Description

ACE515 series is a group of positive voltage output, low power consumption, low dropout voltage regulator.

ACE515 can provide output value in the range of 1.5V~4.5V every 0.1V step. It also can be customized on command.

ACE515 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module with discharge capability.

ACE515 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%.

ACE515 is available in SOT-23-5, SC-70-5 packages which is lead free. It also can available in these packages with lead.

Features

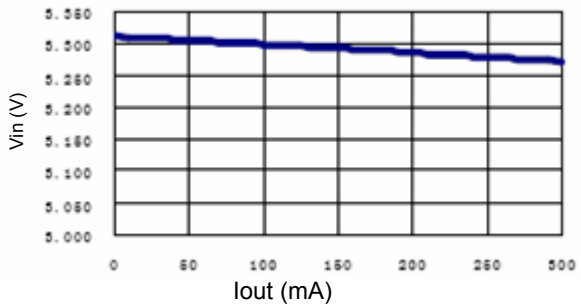
- Low Power Consumption: 15uA (Typ)
- Low Output Noise (47uVRMS)
- Standby Mode: 0.1uA
- Low Dropout Voltage 0.16V@300mA (Typ.)
- High Ripple Rejection: 73dB @100kHz (Typ.)
- Low Temperature Coefficient: ±100ppm/℃
- Excellent Line Regulation: 0.05%/V
- Build-in Chip Enable And Discharge Circuit
- Output Voltage Range: 1.5V~4.5V (customized on command every 0.1V step)
- High Accurate: ±2% (±1% customized)
- Output Current Limit

Application

- Power source for cellular phones and various kind of PCSs
- Battery Powered equipment
- Power Management of MP3, PDA, DSC

Typical Performance Characteristic:

Load Regulation (Vout=4.5V)

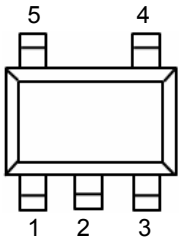


Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Max Input voltage	V_{IN}	6.5	V
Power Dissipation SOT-23-5		250	mW
Junction temperature	T_J	125	°C
Storage temperature	T_S	- 45 to 150	°C
Output Current		300	mA

Packaging Type

SOT-23-5
SC-70-5



Pin Number			Symbol	Function
SC-70-5	SOT-23-5A	SOT-23-5B		
5	5	1	Vout	Output pin
1	1	3	VDD	Input pin
2	2	2	GND	Ground pin
3	3	4	CE	Chip Enable pin
4	4	5	NC	No Connection

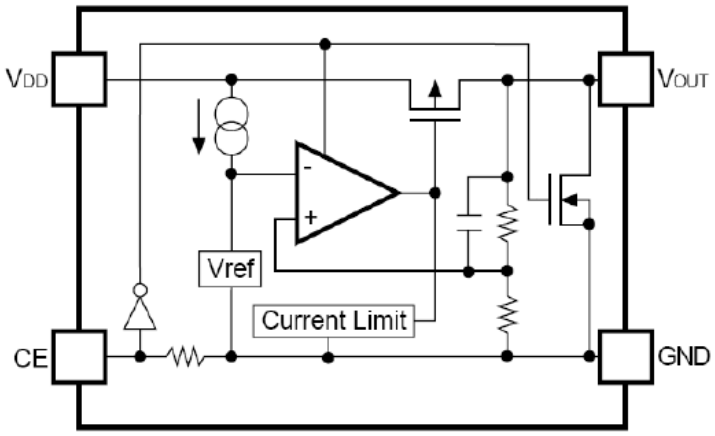
Ordering information

Selection Guide

ACE515 XX XX + H

- Halogen - free
- Pb - free
- BNA: SOT-23-5
  BNB: SOT-23-5
  HN: SC-70-5
- Output Voltage：
  1.5V/2.8V…..4.5V

Block Diagram



Recommended Work Conditions

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

Electrical Characteristics

(Test Conditions: Cin=1uF, Cout=3.4uF,T_A=25℃, unless otherwise specified.)

