

### Features

- Quiescent Current: 6 $\mu$ A
- Input Voltage Range: Max.8V
- Output Current: 300mA
- Low Dropout Voltage: 290mV@100mA (VOUT=3.3V)
- Output Voltage: 1.2~5.0V
- Output Voltage Accuracy:  $\pm 2\%$  (Typ.)
- Low Power Consumption

### Applications

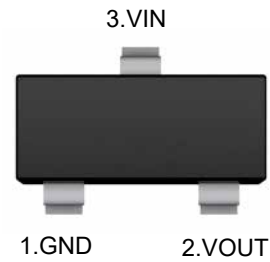
- Mobile Phones
- Battery powered equipment
- Portable game consoles
- Reference voltage sources

### General Description

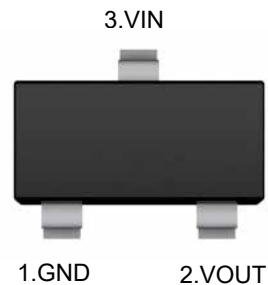
The TN6206A Series are highly precise, low power consumption, 3 terminal, positive voltage regulators manufactured using CMOS technologies

The TN6206A Series consists of a current limiter circuit, a driver transistor, a precision reference voltage and an error correction circuit. The series is compatible with low ESR ceramic capacitors. The current limiter's foldback circuit operates as a short circuit protection as well as the output current limiter for the output pin.

