# ACE555

**300mA High PSRR, Linear Regulator**

## Description

ACE555 series are a group of positive voltage output, low power consumption, low dropout voltage regulators.

ACE555 can provide output value in the range of 1.0V~4.5V every 0.1V step. It also can be customized on command. ACE555 can also work under a wide input voltage ranging from 1.5V to 6V.

ACE555 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.

ACE555 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 ±1%、±2%.

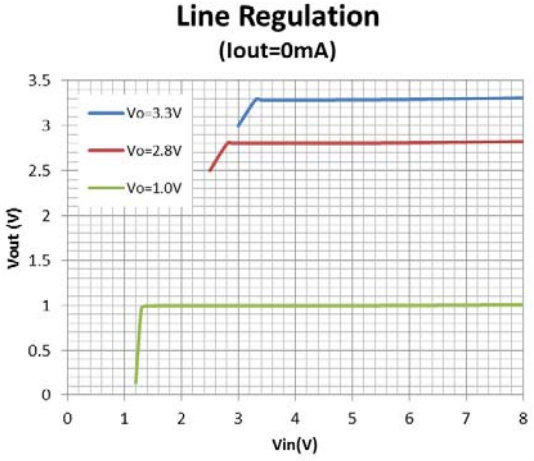
## Features

- Input voltage range: 1.5~6V
- Output voltage range: 1.0V~4.5V (customized on command every 0.1V step)
- Low power consumption: 25uA (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: ±1%、±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

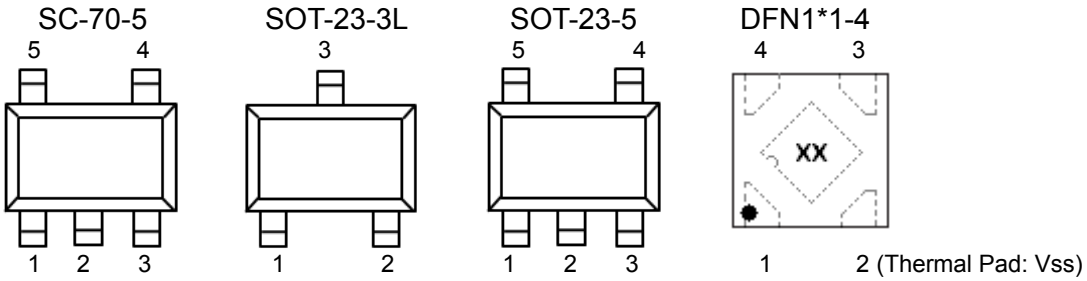
| Parameter | Symbol | Max | Unit |
|---|---|---|---|
| Max Input voltage | $V_{IN}$ | 8 | V |
| Power Dissipation<br>SC-70-5<br>SOT-23-3L<br>SOT-23-5<br>DFN1*1-4 | | <br>250<br>250<br>250<br>600 | mW |
| Junction temperature | $T_J$ | 125 | °C |
| Storage temperature | $T_S$ | - 45 to 150 | °C |
| Output 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



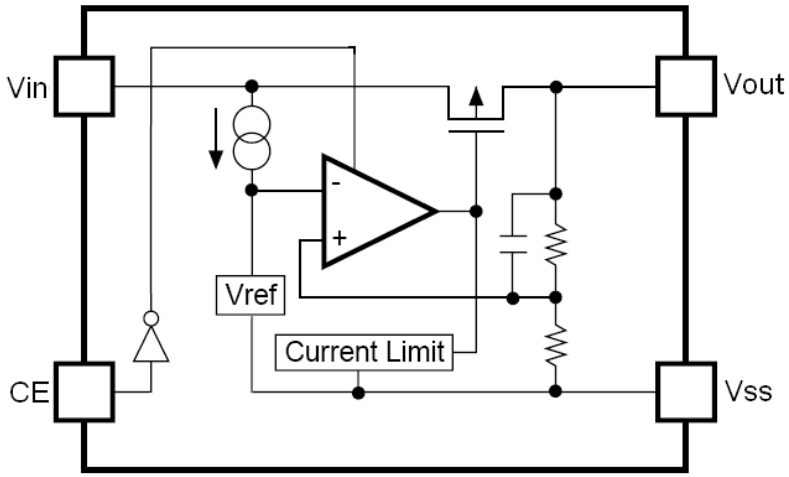

| SC-70-5 | SOT-23-3L | SOT-23-5 | DFN1*1-4 | Description | Function |
|---|---|---|---|---|---|
| 5 | 2 | 5 | 1 | Vout | Output pin |
| 1 | 3 | 1 | 4 | Vin | Input pin |
| 2 | 1 | 2 | 2 | $V_{SS}$ | Ground pin |
| 3 | | 3 | 3 | CE | Chip Enable pin |
| 4 | | 4 | | NC | No Connection |