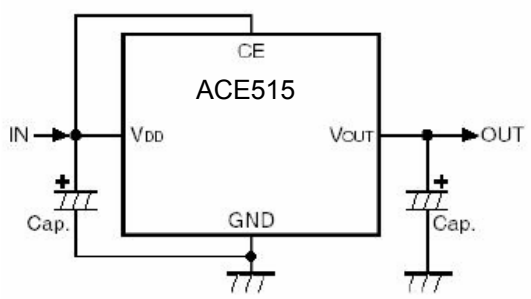
ACE515 for arbitrary output voltage

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Input Voltage	V_{IN}				6	V
Output Voltage	V_{OUT}	V_{IN}=Set V_{OUT}+1V 1mA≦Iout≦30mA	V_{OUT} x0.98	V_{OUT}1	V_{OUT} x 1.02	V
Maximum Output Current	I_{OUT}(Max.)	V_{IN} -V_{OUT}=1V	300			mA
Dropout Voltage, V_{OUT} ≧2.8V	Vdrop[1]	I_{OUT}=100mA		50	80	mV
		I_{OUT}=300mA		160	220	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		30	50	mV
Supply Current	Iss	V_{IN}=Set V_{OUT}+1V		15	25	uA
Supply Current (Standby)	Istandby	V_{IN}=Set V_{OUT}+1V Vce=GND		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		70		dB
Short Current Limit	Ilim	V_{OUT}=0V		500		mA
CE Pull down	Rpd		2.0	5.0	10.0	mΩ

Resistance						
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

1)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



Application hints:

Note 1: Input capacitor (Cin=1uF) is recommended in all application circuit

Note 2: Output capacitor (Cout=3.3uF/4.7uF) is recommended in all application to assure the stability of circuit.

Explanation：

ACE515 series is a group of positive voltage output, low noise, low power consumption, low dropout voltage regulator.

ACE515 can provide output value in the range of 1.5V~4.5V every 0.1V step. It also can be customized on command.

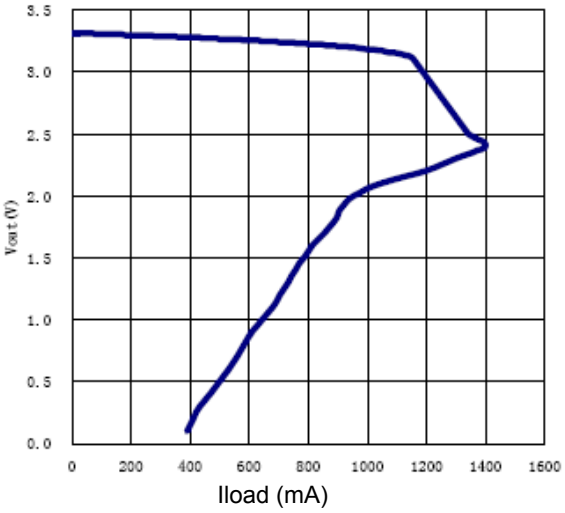
ACE515 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.

ACE515 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

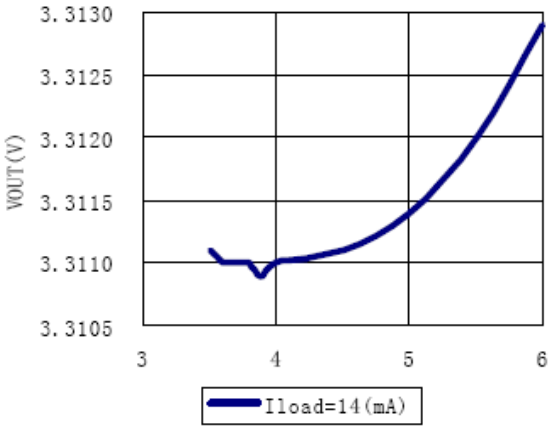
1.Output Voltage vs. Output Current
(with output short protection)

