



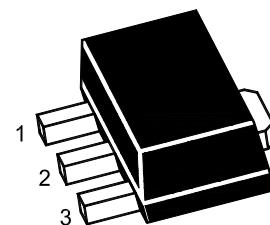
# PJM60H12MNSQ

## N- Channel Depletion Mode MOSFETS

### Features

- Halogen and Antimony Free
- Depletion Mode
- ESD improved Capability
- $V_{DS} = 600V$ ,  $I_D = 0.03A$
- $R_{DS(on)} < 800\Omega$  @  $V_{GS} = 10V$

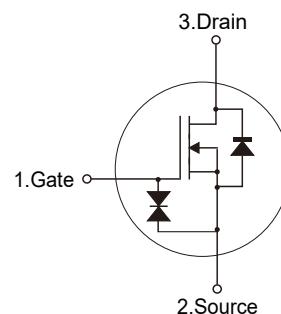
SOT-89



1. Gate 2. Source 3. Drain

Marking:F501D

### Schematic Diagram



### Absolute Maximum Ratings

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	600	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous	$I_D$	0.03	A
Drain Current-Pulsed	$I_{DM}$	0.12	A
Maximum Power Dissipation	$P_D$	1	W
Gate Source ESD (HBM-C=100pF, R=1.5kΩ)	$V_{ESD(G-S)}$	300	V
Junction Temperature	$T_J$	150	°C
Storage Temperature Range	$T_{STG}$	-55 to +150	°C

