



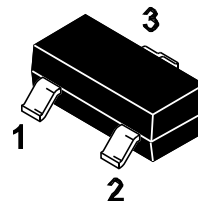
# PJM3407PSA

## P-Channel Enhancement Mode Power MOSFET

### Features

- Low gate charge
- High density cell design for ultra low  $R_{DS(on)}$
- $V_{DS} = -30V, I_D = -4.1A$   
 $R_{DS(on)} < 60m\Omega @ V_{GS} = -10V$

### SOT-23



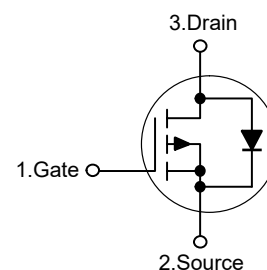
1. Gate 2. Source 3. Drain

Marking Code: R7

### Applications

- PWM applications
- Load switch
- Power management

### Schematic Diagram



### Absolute Maximum Ratings

Ratings at 25°C ambient temperature unless otherwise specified.

| Parameter                             | Symbol    | Value       | Unit |
|---------------------------------------|-----------|-------------|------|
| Drain-Source Voltage                  | $-V_{DS}$ | 30          | V    |
| Gate-Source Voltage                   | $V_{GS}$  | $\pm 20$    | V    |
| Drain Current-Continuous              | $-I_D$    | 4.1         | A    |
| Drain Current-Pulsed <sup>Note1</sup> | $-I_{DM}$ | 20          | A    |
| Maximum Power Dissipation             | $P_D$     | 1.2         | W    |
| Junction Temperature                  | $T_J$     | 150         | °C   |
| Storage Temperature Range             | $T_{STG}$ | -55 to +150 | °C   |

### Thermal Characteristics

|                                                          |                 |     |      |
|----------------------------------------------------------|-----------------|-----|------|
| Thermal Resistance, Junction-to-Ambient <sup>Note2</sup> | $R_{\theta JA}$ | 104 | °C/W |
|----------------------------------------------------------|-----------------|-----|------|



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### Electrical Characteristics

(Ta=25°C unless otherwise specified)

| Parameter                                   | Symbol         | Test Condition                                                 | Min. | Typ. | Max.      | Unit       |
|---------------------------------------------|----------------|----------------------------------------------------------------|------|------|-----------|------------|
| Static Characteristics                      |                |                                                                |      |      |           |            |
| Drain-Source Breakdown Voltage              | $-V_{(BR)DSS}$ | $V_{GS}=0V, I_D=-250\mu A$                                     | 30   | --   | --        | V          |
| Zero Gate Voltage Drain Current             | $-I_{DSS}$     | $V_{DS}=-24V, V_{GS}=0V$                                       | --   | --   | 1         | $\mu A$    |
| Gate-Body Leakage Current                   | $I_{GSS}$      | $V_{GS}=\pm 20V, V_{DS}=0V$                                    | --   | --   | $\pm 100$ | nA         |
| Gate Threshold Voltage <sup>Note3</sup>     | $-V_{GS(th)}$  | $V_{DS}=V_{GS}, I_D=-250\mu A$                                 | 1    | 1.4  | 3         | V          |
| Drain-source on-resistance <sup>Note3</sup> | $R_{DS(on)}$   | $V_{GS}=-10V, I_D=-4.1A$                                       | --   | 48   | 60        | m $\Omega$ |
|                                             |                | $V_{GS}=-4.5V, I_D=-3A$                                        | --   | 60   | 87        | m $\Omega$ |
| Forward Transconductance <sup>Note3</sup>   | $g_{FS}$       | $V_{DS}=-5V, I_D=-4A$                                          | 5.5  | --   | --        | S          |
| Dynamic Characteristics                     |                |                                                                |      |      |           |            |
| Input Capacitance                           | $C_{iss}$      | $V_{DS}=-15V, V_{GS}=0V, f=1MHz$                               | --   | 650  | --        | pF         |
| Output Capacitance                          | $C_{oss}$      |                                                                | --   | 105  | --        | pF         |
| Reverse Transfer Capacitance                | $C_{rss}$      |                                                                | --   | 65   | --        | pF         |
| Switching Characteristics                   |                |                                                                |      |      |           |            |
| Turn-on Delay Time                          | $t_{d(on)}$    | $V_{DD}=-15V, R_L=3.6\Omega$<br>$V_{GS}=-10V, R_{CEN}=3\Omega$ | --   | 8.5  | --        | nS         |
| Turn-on Rise Time                           | $t_r$          |                                                                | --   | 4.5  | --        | nS         |
| Turn-off Delay Time                         | $t_{d(off)}$   |                                                                | --   | 26   | --        | nS         |
| Turn-off Fall Time                          | $t_f$          |                                                                | --   | 12.5 | --        | nS         |
| Total Gate Charge                           | $Q_g$          | $V_{DS}=-15V$<br>$I_D=-4.1A, V_{GS}=-10V$                      | --   | 12.5 | --        | nC         |
| Gate-Source Charge                          | $Q_{gs}$       |                                                                | --   | 2.8  | --        | nC         |
| Gate-Drain Charge                           | $Q_{gd}$       |                                                                | --   | 2.7  | --        | nC         |
| Source-Drain Diode Characteristics          |                |                                                                |      |      |           |            |
| Diode Forward Voltage <sup>Note3</sup>      | $-V_{SD}$      | $V_{GS}=0V, I_S=-4.1A$                                         | --   | --   | 1.2       | V          |
| Diode Forward Current <sup>Note2</sup>      | $-I_S$         |                                                                | --   | --   | 4.1       | A          |

Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. Surface Mounted on FR4 Board,  $t \leq 10$  sec.

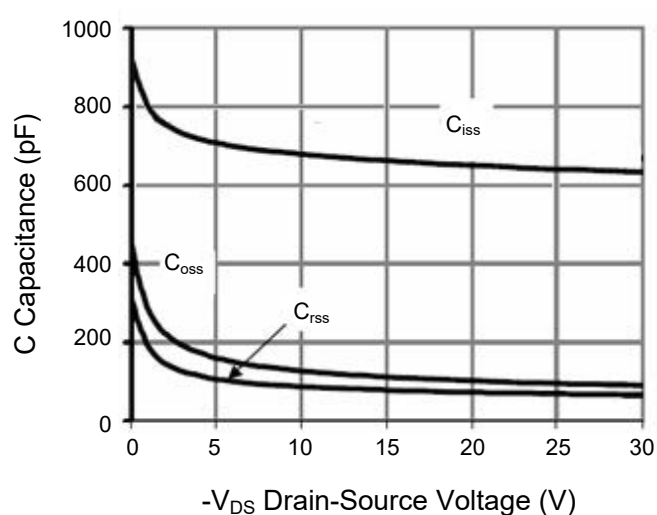
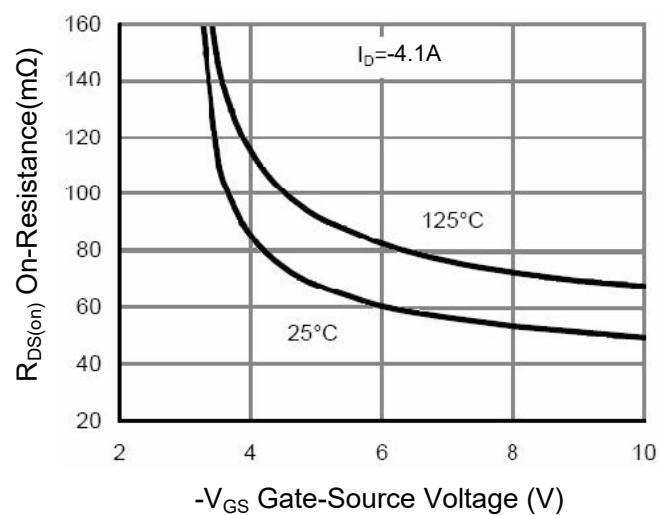
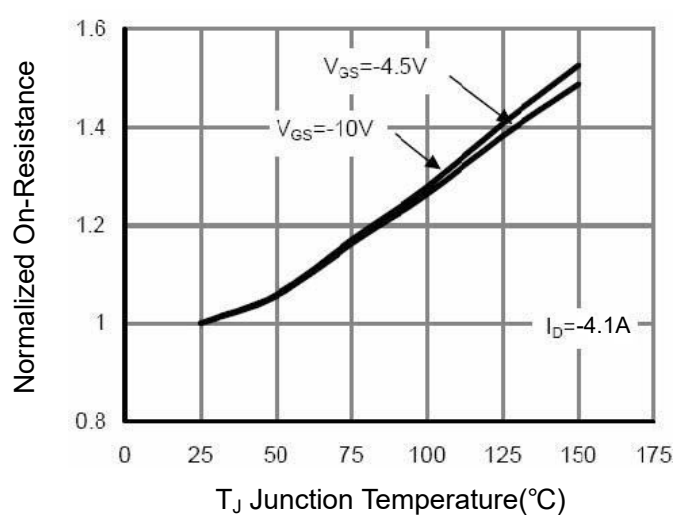
