



PJM20N60SQ

N-Channel Enhancement Mode Power MOSFET

Product Summary

- $V_{DS} = 60V, I_D = 20A$
- $R_{DS(on)} < 35m\Omega @ V_{GS} = 10V$

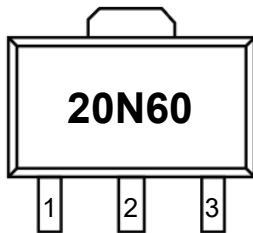
Features

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

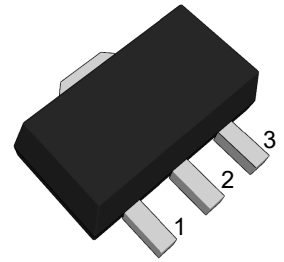
Application

- Power Switching Application
- Uninterruptible Power Supply

Marking Code



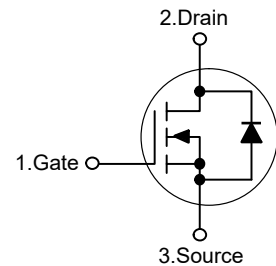
SOT-89



(Top View)

Pin	Description
1	Gate
2	Drain
3	Source

Schematic Diagram



Absolute Maximum Ratings

(Ta=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ^{Note1}	I_D	20	A
