



# PJM05P40SA

## P-Channel Enhancement Mode Power MOSFET

### Product Summary

- $V_{DS} = -40V, I_D = -5A$
- $R_{DS(on)} < 88m\Omega @ V_{GS} = -10V$
- $R_{DS(on)} < 117m\Omega @ V_{GS} = -4.5V$

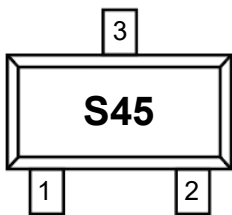
### Features

- Advanced Trench Technology
- RoHS and Reach Compliant
- Halogen and Antimony Free
- Moisture Sensitivity Level 1

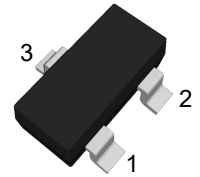
### Application

- Load Switch
- PWM Application
- Power Management

### Marking Code



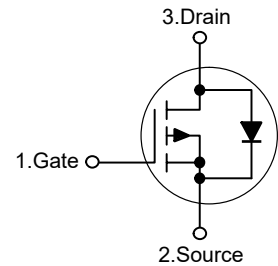
### SOT-23



(Top View)

Pin	Description
1	Gate
2	Source
3	Drain

### Schematic Diagram



### Absolute Maximum Ratings

( $T_a = 25^\circ C$  unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$-V_{DS}$	40	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous	$-I_D$	5	A
Drain Current-Pulsed <sup>Note1</sup>	$-I_{DM}$	20	A
Maximum Power Dissipation	$P_D$	1.2	W
Junction Temperature	$T_J$	150	$^\circ C$
Storage Temperature Range	$T_{STG}$	-55 to +150	$^\circ C$

### Thermal Characteristics

Thermal Resistance, Junction-to-Ambient <sup>Note2</sup>	$R_{\theta JA}$	104	$^\circ C/W$
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### Electrical Characteristics

(T<sub>J</sub>=25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	-V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA	40	--	--	V
Zero Gate Voltage Drain Current	-I <sub>DSS</sub>	V <sub>DS</sub> =-40V, V <sub>GS</sub> =0V	--	--	1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	--	--	±100	nA
Gate Threshold Voltage <sup>Note3</sup>	-V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	1	1.6	2.5	V
Drain-Source On-Resistance <sup>Note3</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-3A	--	68	88	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-2A	--	85	117	mΩ
Forward Transconductance <sup>Note3</sup>	g <sub>FS</sub>	V <sub>DS</sub> =-5V, I <sub>D</sub> =-1A	--	4.5	--	S
<b>Dynamic Characteristics</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V, f=1MHz	--	515	--	pF
Output Capacitance	C <sub>oss</sub>		--	48	--	pF
Reverse Transfer Capacitance	C <sub>rss</sub>		--	40	--	pF
Gate Resistance	R <sub>G</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =0V, f=1MHz	--	10.8	--	Ω
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-20V, I <sub>D</sub> =-3A, V <sub>GS</sub> =-10V	--	10	--	nC
Gate-Source Charge	Q <sub>gs</sub>		--	2	--	nC
Gate-Drain Charge	Q <sub>gd</sub>		--	1.6	--	nC
<b>Switching Characteristics</b>						
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =-20V, I <sub>D</sub> =-5A, V <sub>GS</sub> =-10V, R <sub>GEN</sub> =2.4Ω	--	7	--	nS
Turn-on Rise Time	t <sub>r</sub>		--	19	--	nS
Turn-off Delay Time	t <sub>d(off)</sub>		--	16	--	nS
Turn-off Fall Time	t <sub>f</sub>		--	24	--	nS
<b>Source-Drain Diode Characteristics</b>						
Diode Forward Voltage <sup>Note3</sup>	-V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =-5A	--	--	1.2	V
Diode Forward Current <sup>Note2</sup>	-I <sub>S</sub>		--	--	5	A