## Ordering information

ACE555 X 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
- Reference Voltage accuracy :
  A : 1%
  B : 2%

## Block Diagram




## Recommended Work Conditions

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

## Electrical Characteristics

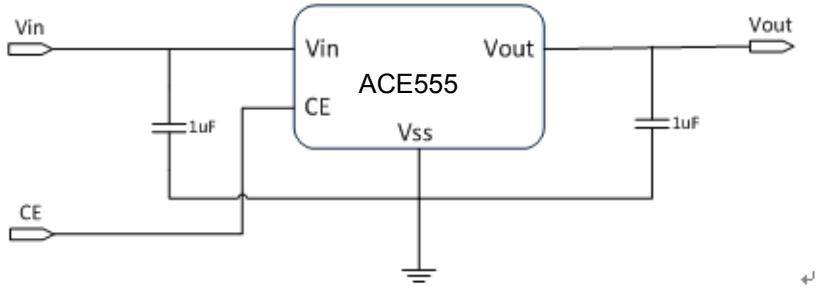
ACE555, For Arbitrary Output Voltage.(Test Conditions: Cin=1uF,Cout=1uF,$T_A$=25°C, unless otherwise specified.)

| 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 |
| △Vout / △Vin x Vout | Line Regulation | | Iout=40mA 2.8V≤Vin≤6V | | 0.05 | 0.2 | %/V |
| △Vout | Load Regulation | | Vin=Set Vout+1V 1mA≤Iout≤300mA | | 50 | 80 | mV |
| Iss | Supply Current | | Vin=Set Vout+1V | | 25 | | uA |
| Istandby | Supply Current (Srandby) | | Vin=Set Vout+1V Vce=Vss | | 0.1 | 1.0 | uA |
| △Vout / △T 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：

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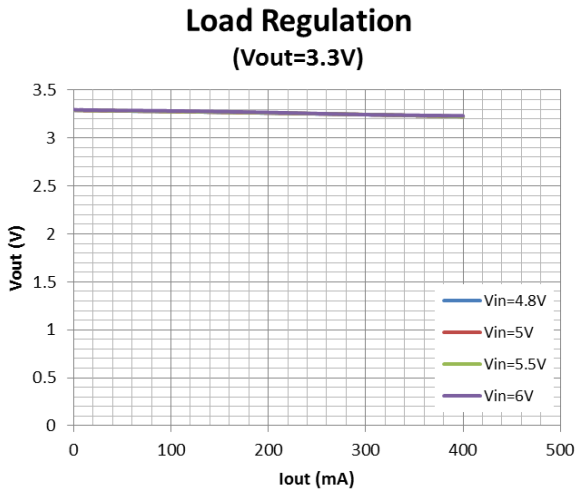
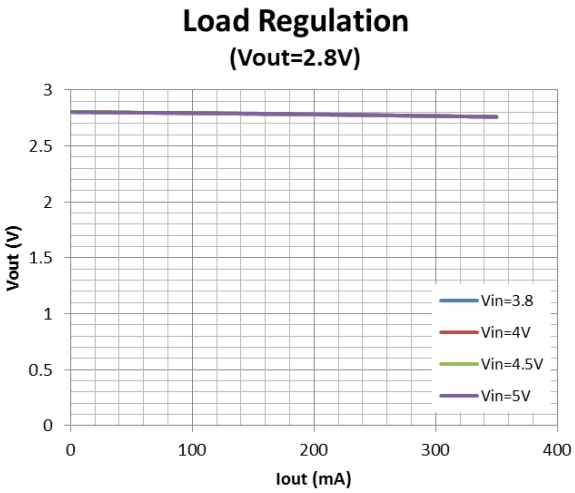
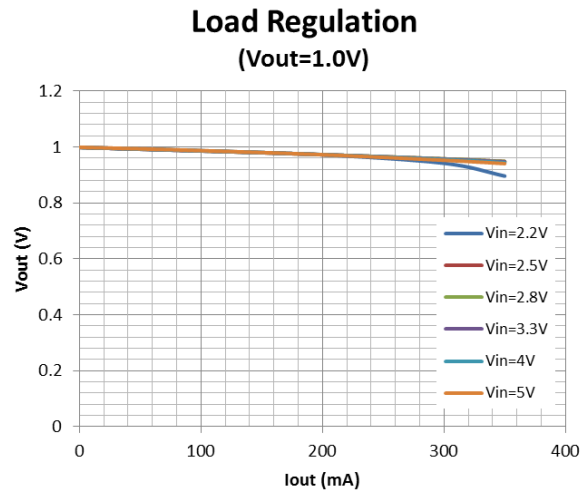
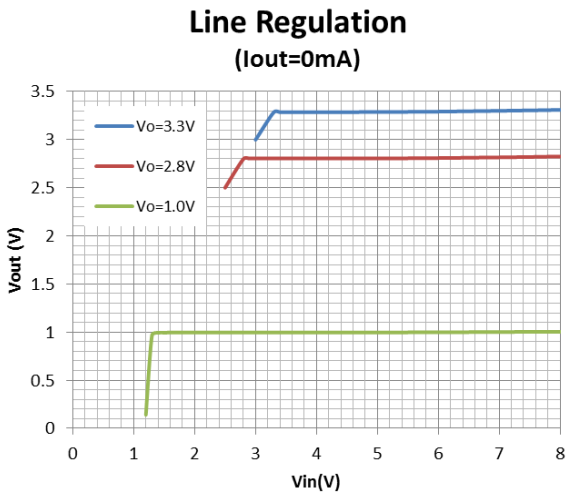
## Typical Performance Characteristics ($T_A$=25℃)