Drain Current-Pulsed ^{Note2}	I_{DM}	60	A
Maximum Power Dissipation	P_D	2	W
Junction Temperature	T_J	175	°C
Storage Temperature Range	T_{STG}	-55 to +175	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Case ^{Note3}	$R_{\theta JC}$	5	°C/W
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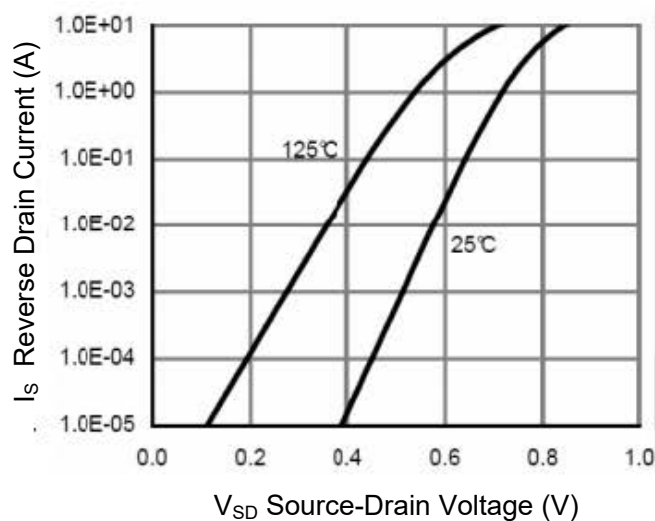
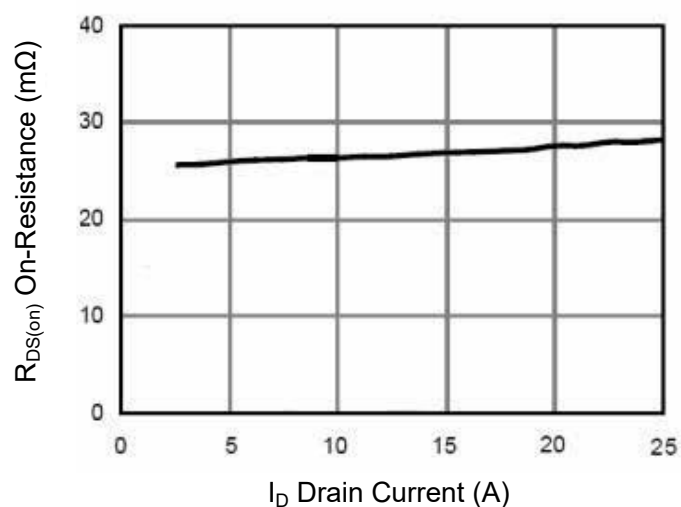
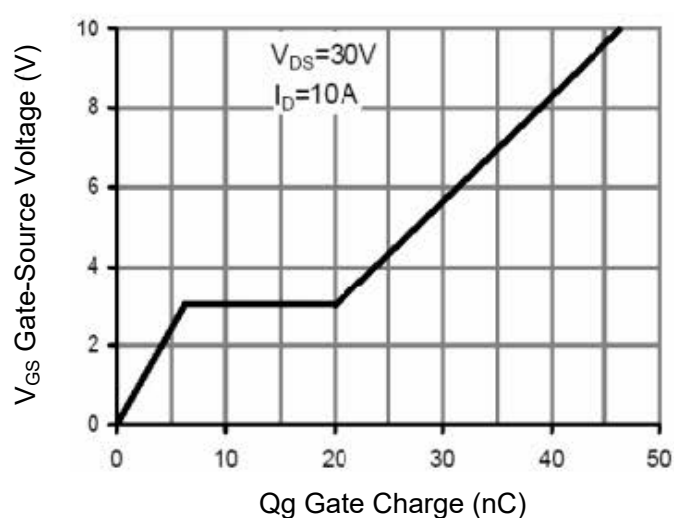
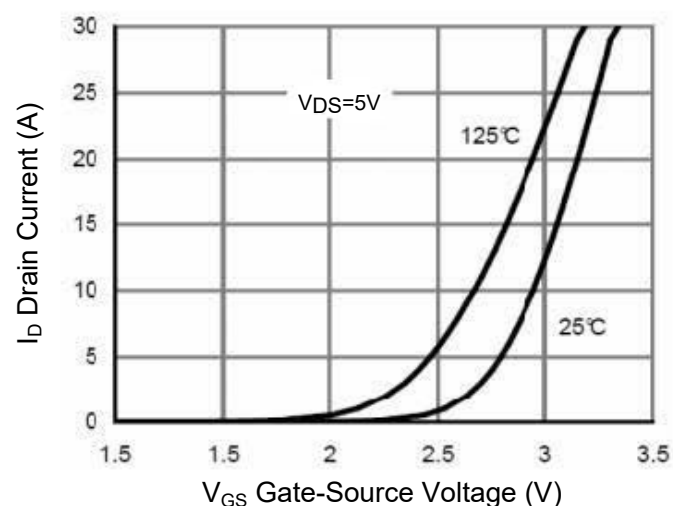
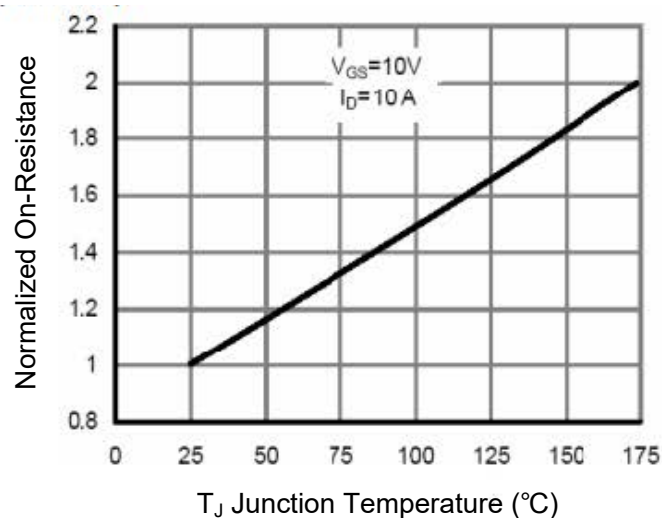
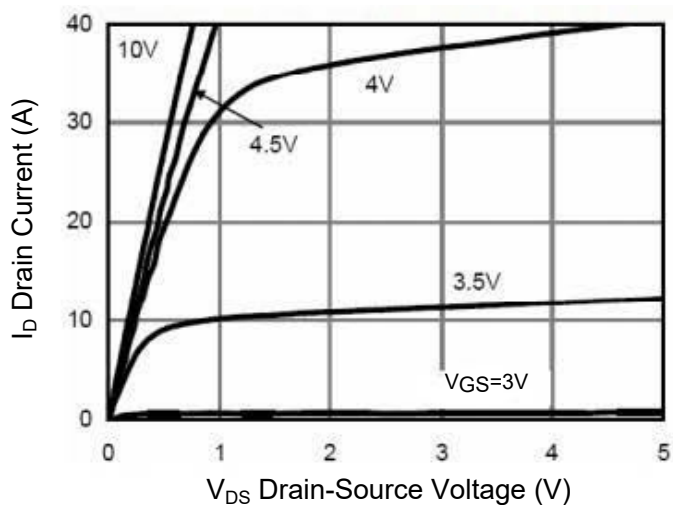
Electrical Characteristics

