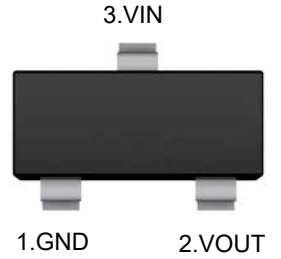
Description

The LB72 series is manufactured using CMOS technology with a maximum input voltage of 24V. This series is a high-voltage linear regulator with multiple fixed output voltages.

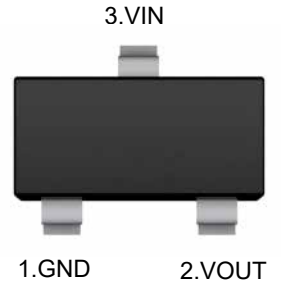
SOT-23



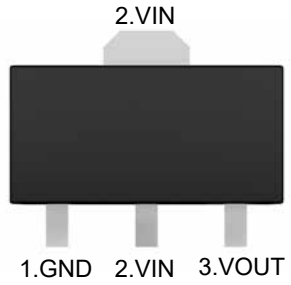
Features

- High Input Voltage Rating： Up to 24V
- Maximum Output Current: 150mA
- Low Dropout : 500mV @ 100mA
- Fixed Output Voltages： 3V,3.3V,5V
- Current Limiting Protection
- Thermal Shutdown Protection
- Available Packages： SOT-23、SOT-23-3、SOT-89、SOT-23-5

SOT-23-3



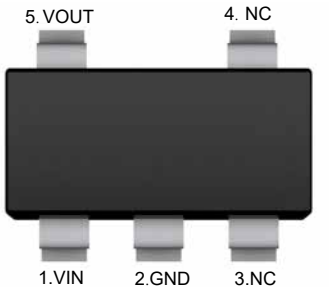
SOT-89



Applications

- Battery-Powered Equipment
- Communication device
- Security monitoring equipment

SOT-23-5



Marking Code

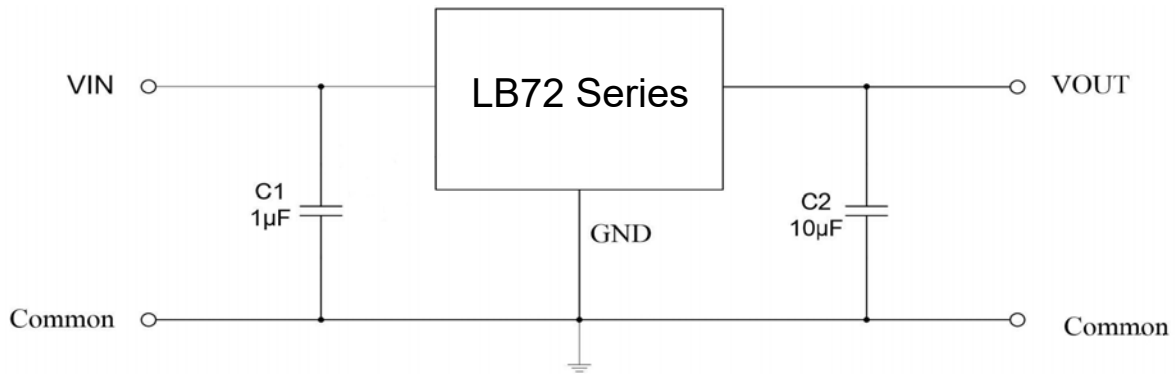
Output Voltage	Package	Marking	Output Voltage	Package	Marking
3V	SOT-23	7230	3V	SOT-89	7230
3.3V	SOT-23	7233	3.3V	SOT-89	7233
5V	SOT-23	7250	5V	SOT-89	7250
3V	SOT-23-3	7230C	3V	SOT-23-5	7230E
3.3V	SOT-23-3	7233C	3.3V	SOT-23-5	7233E
5V	SOT-23-3	7250C	5V	SOT-23-5	7250E