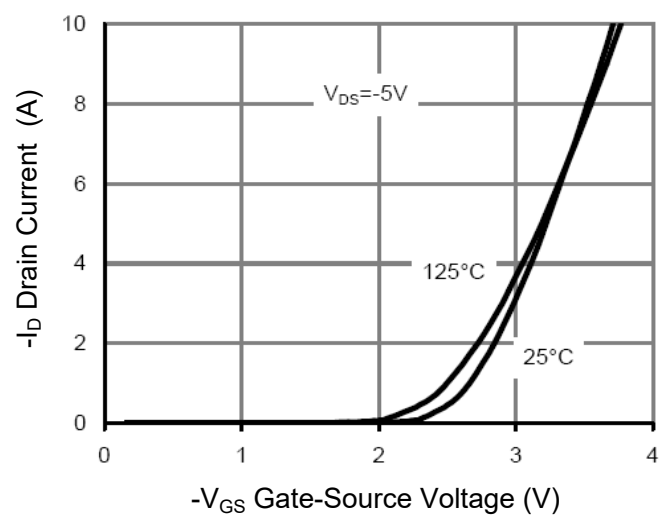
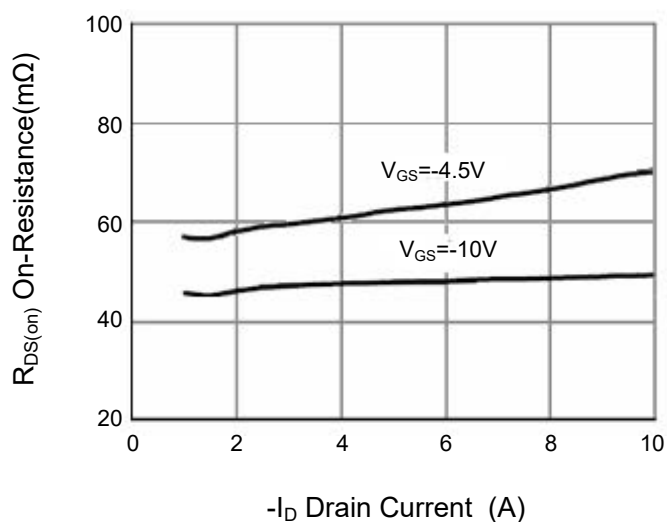
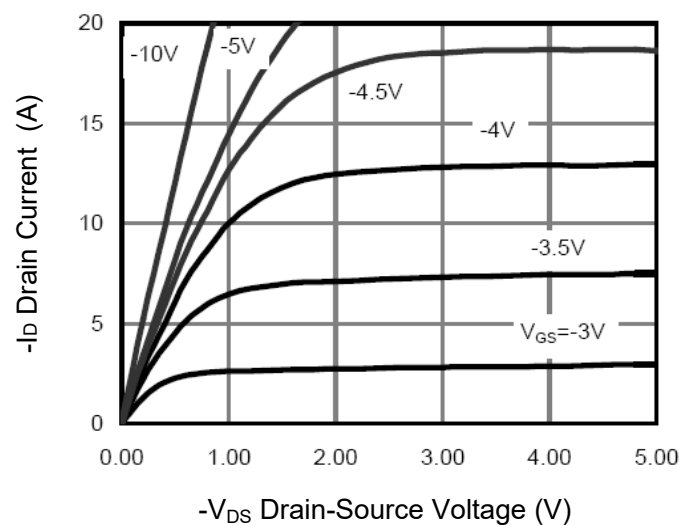
3. Pulse Test: Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .



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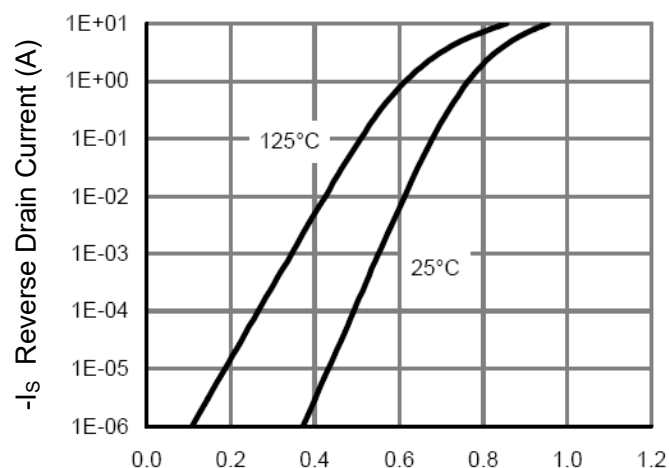
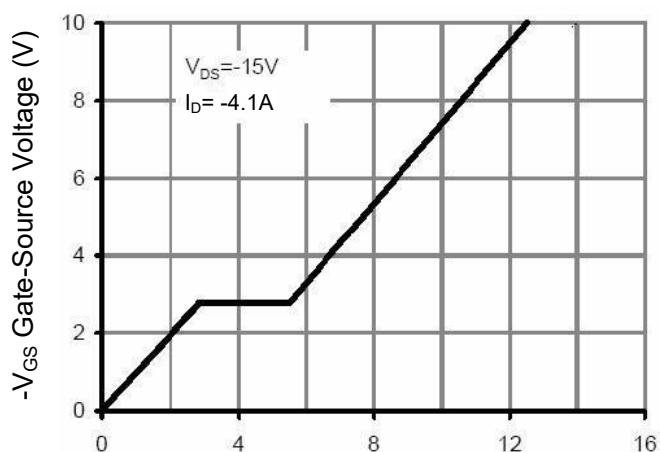
### Typical Characteristic Curves





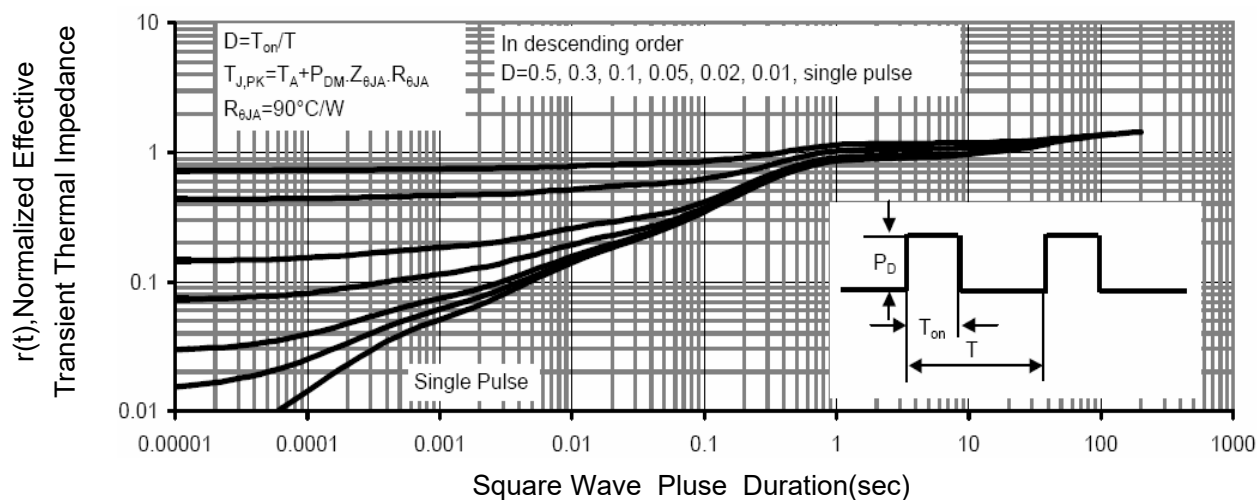
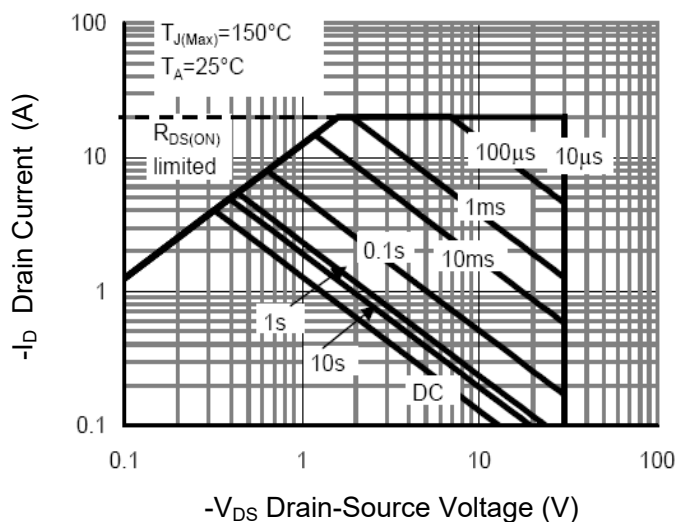
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Q<sub>g</sub> Gate Charge (nC)