Current limit vs. Vout



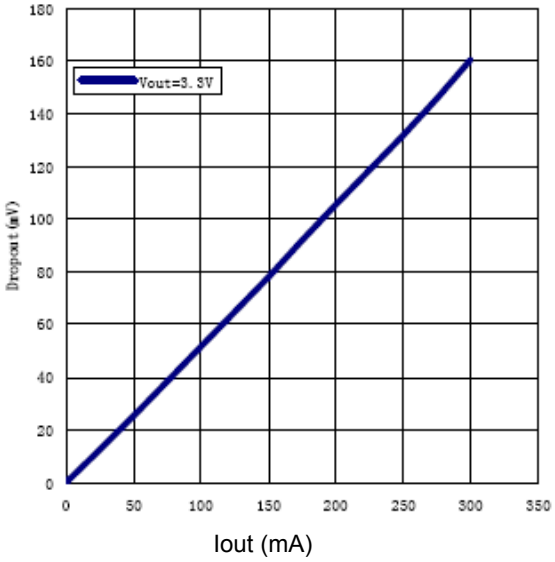
2.Output Voltage vs. Input Voltage

Lin Regulation



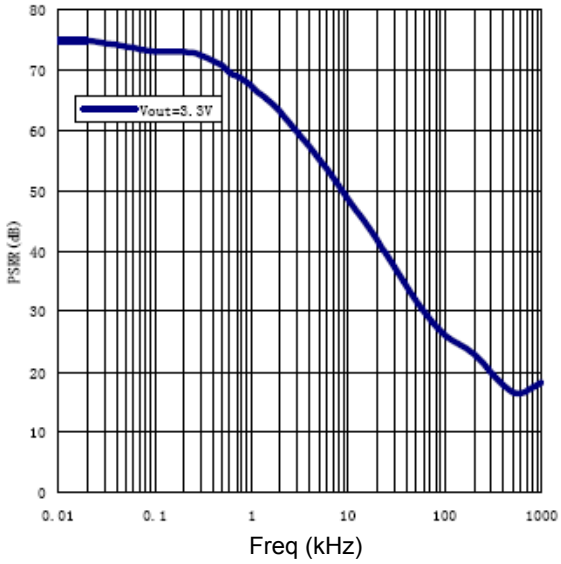
3.Dropout Voltage vs. Output Current

Dropout & Iout