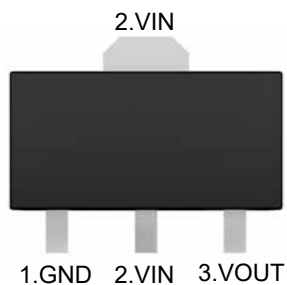
**SOT-23**



**SOT-23-3**



**SOT-89**



### Ordering Information

TN6206A-□□□□

Package Type

SA : SOT-23

SC : SOT-23-3

SQ : SOT-89

Output Voltage

12 : 1.2V 15 : 1.5V 18 : 1.8V

25 : 2.5V 28 : 2.8V 30 : 3.0V

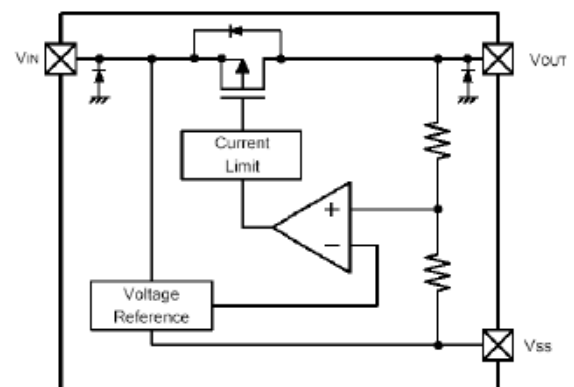
33 : 3.3V 50 : 5.0V

Output current tap

L : 300mA

Version Number

### Block Diagram

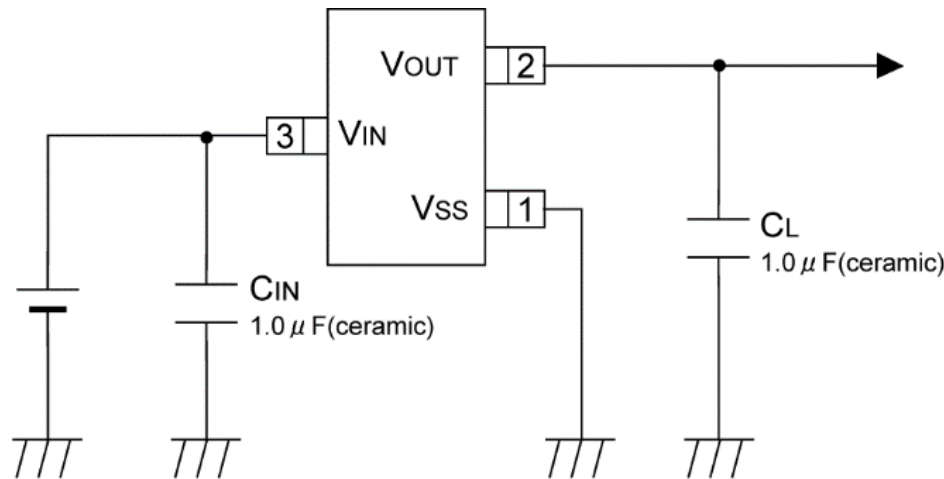


Absolute Maximum Ratings <sup>Note1</sup>

Ratings at 25°C ambient temperature unless otherwise specified.

| Parameter                   | Symbol    | Value                   | Unit |
|-----------------------------|-----------|-------------------------|------|
| Input Voltage               | $V_{IN}$  | -0.3 ~ +6               | V    |
| Output Voltage              | $V_{OUT}$ | -0.3 ~ ( $V_{IN}+0.3$ ) | V    |
| Output Current              | $I_{OUT}$ | 300                     | mA   |
| Power Dissipation           | SOT-23    | 200                     | mW   |
|                             | SOT-23-3  | 250                     | mW   |
|                             | SOT-89    | 500                     | mW   |
| Operating Temperature Range | $T_{opr}$ | 0 ~ 70                  | °C   |
| Storage Temperature Range   | $T_{stg}$ | -55 ~ 125               | °C   |