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

2. Surface Mounted on FR4 Board, t ≤ 10 sec.

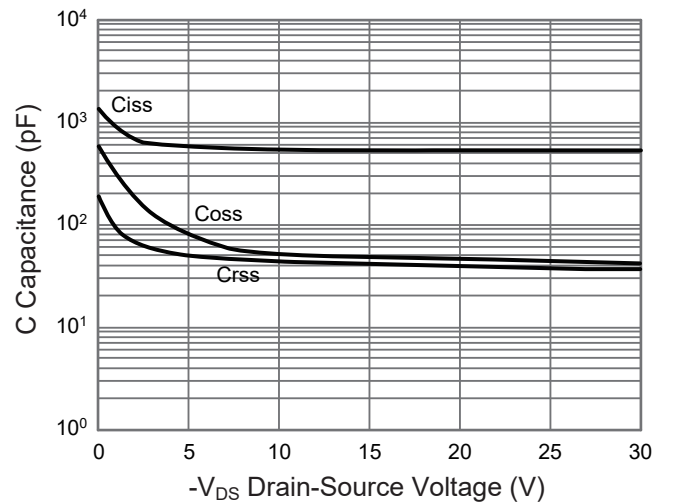
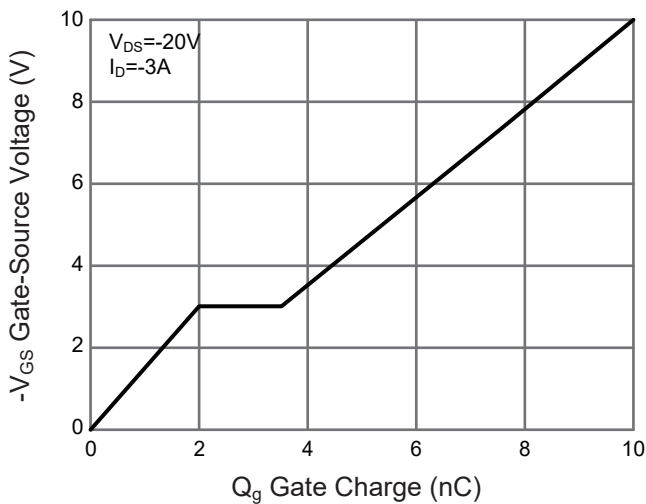
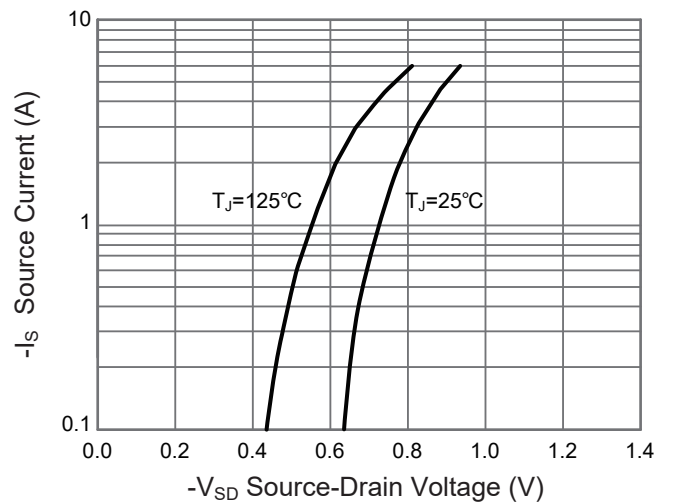
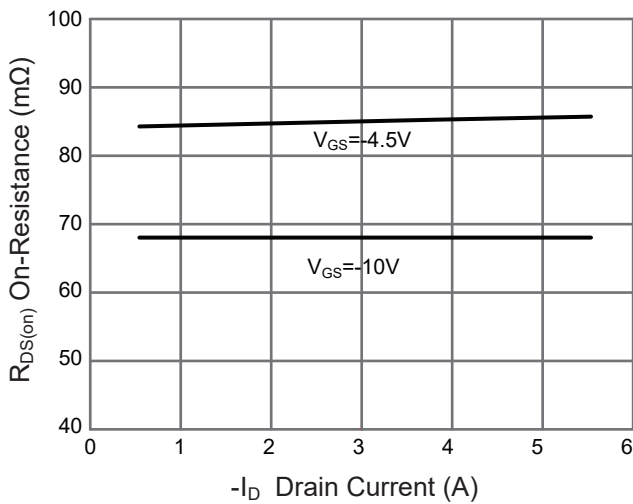
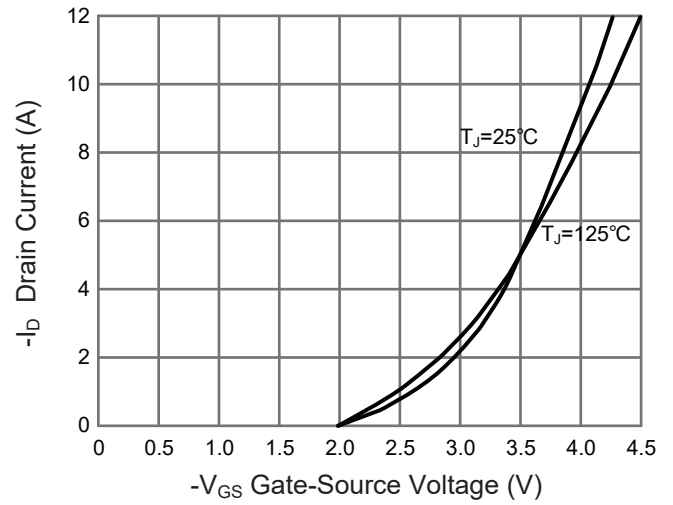
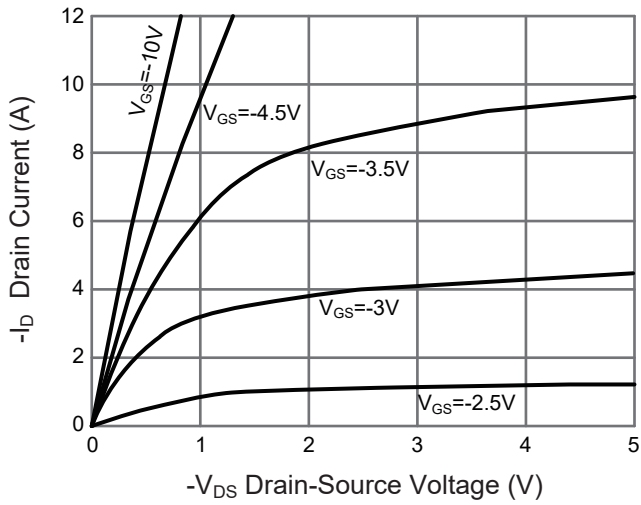
3. Pulse Test: Pulse width ≤ 300μs, duty cycle ≤ 2%.