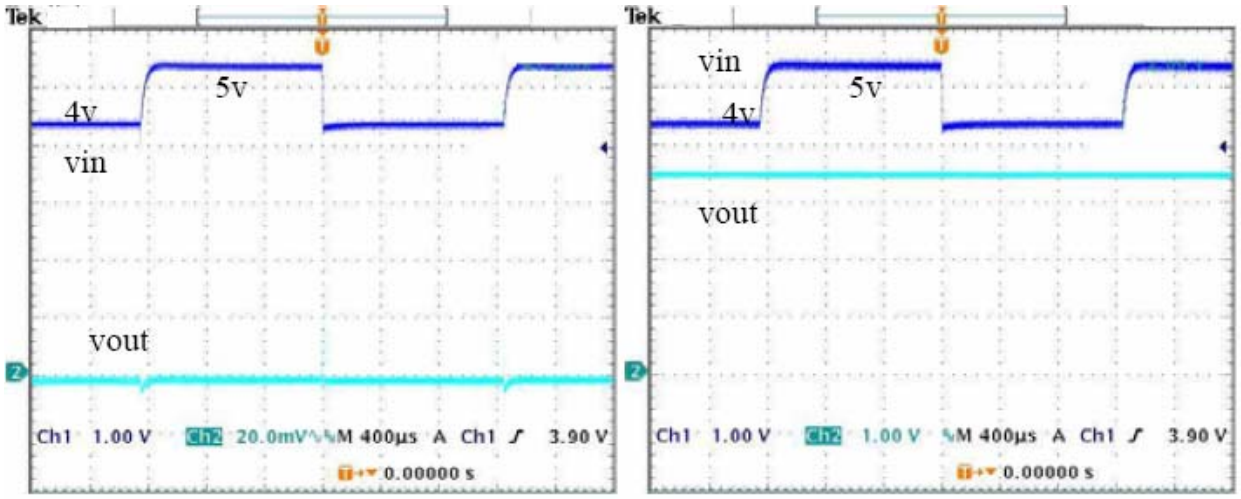
4.Ripple rejection vs. Frequency

PSRR



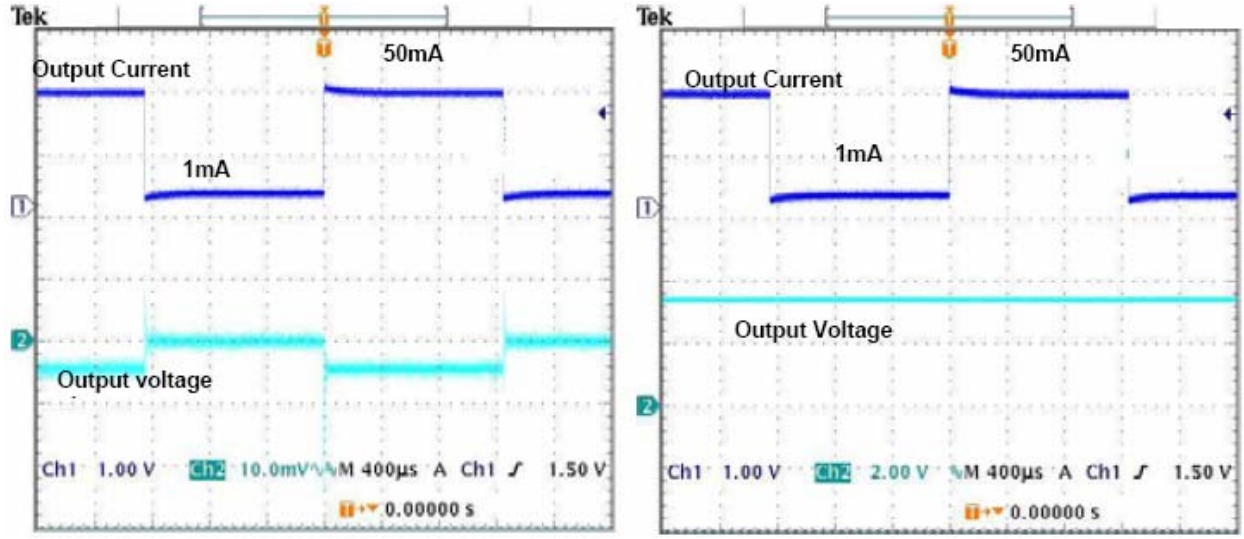
5.Line transient response

Cin=Cout=1uF Iout=25mA Vout=3.3V

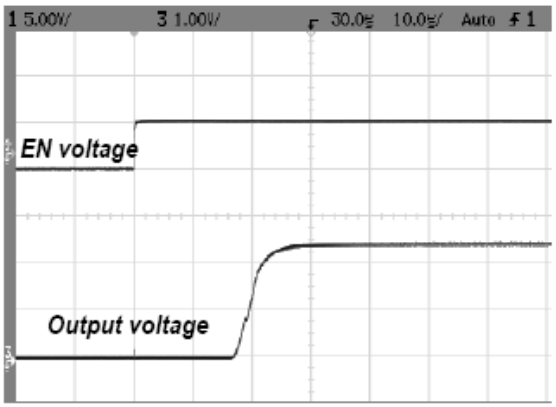