$-V_{DS}$  Drain-Source Voltage (V)





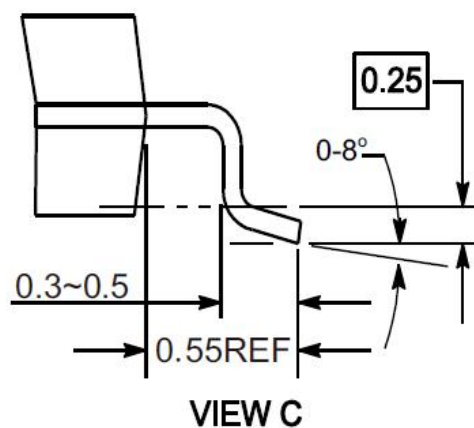
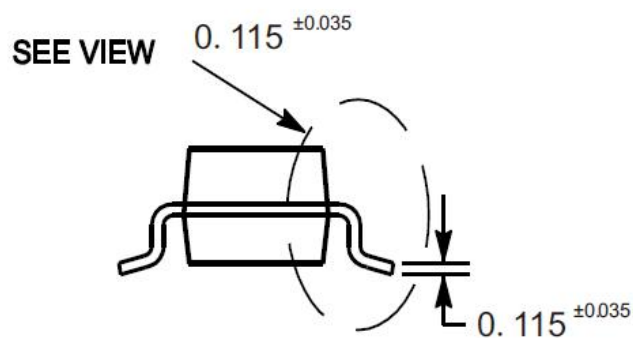
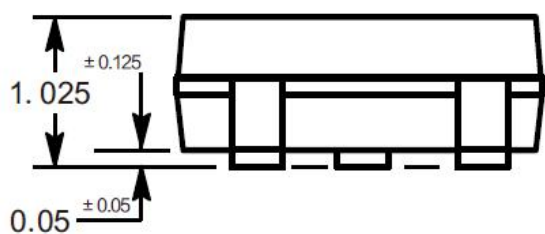
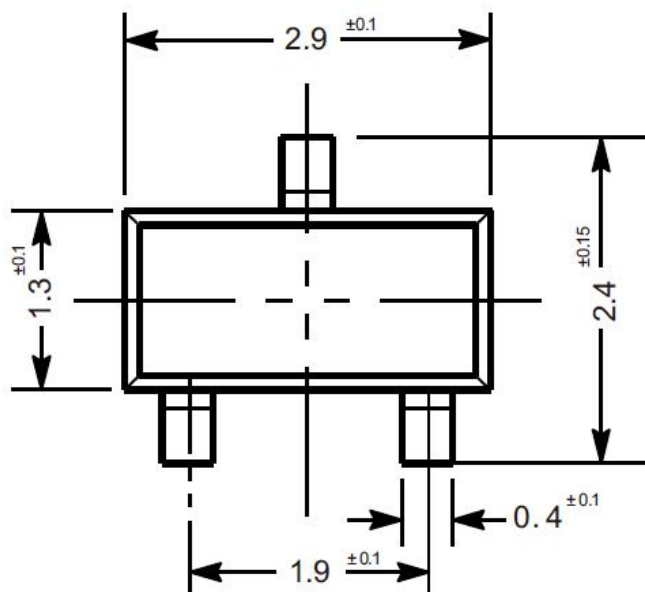
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## P-Channel Enhancement Mode Power MOSFET