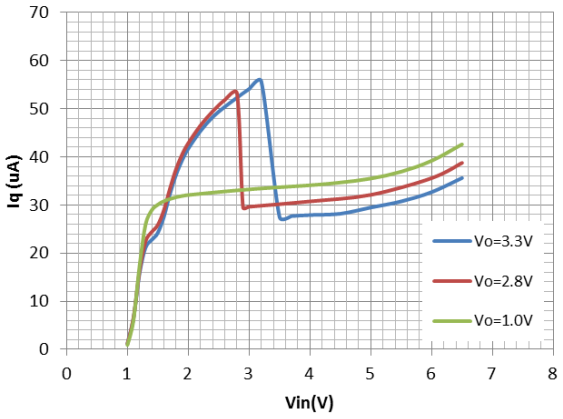



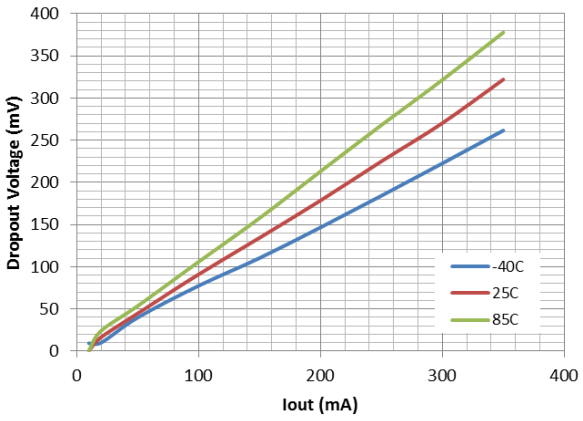



## Typical Performance Characteristics

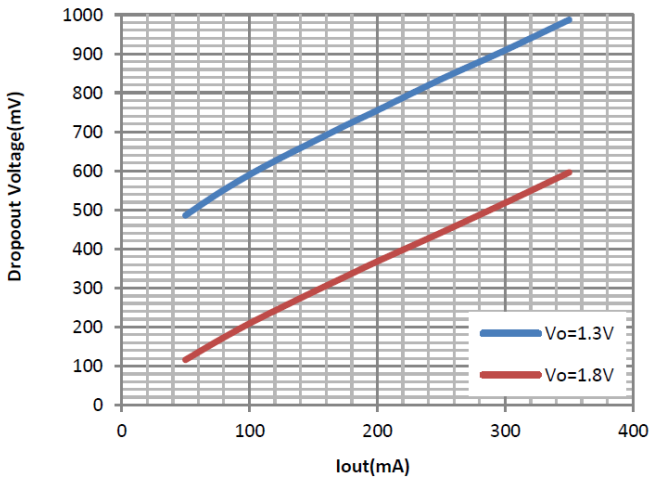
### Quienscent Current
(Iout=0mA and CE=high)