Ordering Information

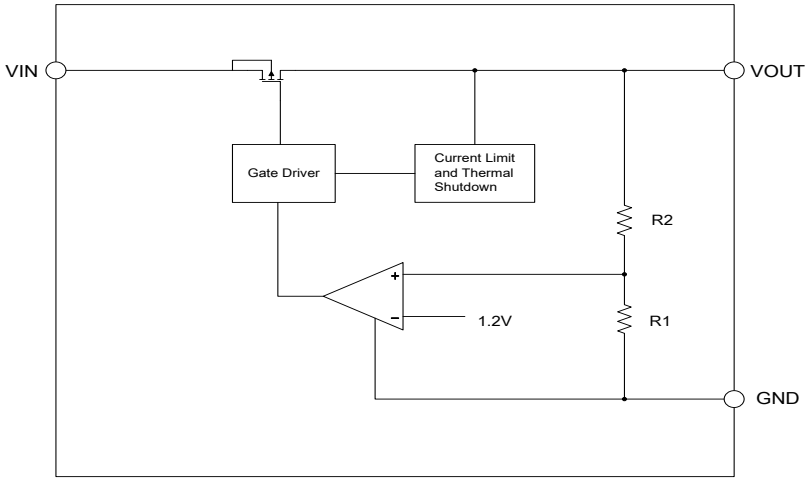
LB72- □□□□□

- Package Type
  SA:SOT-23
  SC:SOT-23-3
  SQ:SOT-89
  SE:SOT-23-5
- Output Voltage
  30 : 3.0V 33 : 3.3V 50 : 5.0V
- Output current tap
  L : 150mA
- A:Revision NO.
- Series NO.

Typical Application Circuit



Function Block Diagram



Absolute Maximum Ratings Note1

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter		Value	Unit
VIN to GND Voltage		30	V
VOUT to GND Voltage		15	V
Output Current		Internally limited	
Power Dissipation	SOT-23	260	mW
	SOT-23-3	330	mW
	SOT-23-5	330	mW
	SOT-89	550	mW
Thermal Resistance,Junction-to-Ambient	SOT-23	380	℃/W
	SOT-23-3	300	℃/W
	SOT-23-5	300	℃/W
	SOT-89	180	℃/W
Operating Ambient Temperature		-20~70	℃
Welding temperature		260	℃
Storage temperature range		-50~125	℃
ESD(HBM)		4	KV
ESD(MM)		100	V

Note 1. Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions may affect device reliability.

Electrical Characteristics

(C_{IN}=1μF, C_{OUT}=10μF, T_A=25℃ , unless otherwise noted.)

Parameter	Symbol	Conditions		MIN.	TYP.	MAX.	Unit
Input Voltage	V_{IN}			3		24	V
Output Voltage Accuracy	ΔV_{OUT}	V_{IN}=12V, I_{OUT}=10mA		-2		+2	%
Quiescent Current	I_Q	V_{IN}=12V, I_{OUT}=0mA				3	μA
Maximum Output Current	I_{OUT_Max}				150		mA
Dropout Voltage Note1	V_{DROP}	V_{OUT}= 3V	I_{OUT}=150mA		700	900	mV
			I_{OUT}=100mA		500	600	
		V_{OUT}= 3.3V	I_{OUT}=150mA		800	990	mV
			I_{OUT}=100mA		500	700	
		V_{OUT}= 5V	I_{OUT}=150mA		800	990	mV
			I_{OUT}=100mA		500	700	
Line Regulation	ΔV_{LINE}	V_{OUTNOM}+2V≤V_{IN}≤24V I_{OUT}=10mA			0.15		%/V
Load Regulation	ΔV_{LOAD}	V_{IN}=10V, 1mA<I_{OUT}<150mA			45	80	mV
Short Current	I_{SHORT}				100		mA

Note 1. The dropout voltage is defined as V_{IN} – V_{OUT}, when V_{OUT} is 98% of the normal value of V_{OUT}.

Functional Description

Input Capacitor

A 1μF ceramic capacitor is recommended to connect between VIN and GND pins to decouple input power supply glitch and noise. The amount of the capacitance may be increased without limit. This input capacitor must be located as close as possible to the device to assure input stability and less noise. For PCB layout, a wide copper trace is required for both VIN and GND.