### Package Outline

SOT-23

Dimensions in mm



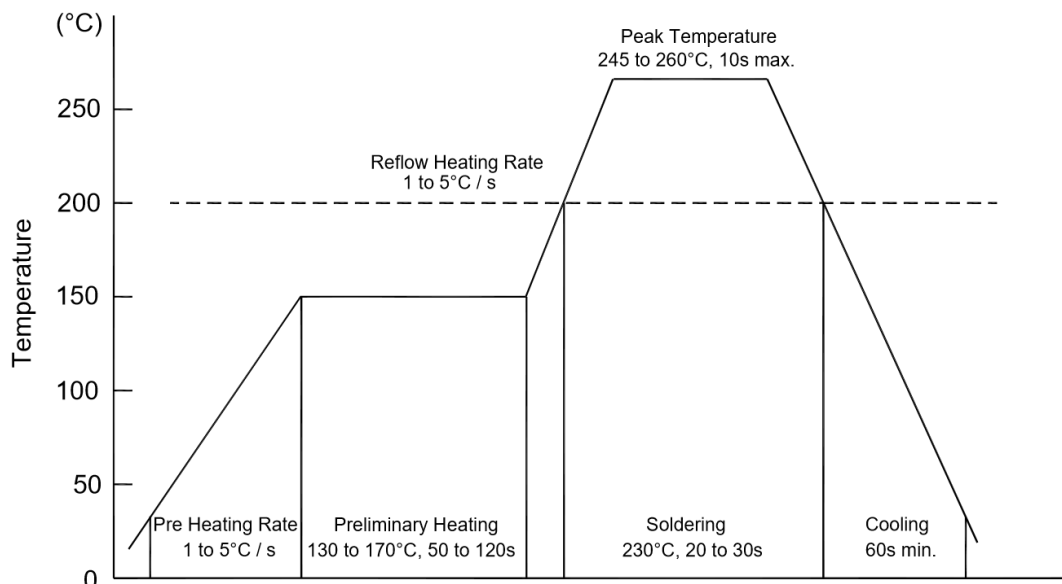
### Ordering Information

| Device     | Package | Shipping              |
|------------|---------|-----------------------|
| PJM3407PSA | SOT-23  | 3,000PCS/Reel&7inches |



### Conditions of Soldering and Storage

#### ◆ Recommended condition of reflow soldering



Recommended peak temperature is over 245 °C. If peak temperature is below 245 °C, you may adjust the following parameters:

- Time length of peak temperature (longer)
- Time length of soldering (longer)
- Thickness of solder paste (thicker)