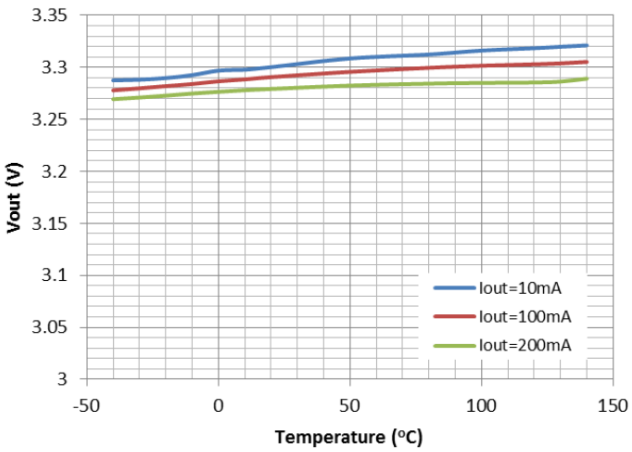

### Dropout Voltage
(Vout=3.3V)




### Dropout Voltage



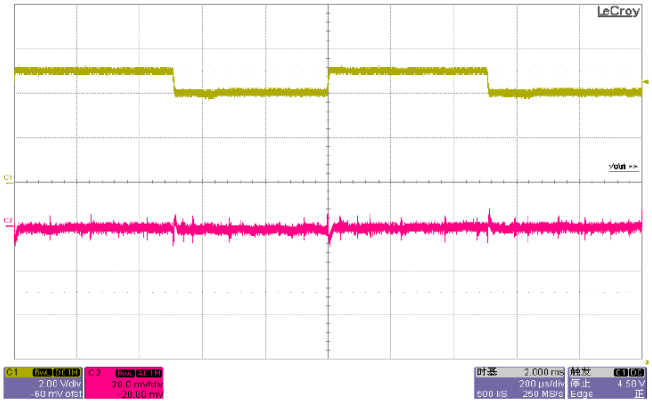

### Vout Temperature Coefficient
(Vout=3.3V)



## Line Transient Response

Vout=3.3V, Iout=20mA