Typical Application Circuit

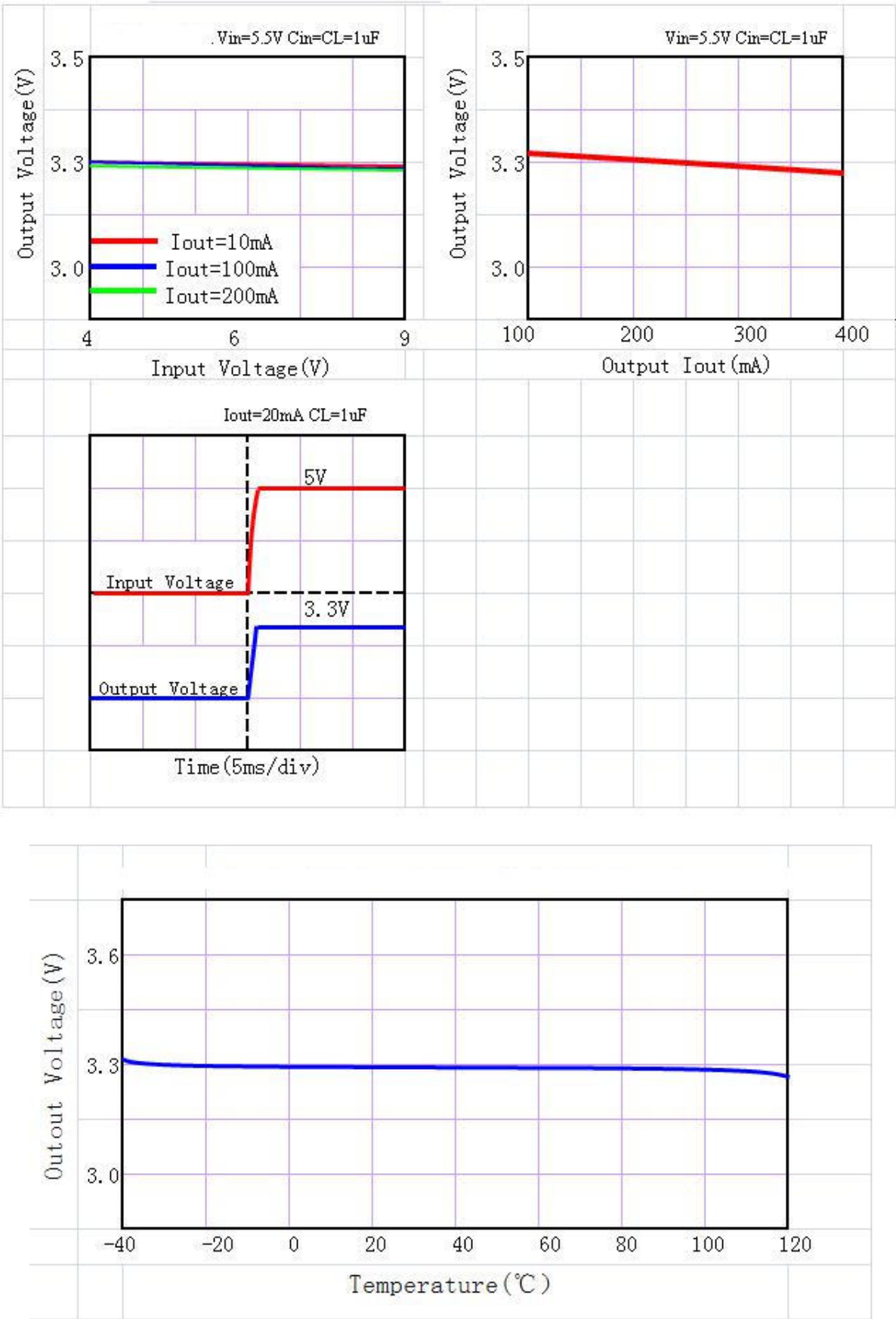


Electrical Characteristics

( $V_{IN}=V_{OUT}+1$ ,  $C_{IN}=C_{OUT}=1\mu F$ ,  $T_A=25^{\circ}C$  , unless otherwise noted.)

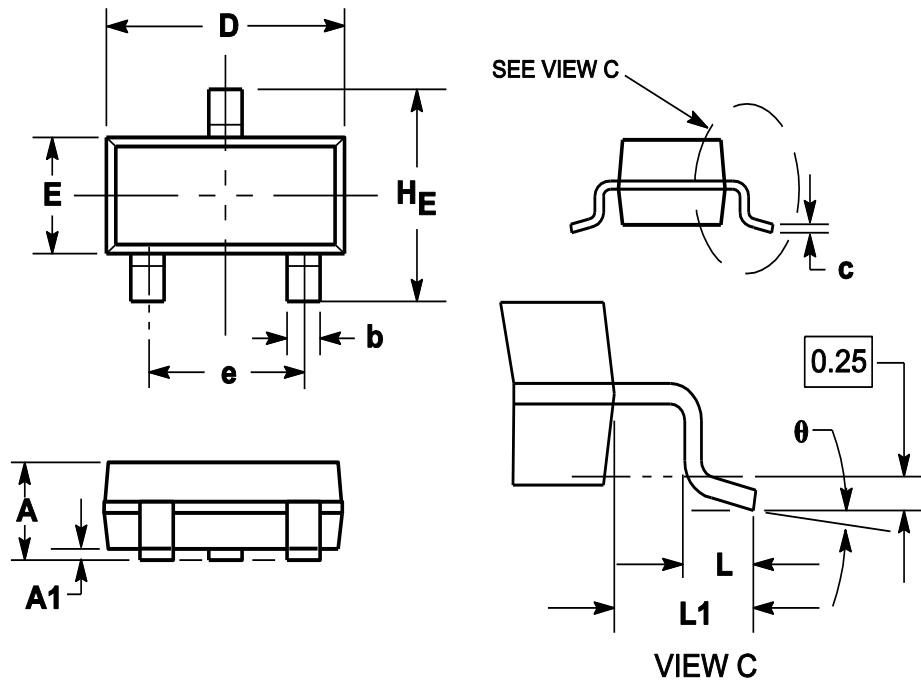
| Parameter                              |        | Symbol            | Conditions                                  | MIN. | TYP.      | MAX. | Unit             |
|----------------------------------------|--------|-------------------|---------------------------------------------|------|-----------|------|------------------|
| Input Voltage                          |        | $V_{IN}$          |                                             |      |           | 8    | V                |
| Output Voltage Accuracy                |        | $\Delta V_{OUT}$  | $I_{OUT}=30mA$                              | -2   |           | +2   | %                |
| Quiescent Current                      |        | $I_Q$             | $I_{OUT}=0mA$                               |      | 6         |      | $\mu A$          |
| Dropout Voltage                        |        | $V_{DROP}$        | $I_{OUT}=100mA, V_{OUT}\leq 1.5V$           |      |           | 570  | mV               |
|                                        |        |                   | $I_{OUT}=100mA, 1.8V\leq V_{OUT}\leq 1.5V$  |      |           | 420  |                  |
|                                        |        |                   | $I_{OUT}=100mA, 2.8V\leq V_{OUT}\leq 5V$    |      |           | 350  |                  |
| Line Regulation                        |        | $\Delta V_{LINE}$ | $V_{IN}=V_{OUT}+1$ to 8V<br>$I_{OUT}=40mA$  |      |           | 0.2  | %/V              |
| Load Regulation                        |        | $\Delta V_{LOAD}$ | $1mA<I_{OUT}<80mA$                          |      | 12        | 30   | mV               |
| Output Voltage Temperature Coefficient |        | $TC_{VOUT}$       | $I_{OUT}=30mA$ ,<br>$T_A=0\sim 70^{\circ}C$ |      | $\pm 100$ |      | ppm/ $^{\circ}C$ |
| PSRR                                   | f=1KHz | PSRR              | $I_{OUT}=100mA$                             |      | -70       |      | dB               |
| Output Noise                           |        | $E_{NO}$          | BW=10Hz~100KHz                              |      | 160       |      | $\mu V_{RMS}$    |