#### ◆ Conditions of hand soldering

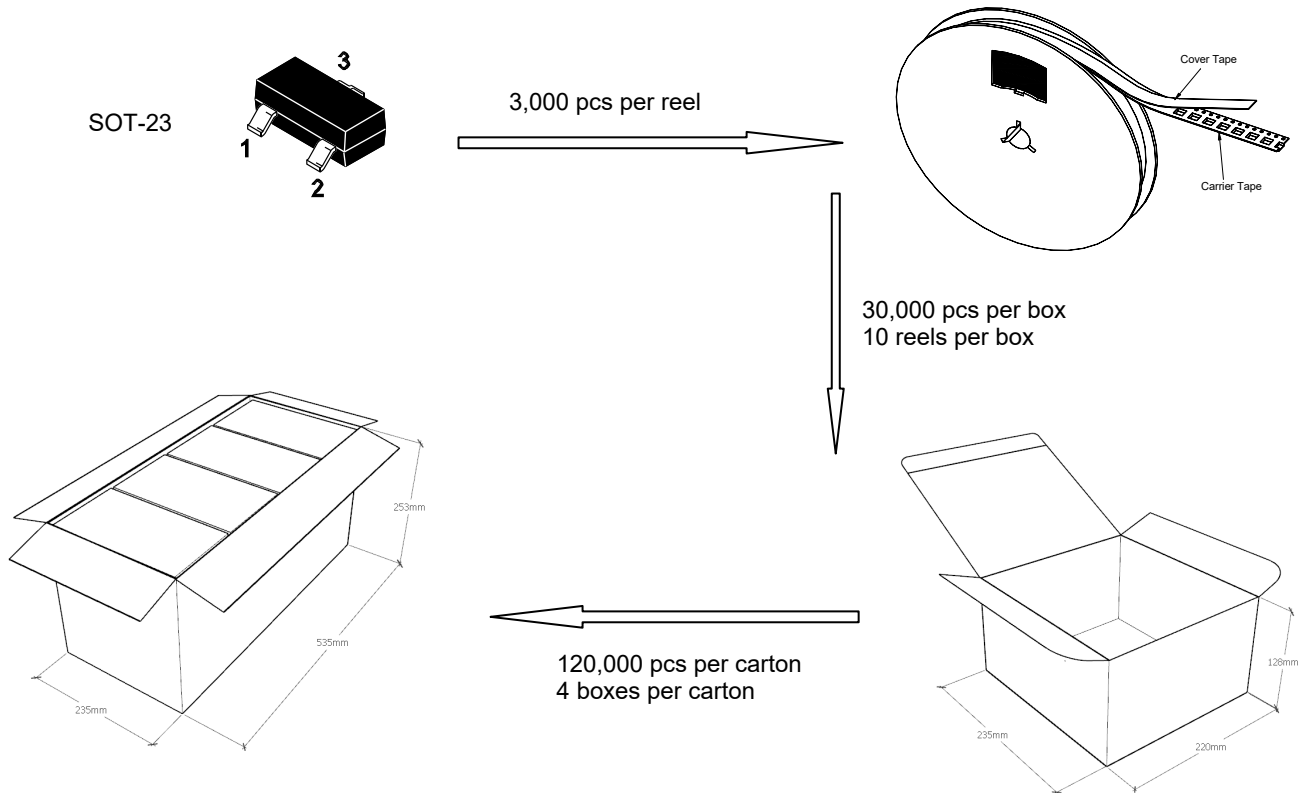
- Temperature: 370 °C
- Time: 3s max.
- Times: one time

#### ◆ Storage conditions

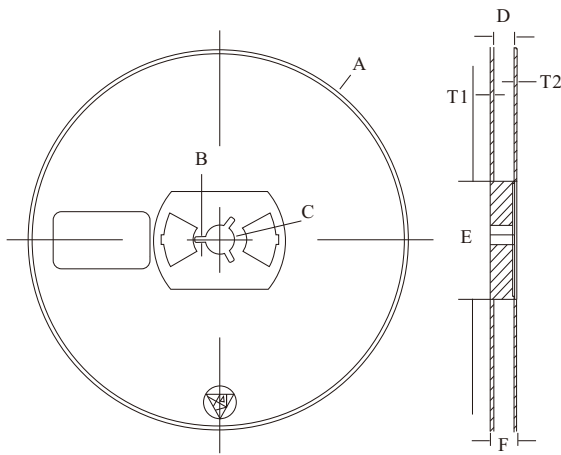
- **Temperature**  
5 to 40 °C
- **Humidity**  
30 to 80% RH
- **Recommended period**  
One year after manufacturing

### Package Specifications

- The method of packaging



### ◆ Embossed tape and reel data



Reel (7")

| Symbol | Value (unit: mm)           |
|--------|----------------------------|
| A      | $\varnothing 177.8 \pm 1$  |
| B      | $2.7 \pm 0.2$              |
| C      | $\varnothing 13.5 \pm 0.2$ |
| E      | $\varnothing 54.5 \pm 0.2$ |
| F      | $12.3 \pm 0.3$             |
| D      | $9.6 \pm 2 / -0.3$         |
| T1     | $1.0 \pm 0.2$              |
| T2     | $1.2 \pm 0.2$              |