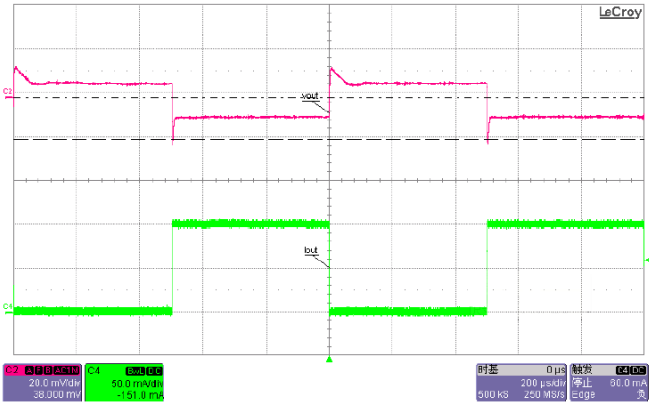
*(brown: Vin; Red: Vout)*



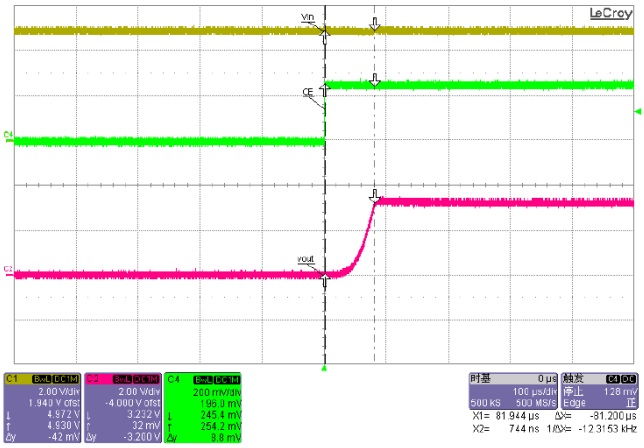

## Load Transient Response

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

*(Green: Iout; Red: Vout)*