Typical Characteristics Curves

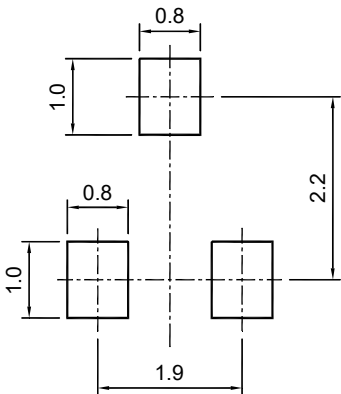


Package Outline

SOT-23



| Symbol   | Dimensions in millimeter |       |       |
|----------|--------------------------|-------|-------|
|          | Min.                     | Typ.  | Max.  |
| A        | 0.900                    | 1.025 | 1.150 |
| A1       | 0.000                    | 0.050 | 0.100 |
| b        | 0.300                    | 0.400 | 0.500 |
| c        | 0.080                    | 0.115 | 0.150 |
| D        | 2.800                    | 2.900 | 3.000 |
| E        | 1.200                    | 1.300 | 1.400 |
| HE       | 2.250                    | 2.400 | 2.550 |
| e        | 1.800                    | 1.900 | 2.000 |
| L1       | 0.550REF                 |       |       |
| L        | 0.300                    |       | 0.500 |
| $\theta$ | 0°                       |       | 8°    |