(Ta=25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$	--	--	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	--	--	± 100	nA
Gate Threshold Voltage ^{Note4}	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.7	2.5	V
Drain-Source On-Resistance ^{Note4}	$R_{DS(on)}$	$V_{GS}=10V, I_D=10A$	--	23	35	m Ω
Forward Transconductance ^{Note4}	g_{FS}	$V_{DS}=5V, I_D=5A$	11	--	--	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=30V, V_{GS}=0V, f=1MHz$	--	500	--	pF
Output Capacitance	C_{oss}		--	60	--	pF
Reverse Transfer Capacitance	C_{rss}		--	25	--	pF
Total Gate Charge	Q_g	$V_{DD}=10V, I_D=4.5A, V_{GS}=10V$	--	47	--	nC
Gate-Source Charge	Q_{gs}		--	6	--	nC
Gate-Drain Charge	Q_{gd}		--	14	--	nC
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=30V, I_D=2A$ $V_{GS}=10V, R_{GEN}=3\Omega$	--	6	--	nS
Turn-on Rise Time	t_r		--	2.8	--	nS
Turn-off Delay Time	$t_{d(off)}$		--	9	--	nS
Turn-off Fall Time	t_f		--	5	--	nS
Source-Drain Diode Characteristics						
Diode Forward Voltage ^{Note4}	V_{SD}	$V_{GS}=0V, I_S=10A$	--	--	1.5	V
Diode Forward Current ^{Note3}	I_S		--	--	10	A

Note: 1. Calculated continuous current based on maximum allowable junction temperature. The package limitation current is 10A.
2. Pulse width limited by safe operating area.
3. Surface Mounted on FR4 Board, $t \leq 10$ sec.
4. Pulse Test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