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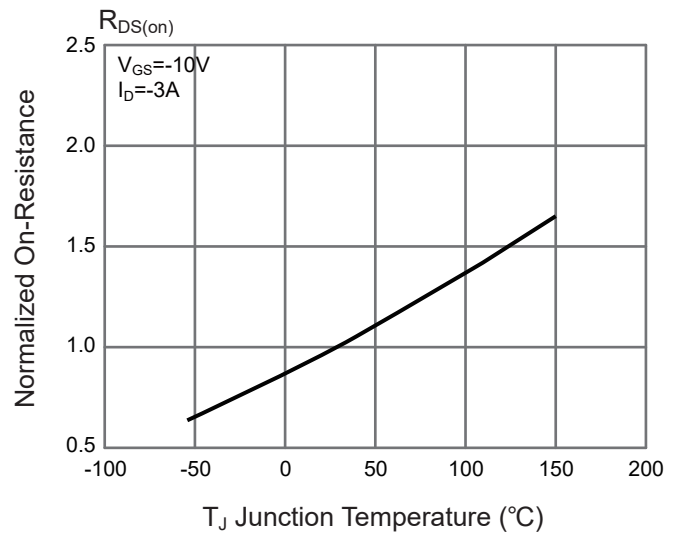
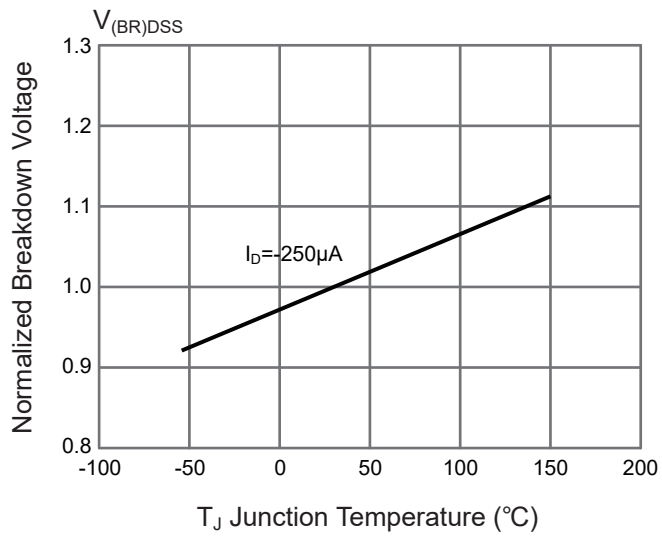
### Typical Characteristic Curves