### Thermal Characteristics

Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	357	°C/W
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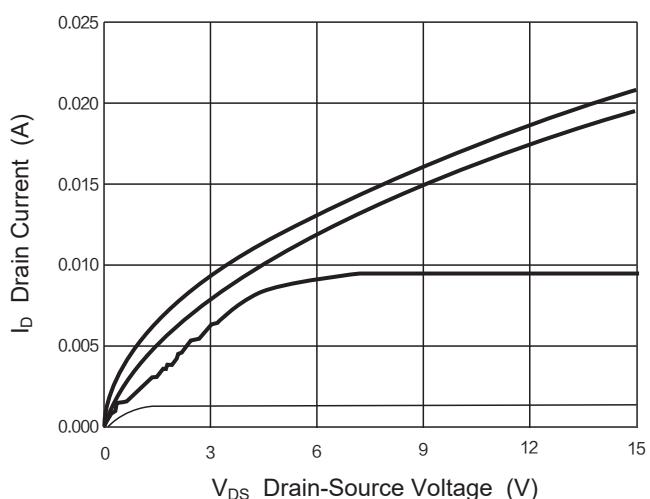
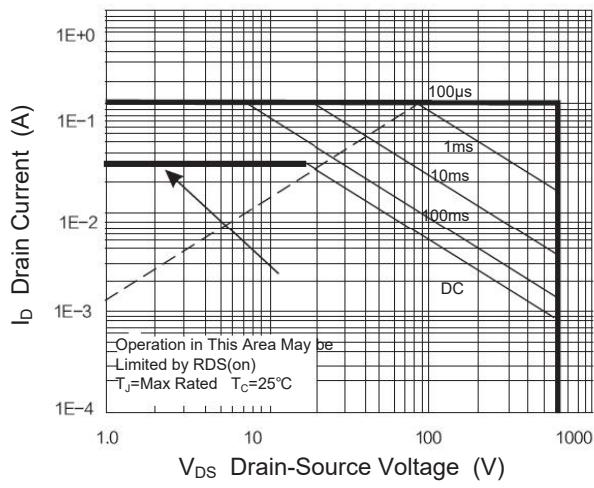
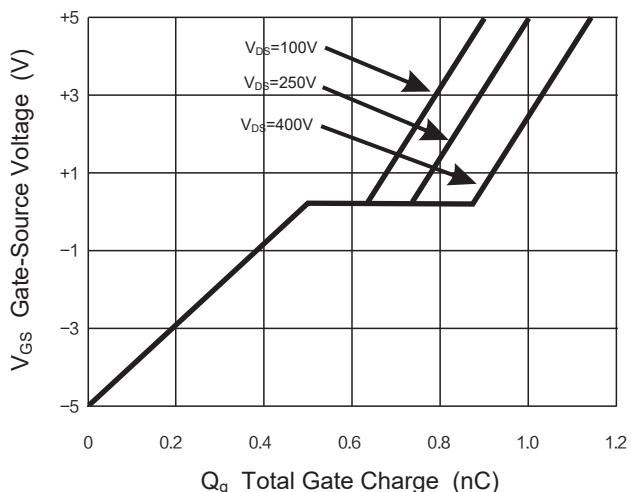
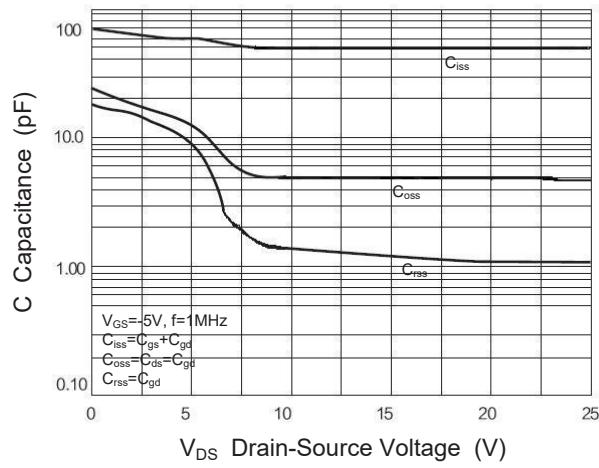
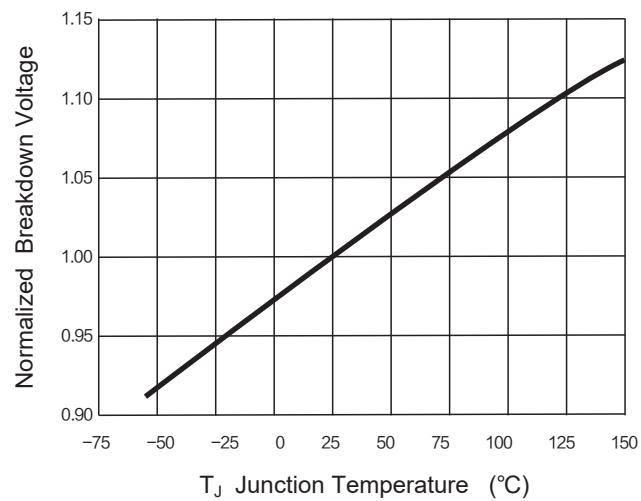
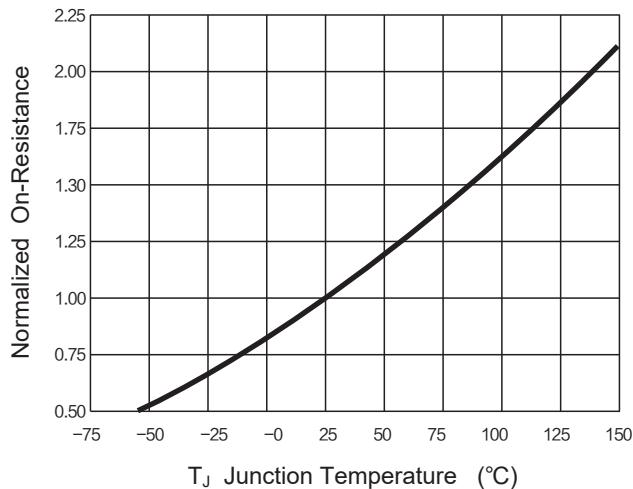
### Electrical Characteristics