Output Capacitor

An output capacitor is required for the stability of the LDO. The recommended minimum output capacitance is 1μF, ceramic capacitor is recommended, and temperature characteristics are X7R or X5R. Higher capacitance values help to improve load/line transient response. The output capacitance may be increased to keep low undershoot/overshoot. Place output capacitor as close as possible to VOUT and GND pins.

Current Limit and Short Circuit Protection

When output current at VOUT pin is higher than current limit threshold or the VOUT pin is direct short to GND, the current limit protection will be triggered and clamp the output current at a pre-designed level to prevent over-current and thermal damage.

Thermal Considerations

For continuous operation, do not exceed absolute maximum junction temperature. The maximum power dissipation depends on the thermal resistance of the IC package, PCB layout, rate of surrounding airflow, and difference between junction and ambient temperature. The maximum power dissipation can be calculated by the following formula :

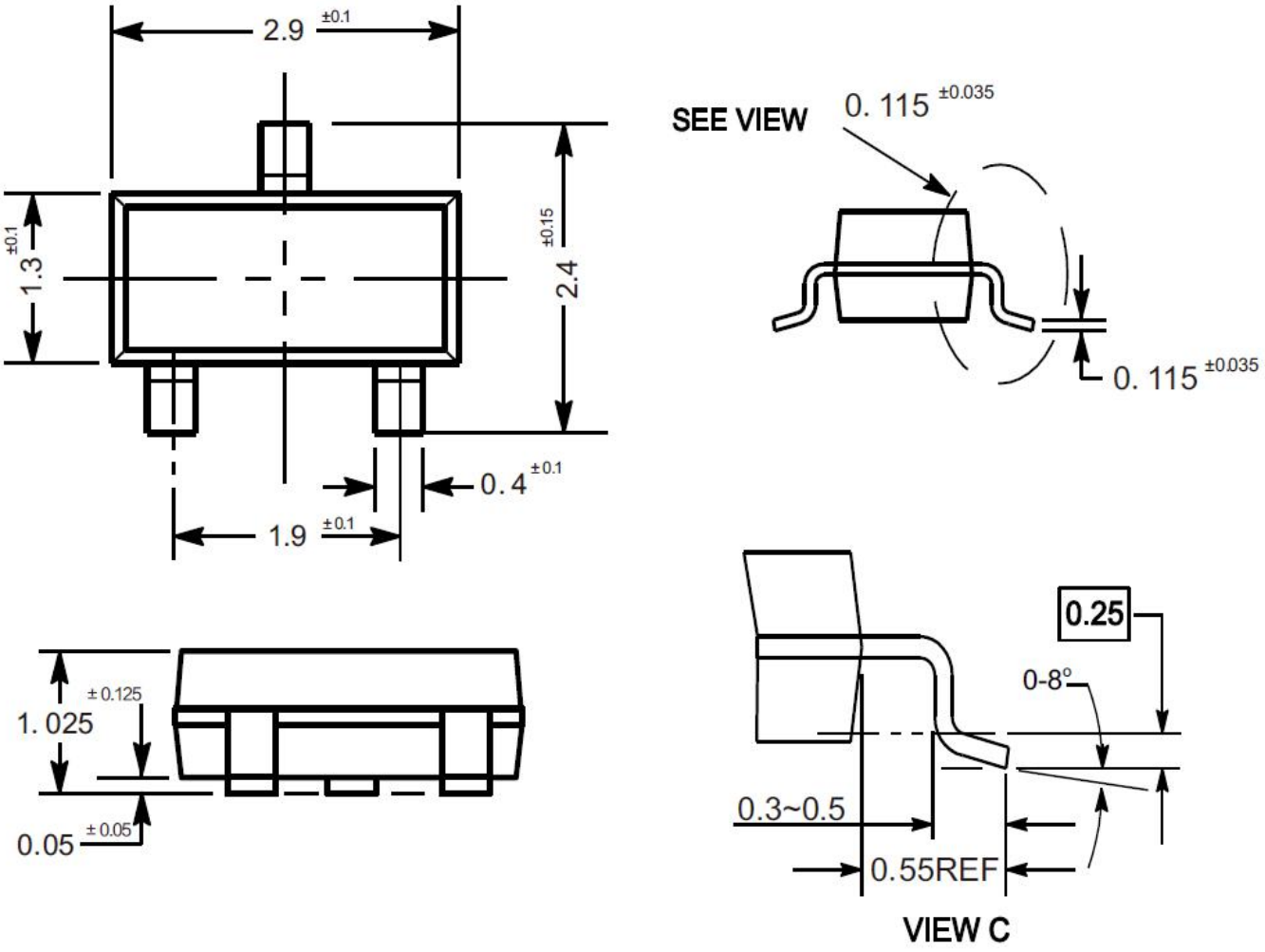
$PD(MAX) = (TJ(MAX) - TA) / R\theta JA$

Where TJ(MAX) is the maximum operation junction temperature 125°C, TA is the ambient temperature and the RθJA is the junction to ambient thermal resistance.

The power dissipation definition in device is:

$PD = (VIN - VOUT) \times IOUT + VIN \times IQ$

Package Outline
SOT-23
Dimensions in mm

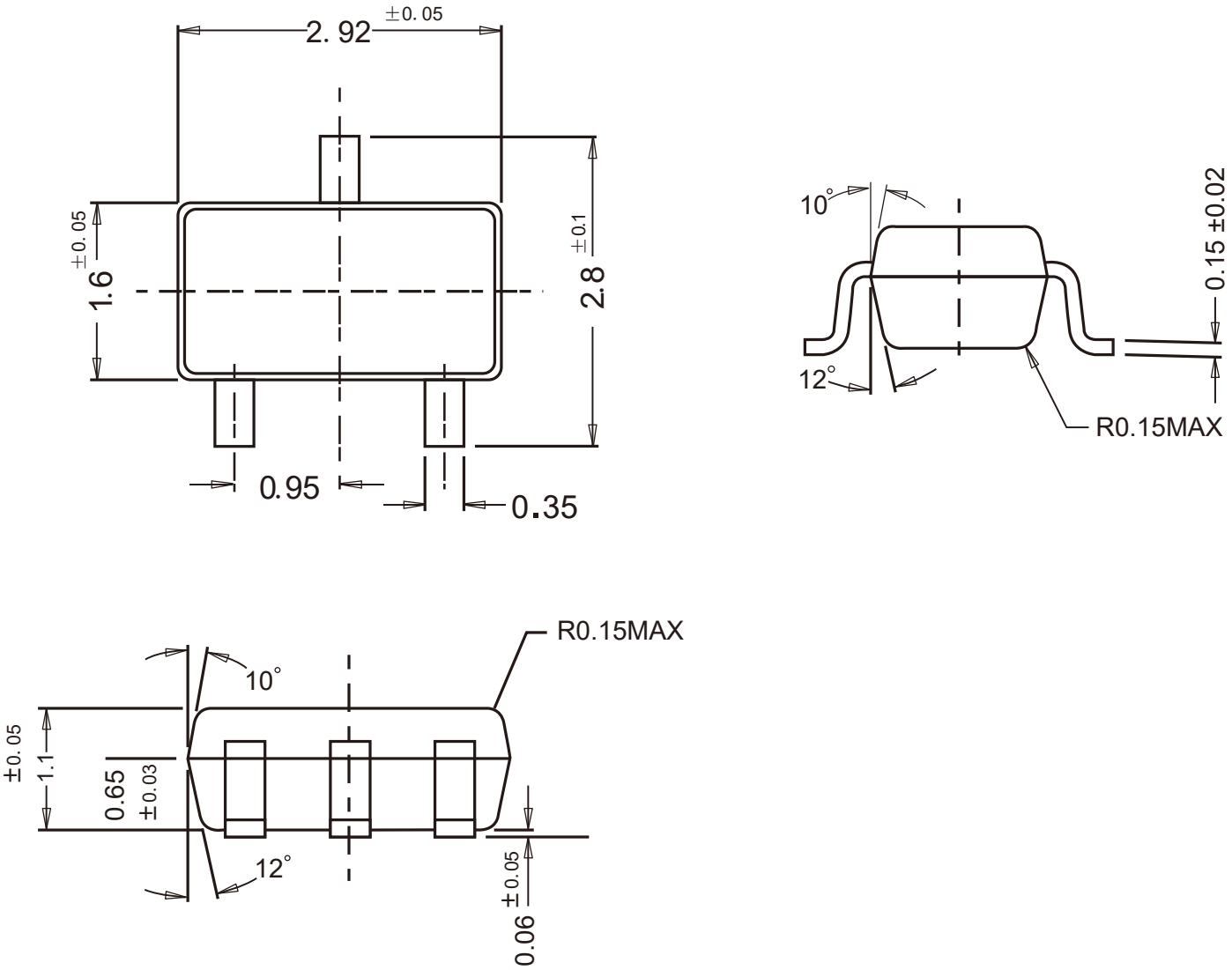


Ordering Information

Device	Package	Shipping
LB72 Series	SOT-23	3,000/ Tape & Reel (7 inches)