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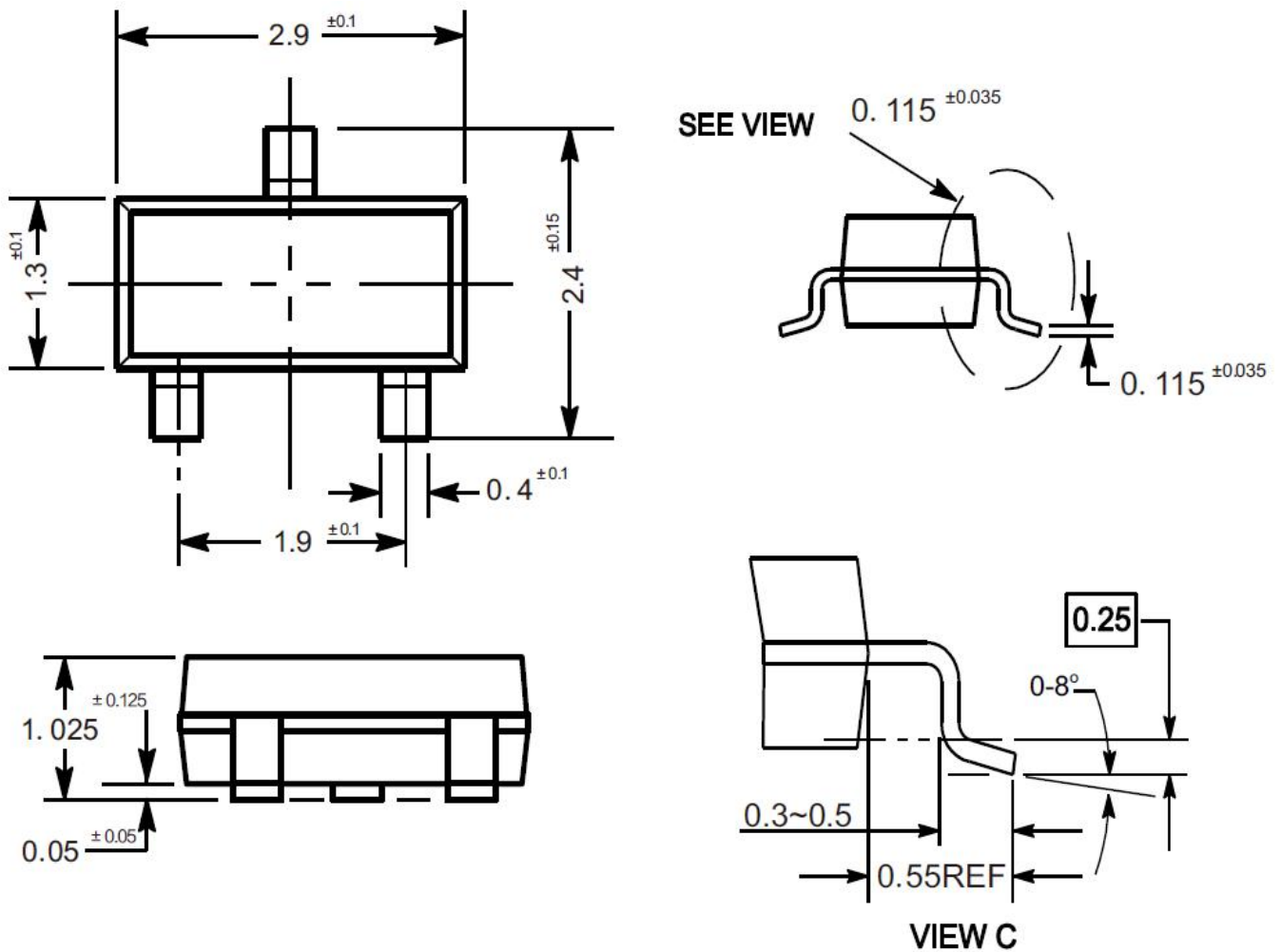
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### Package Outline