(Ta=25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>OFF Characteristics</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =-5V, I <sub>D</sub> =250μA	600	--	--	V
Gate-Body Leakage Current	I <sub>D(off)</sub>	V <sub>DS</sub> =600V, V <sub>GS</sub> =-5V	--	--	0.1	μA
		V <sub>DS</sub> =480V, V <sub>GS</sub> =-5V, T <sub>A</sub> =125°C	--	--	10	μA
Gate Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±10V	--	--	±200	nA
<b>ON Characteristics</b>						
Gate-to-Source Cut-off Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =3V, I <sub>D</sub> =8μA	-2.7	-1.8	-1	V
On-State Drain Current	I <sub>DSS</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =25V	12	--	--	mA
Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =3mA	--	350	700	Ω
		V <sub>GS</sub> =10V, I <sub>D</sub> =16mA	--	400	800	Ω
<b>Dynamic Characteristics</b>						
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =50V, I <sub>D</sub> =0.01A	8	17	--	mS
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =-5V, f=1MHz	--	50	--	pF
Output Capacitance	C <sub>oss</sub>		--	4.53	--	pF
Reverse Transfer Capacitance	C <sub>rss</sub>		--	1.08	--	pF
<b>Switching Characteristics</b>						
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =300V, I <sub>D</sub> =0.01A V <sub>GS</sub> =-5V~7V, R <sub>G</sub> =6Ω	--	9.9	--	nS
Turn-on Rise Time	t <sub>r</sub>		--	55.8	--	nS
Turn-off Delay Time	t <sub>d(off)</sub>		--	56.4	--	nS
Turn-off Fall Time	t <sub>f</sub>		--	136	--	nS
Total Gate Charge	Q <sub>g</sub>	V <sub>DD</sub> =400V, I <sub>D</sub> =0.01A, V <sub>GS</sub> =-5V~5V	--	1.14	--	nC
Gate-Source Charge	Q <sub>gs</sub>		--	0.5	--	nC
Gate-Drain Charge	Q <sub>gd</sub>		--	0.37	--	nC
<b>Drain-Source Diode Characteristics</b>						
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =-5V, I <sub>F</sub> =16mA	--	--	1.2	V
Diode Forward Current	I <sub>S</sub>		--	--	0.025	A
<b>Gate-Source Zener Diode</b>						
Gate-Source Breakdown Voltage	V <sub>GSO</sub>	I <sub>GS</sub> =±1mA (Open Drain)	--	0.75	1.2	V