Package Outline

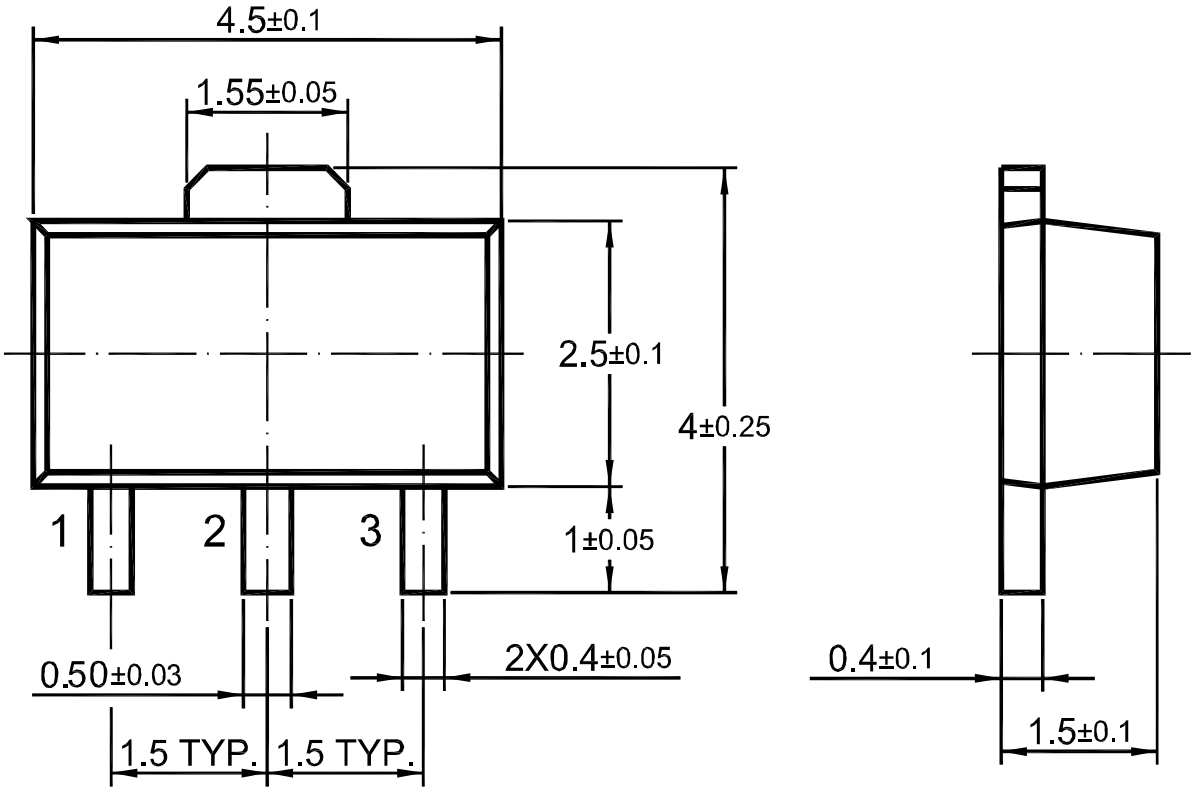
SOT-23-3
Dimensions in mm



Ordering Information

Device	Package	Shipping
LB72 Series	SOT-23-3	3,000/ Tape & Reel (7 inches)