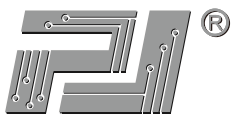
SOT-23

Dimensions in mm



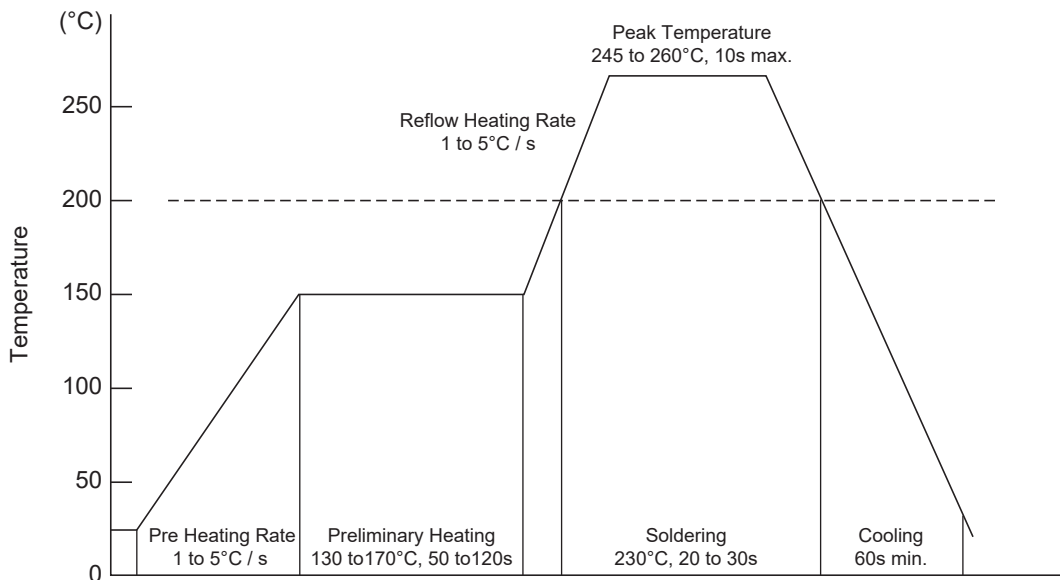
### Ordering Information

Device	Package	Shipping
PJM05P40SA	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: 300°C
- Time: 3s max.
- Times: one time