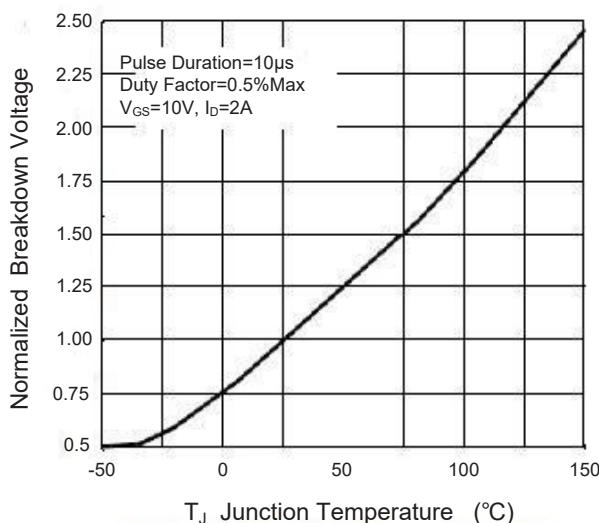
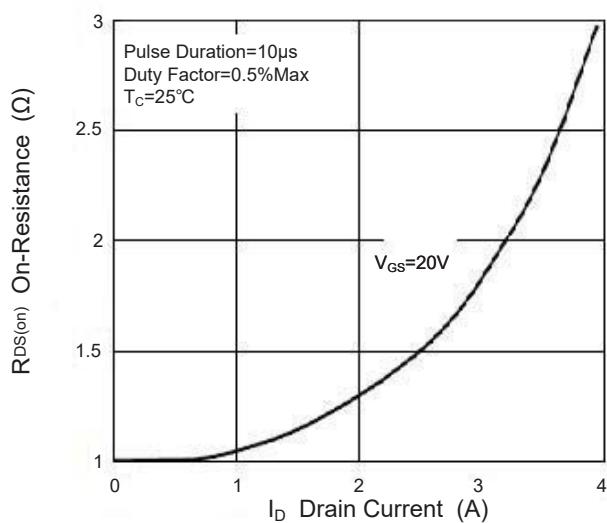
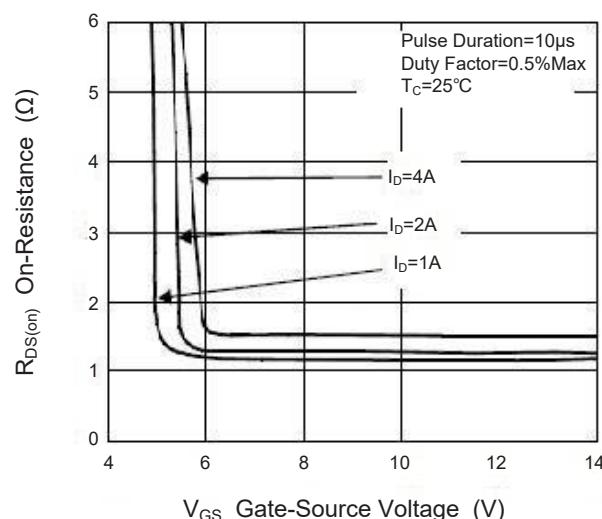
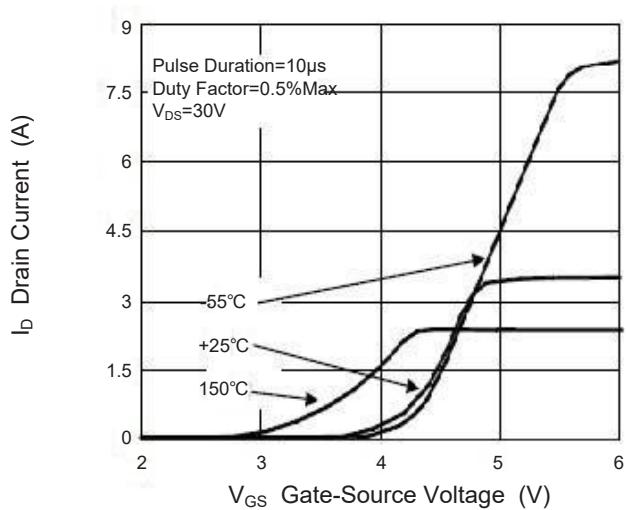
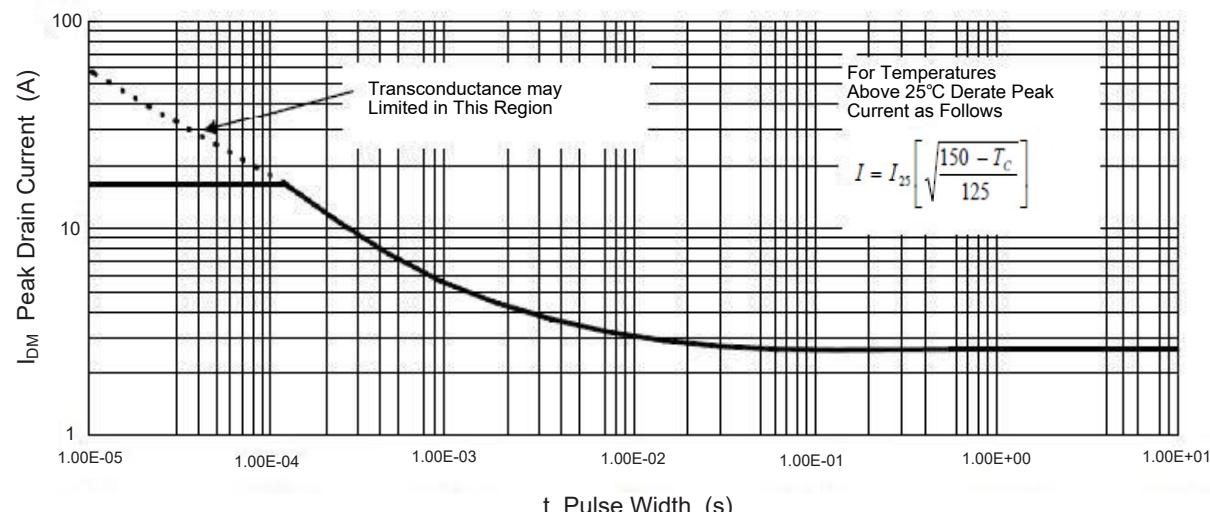
### Typical Characteristic Curves