6.Line transient response

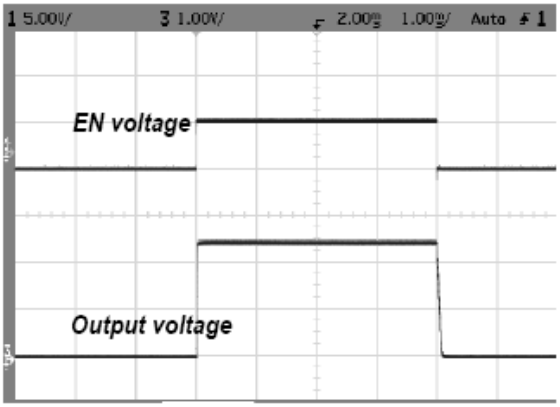
Cin=Cout=1uF Vin=4.5V Vout=3.3V



7.Startup response

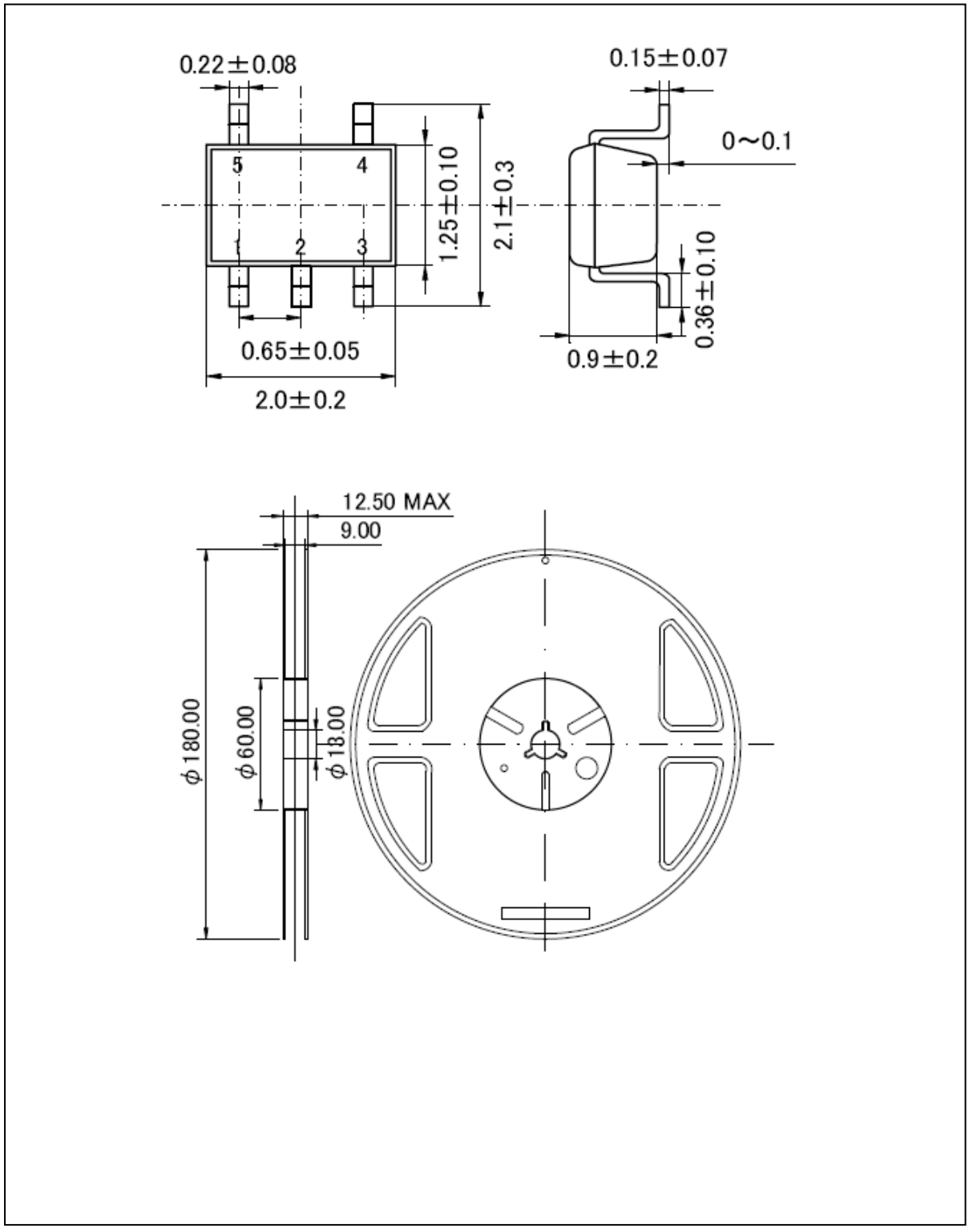


8.Shutdown response



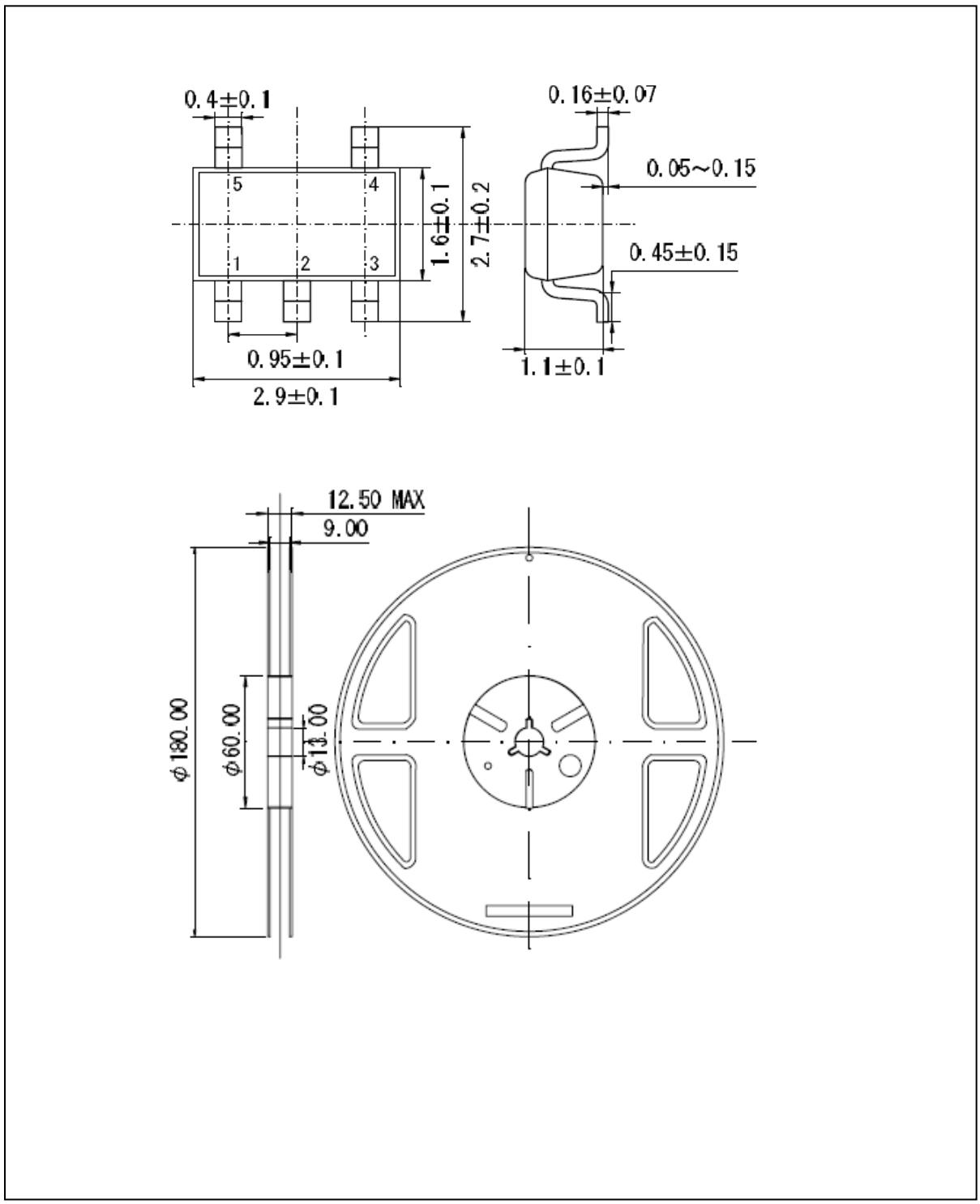
Packing Information

SC-70-5



Packing Information

SOT-23-5



Notes

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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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