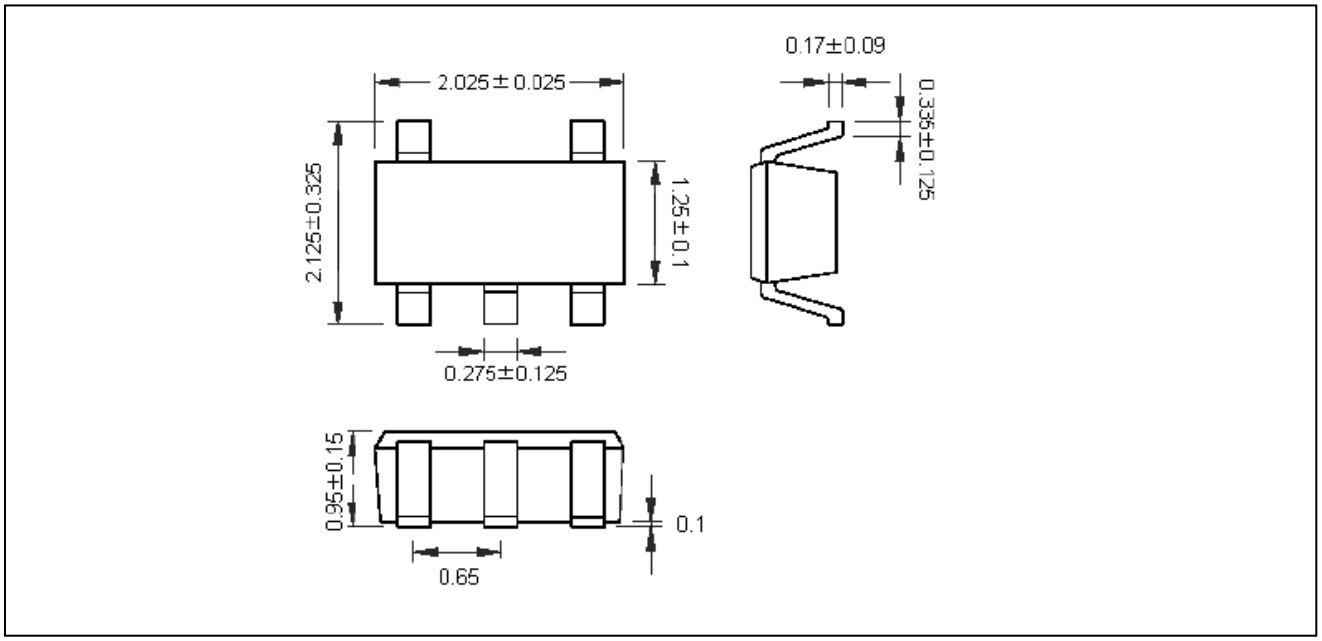



## CE Chip Enable Response

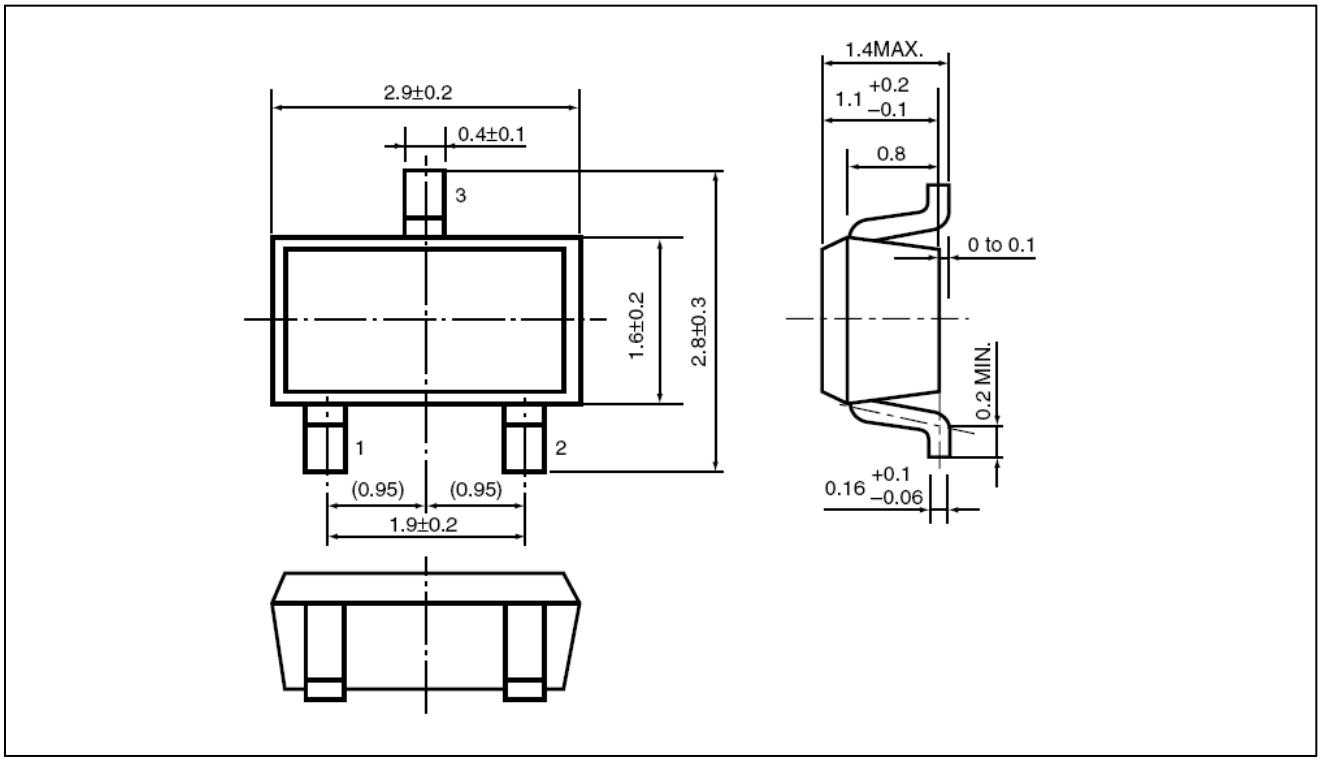


## Packing Information

### SC-70-5

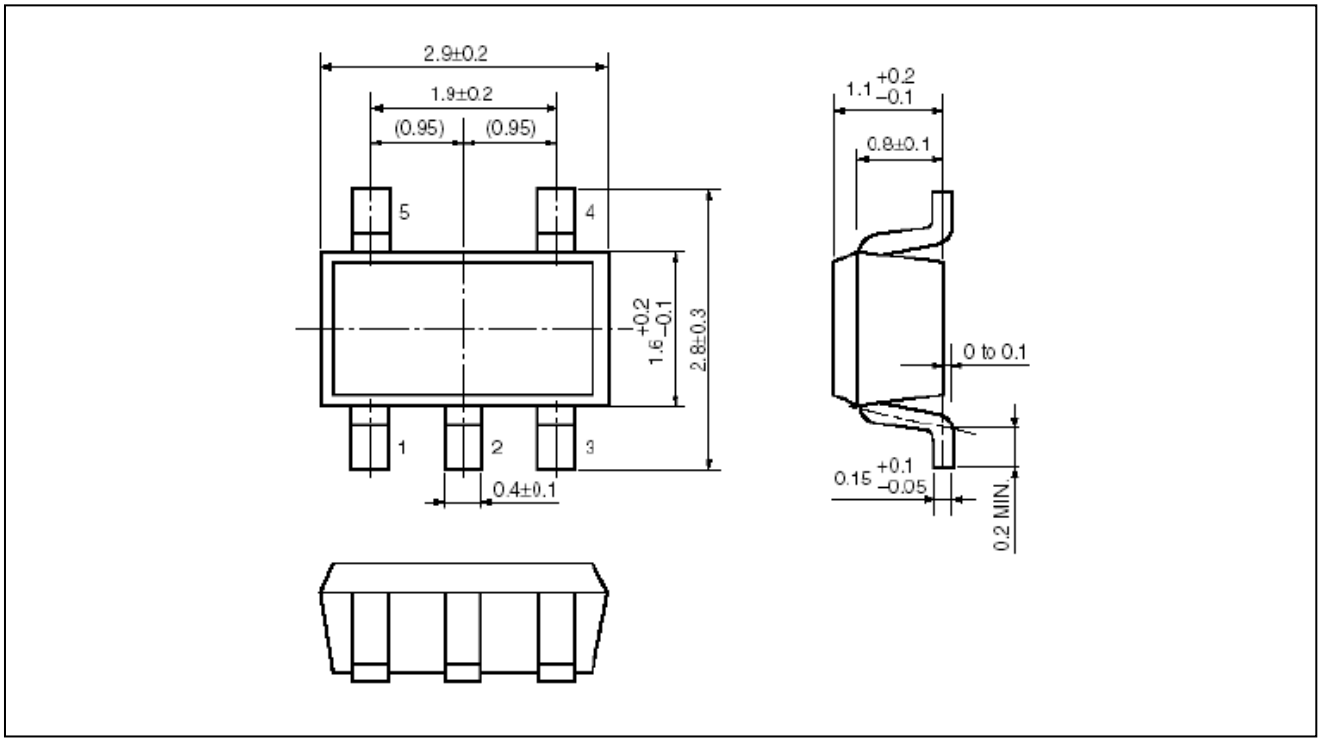



### SOT-23-3L

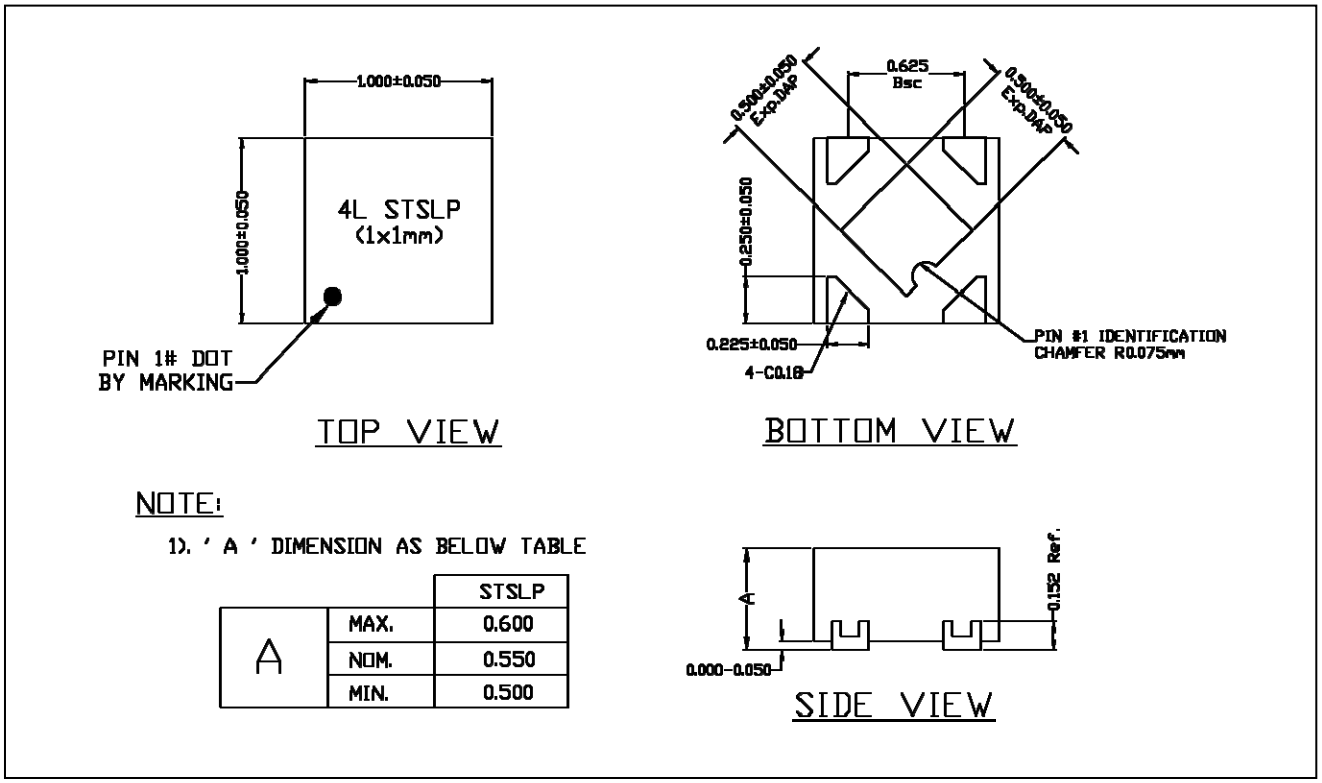


## Packing Information

### SOT-23-5




### DFN1*1-4



Notes

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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.

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