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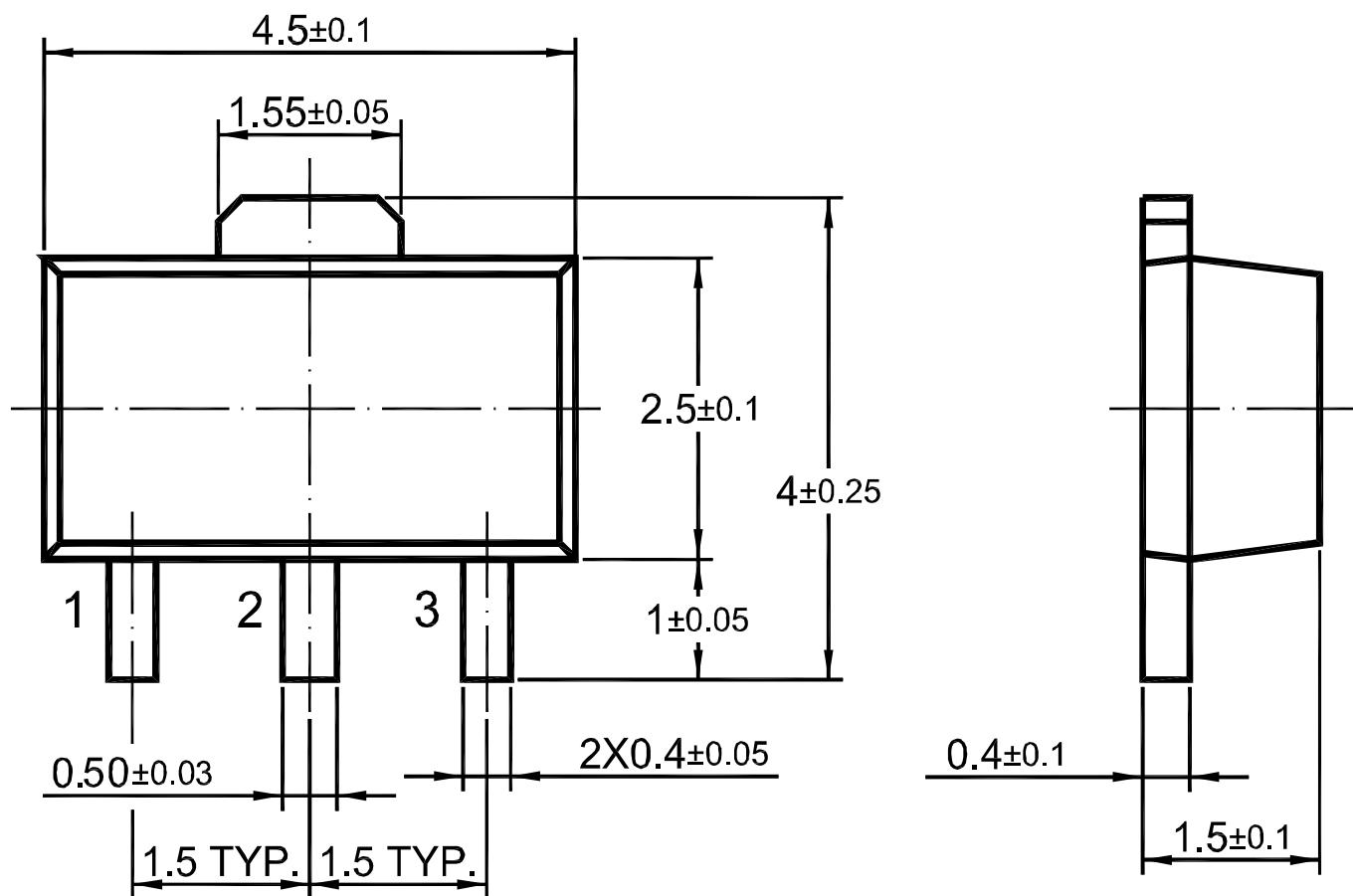