SOT-23

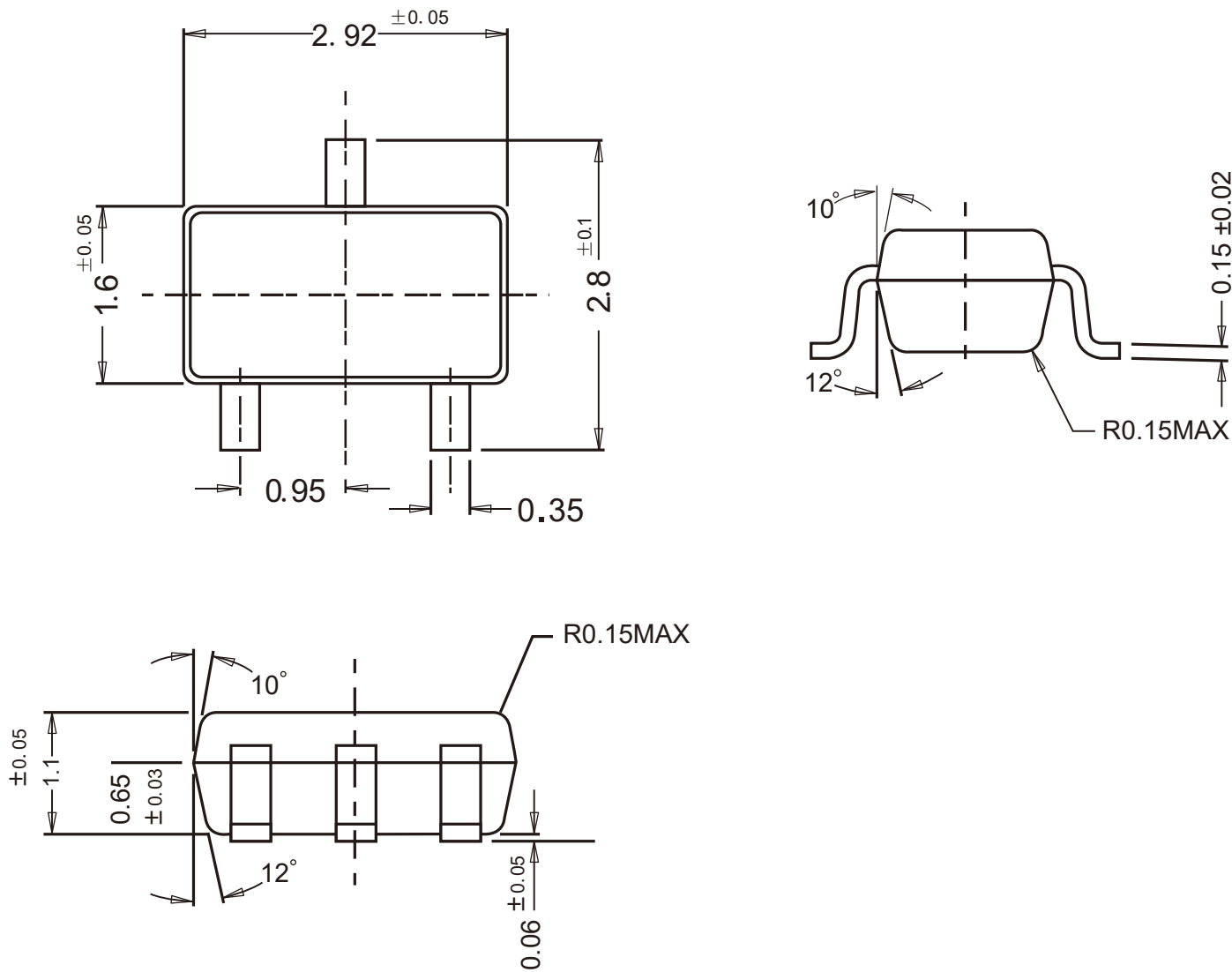
Recommended soldering pad

Ordering Information

| Device         | Package | Shipping              |
|----------------|---------|-----------------------|
| TN6206A Series | SOT-23  | 3000/Reel&Tape(7inch) |

