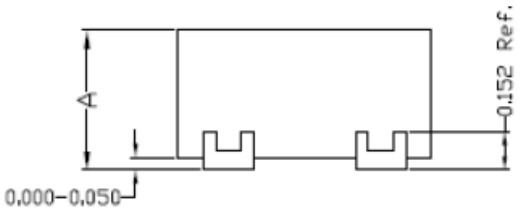
TOP VIEW



BOTTOM VIEW

Note. A DIMENSION AS BELOW TABLE

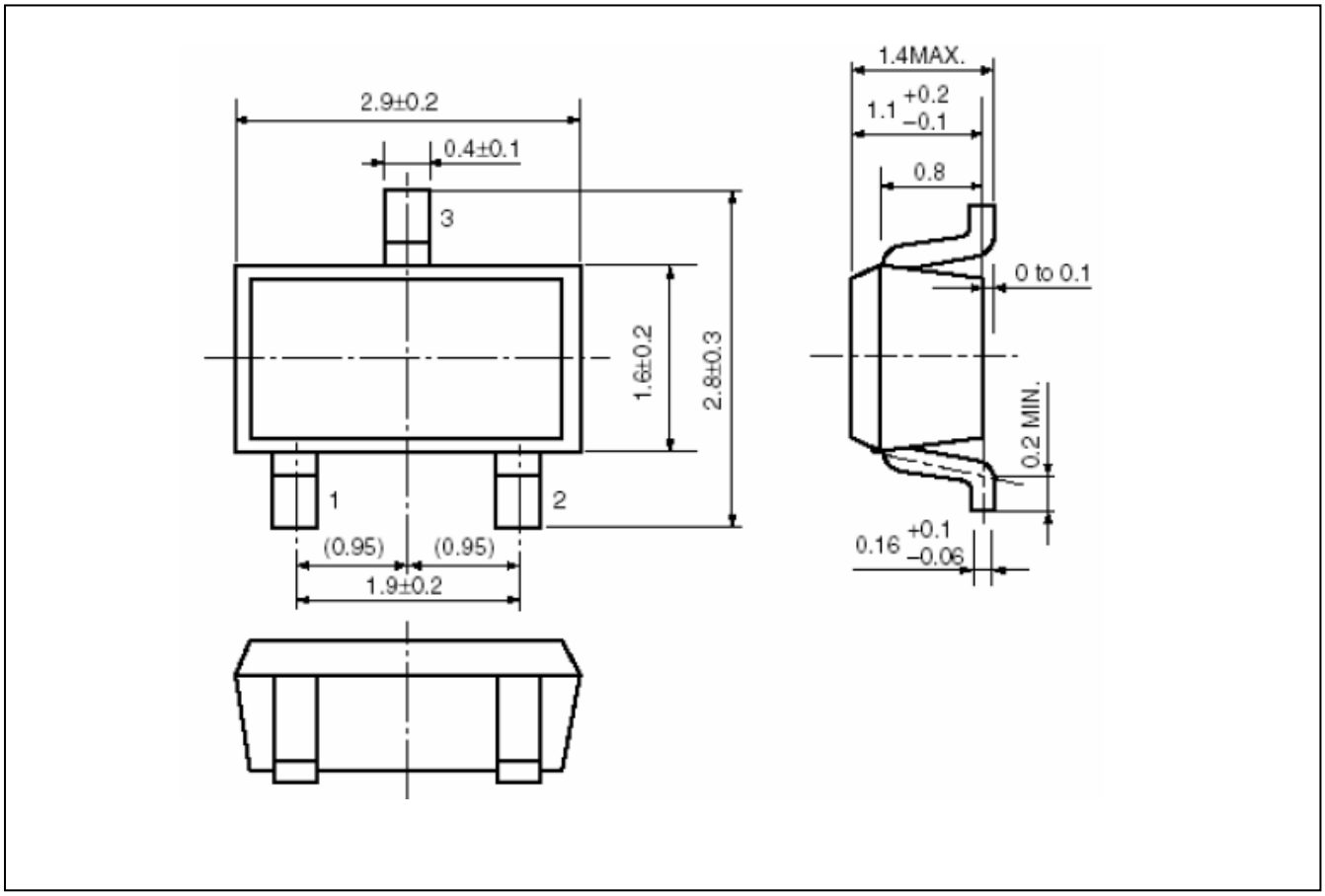
	Max	Nom	Min
A	0.6	0.55	0.5



SIDE VIEW

Packing Information

SOT-23-3



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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