### Package Outline

SOT-89

Dimensions in mm

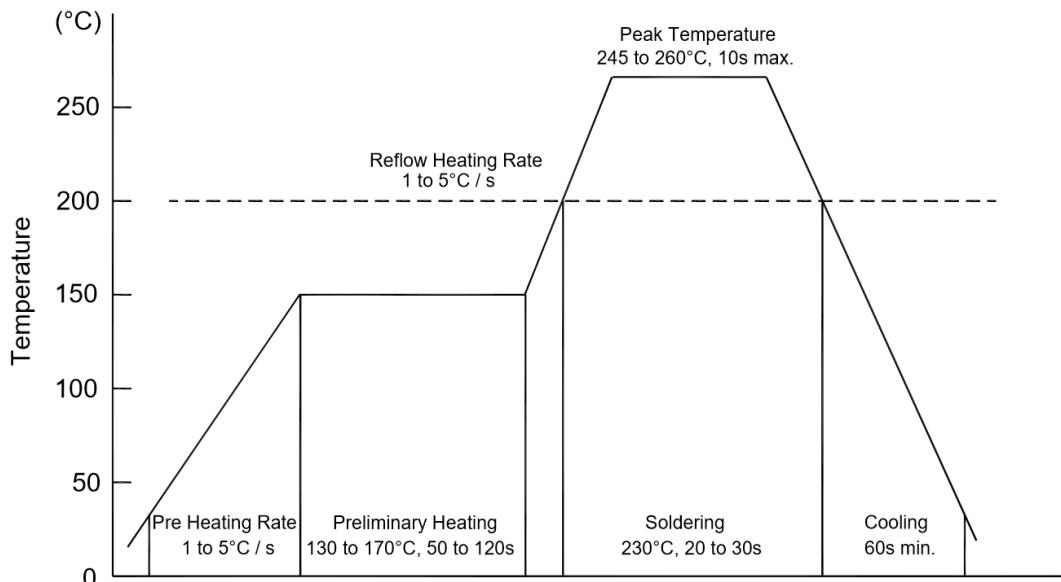


### Ordering Information

Device	Package	Shipping
PJM60H12MNSQ	SOT-89	3,000PCS/Reel&13inches

## 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

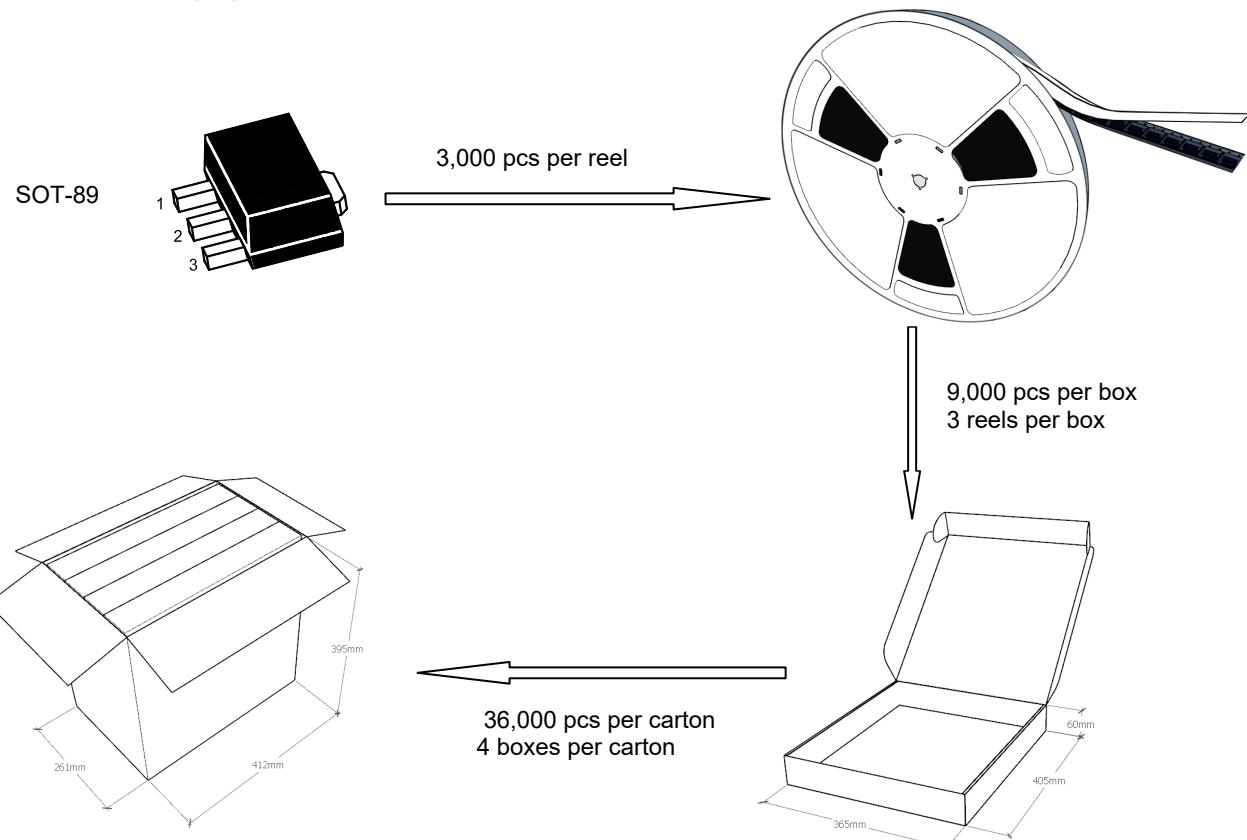
### ◆ Storage conditions

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