Package Outline

SOT-23-3  
Dimensions in mm

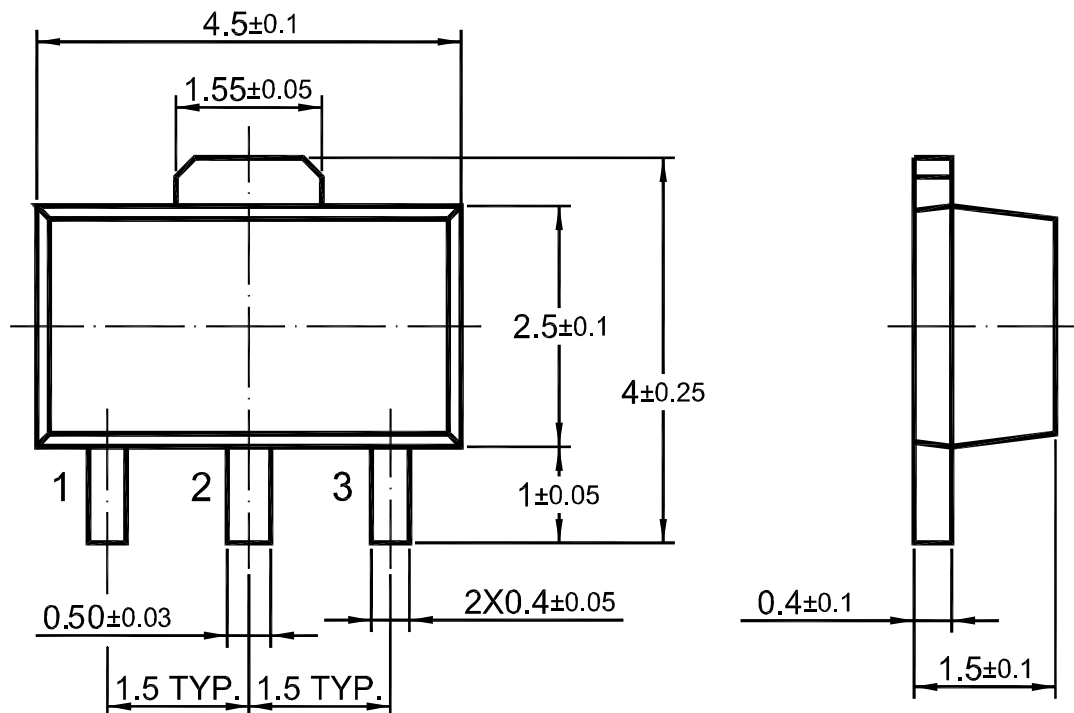


Ordering Information

| Device         | Package  | Shipping              |
|----------------|----------|-----------------------|
| TN6206A Series | SOT-23-3 | 3000/Reel&Tape(7inch) |

## Package Outline SOT-89

Dimensions in mm



## Ordering Information

| Device         | Package | Shipping                 |
|----------------|---------|--------------------------|
| TN6206A Series | SOT-89  | 1000PCS/Reel&Tape(7inch) |

## Contact Information

TANI website: <http://www.tanisemi.com> Email: [tani@tanisemi.com](mailto:tani@tanisemi.com)

For additional information, please contact your local Sales Representative.



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## Product Specification Statement

The product specification aims to provide users with a reference regarding various product parameters, performance, and usage. It presents certain aspects of the product's performance in graphical form and is intended solely for users to select product and make product comparisons, enabling users to better understand and evaluate the characteristics and advantages of the product. It does not constitute any commitment, warranty, or guarantee.

The product parameters described in the product specification are numerical values, characteristics, and functions obtained through actual testing or theoretical calculations of the product in an independent or ideal state. Due to the complexity of product applications and variations in test conditions and equipment, there may be slight fluctuations in parameter test values. TANI shall not guarantee that the actual performance of the product when installed in the customer's system or equipment will be entirely consistent with the product specification, especially concerning dynamic parameters. It is recommended that users consult with professionals for product selection and system design. Users should also thoroughly validate and assess whether the actual parameters and performance when installed in their respective systems or equipment meet their requirements or expectations. Additionally, users should exercise caution in verifying product compatibility issues, and TANI assumes no responsibility for the application of the product. TANI strives to provide accurate and up-to-date information to the best of our ability. However, due to technical, human, or other reasons, TANI cannot guarantee that the information provided in the product specification is entirely accurate and error-free. TANI shall not be held responsible for any losses or damages resulting from the use or reliance on any information in these product specifications.

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The design of the product is intended to meet civilian needs and is not guaranteed for use in harsh environments or precision equipment. It is not recommended for use in systems or equipment such as medical devices, aircraft, nuclear power, and similar systems, where failures in these systems or equipment could reasonably be expected to result in personal injury. TANI shall assume no responsibility for any consequences resulting from such usage.

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