#### ◆ Storage conditions

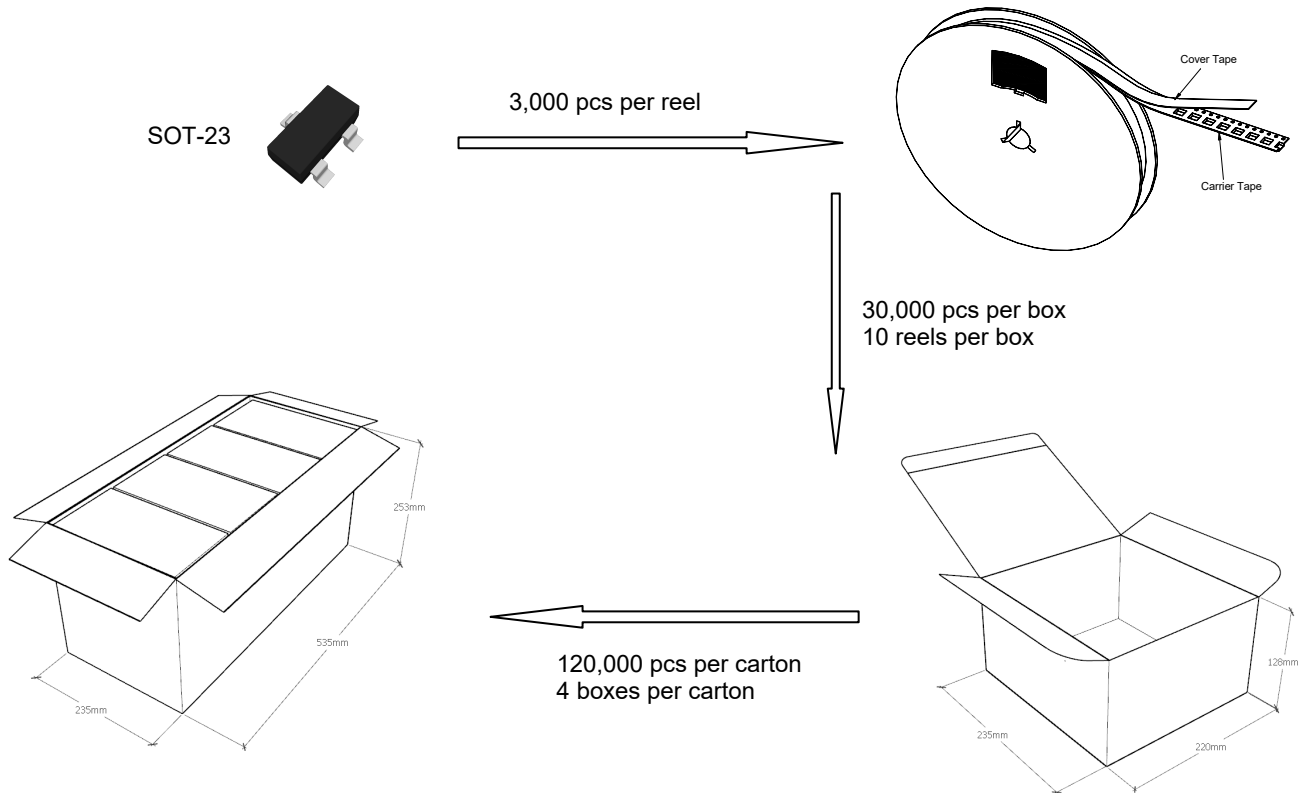
- **Temperature**  
5 to 40°C
- **Humidity**  
30 to 80% RH
- **Recommended period**  
One year after manufacturing



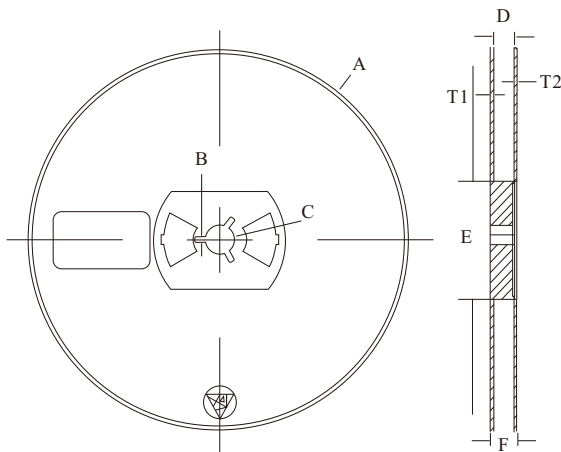
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## Package Specifications

- The method of packaging



## ◆ Embossed tape and reel data



Symbol	Value (unit: mm)
A	Ø 177.8±1
B	2.7±0.2
C	Ø 13.5±0.2
E	Ø 54.5±0.2
F	12.3±0.3
D	9.6+2/-0.3
T1	1.0±0.2
T2	1.2±0.2

Reel (7")