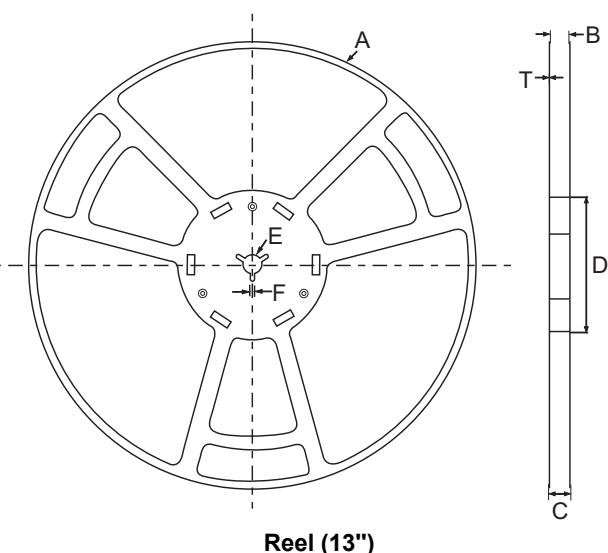


## Package Specifications

- The method of packaging



### ◆ Embossed tape and reel data



symbol	Value(unit:mm)
A	$\phi 330 \pm 1$
B	$12.7 \pm 0.5$
C	$16.5 \pm 0.3$
D	$\phi 99.5 \pm 0.5$
E	$\phi 13.6 \pm 0.3$
F	$2.8 \pm 0.3$
T	$1.9 \pm 0.2$