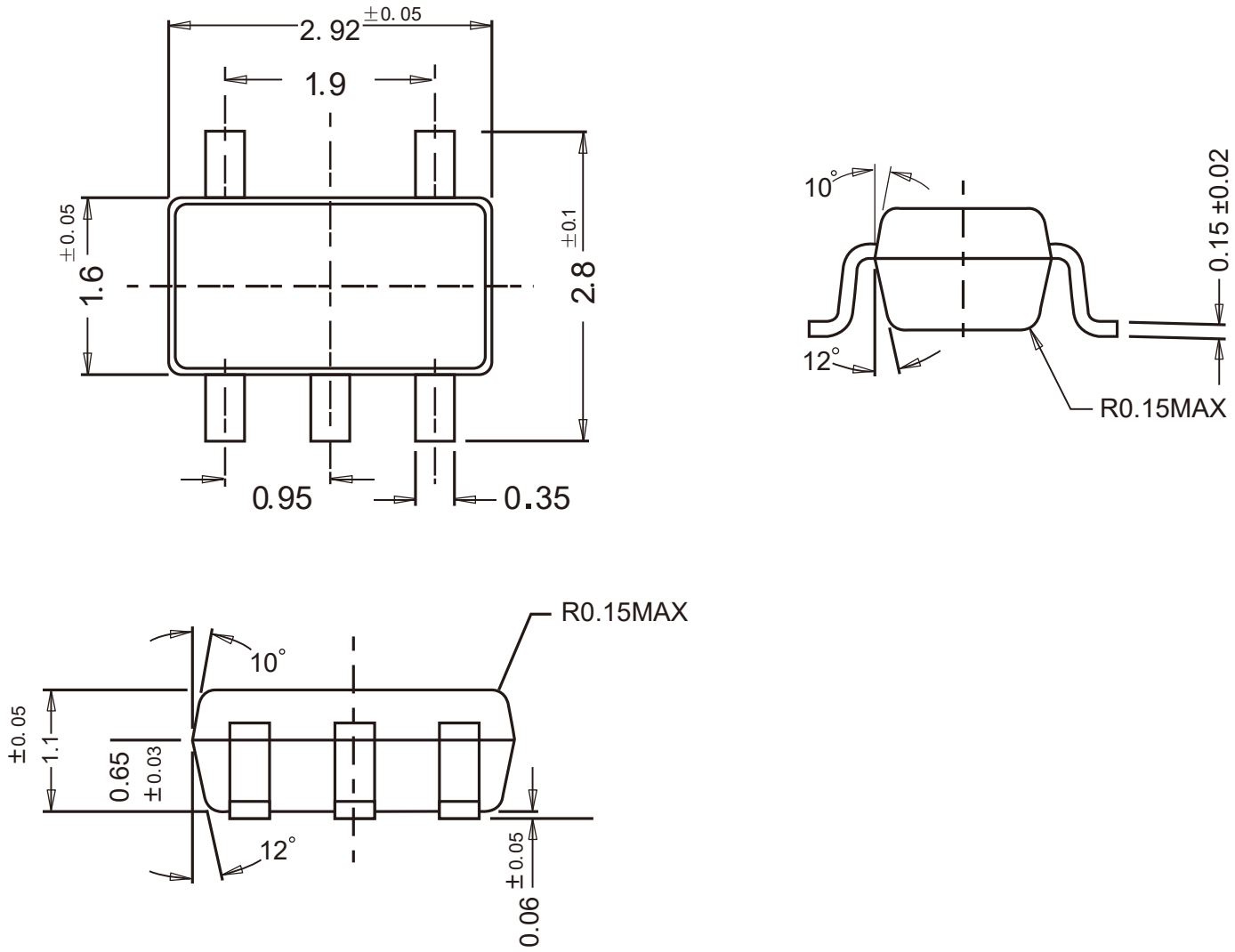
Package Outline
SOT-89
Dimensions in mm



Ordering Information

Device	Package	Shipping
LB72 Series	SOT-89	1,000/ Tape & Reel (7 inches)

Package Outline
SOT-23-5
Dimensions in mm



Ordering Information

Device	Package	Shipping
LB72 Series	SOT-23-5	3,000/ Tape & Reel (7 inches)