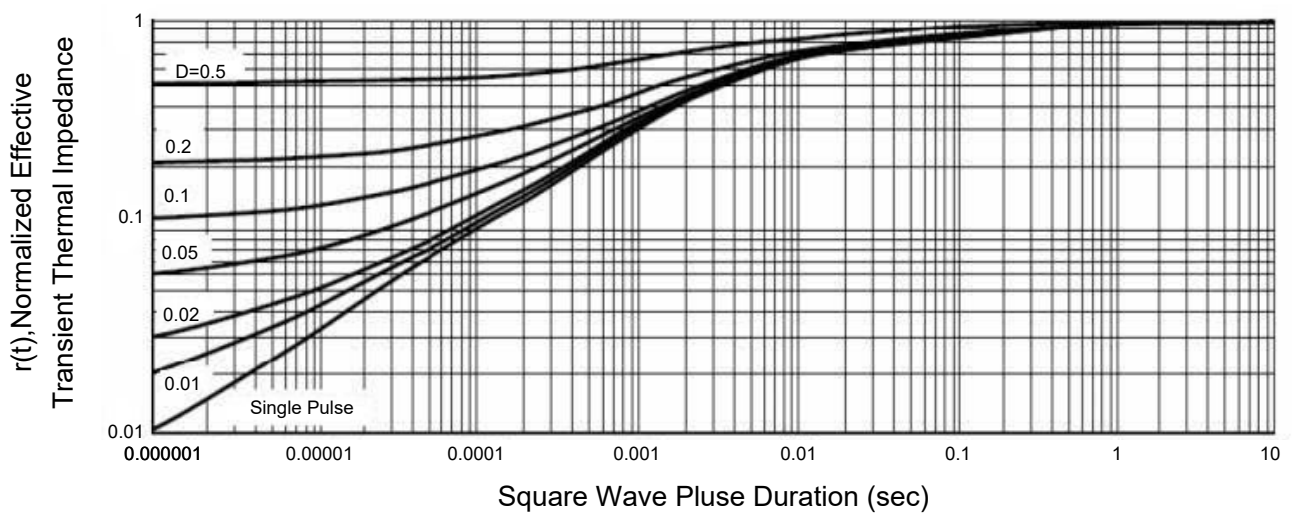
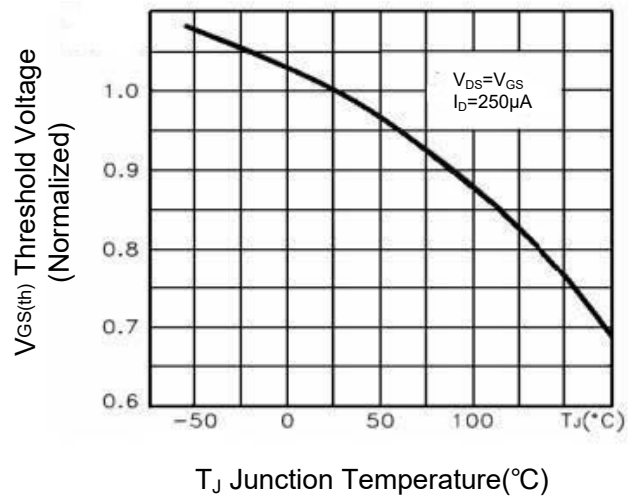
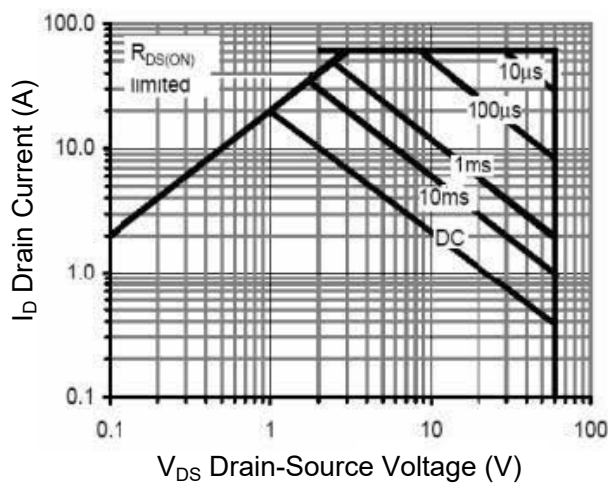
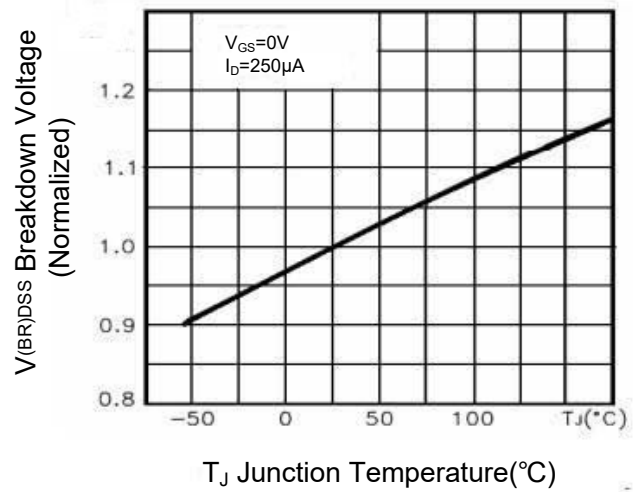
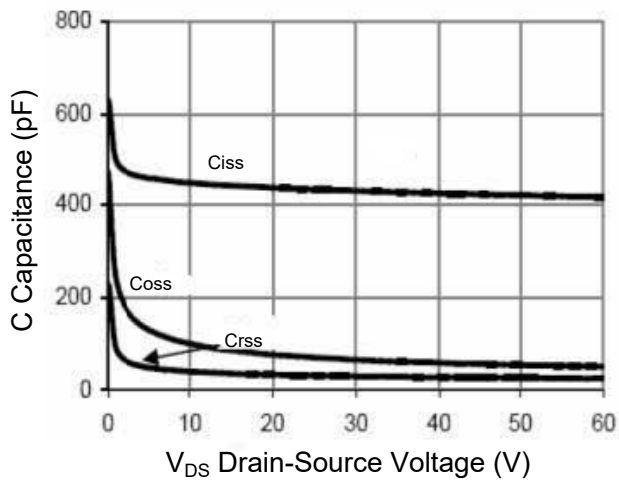
Typical Characteristic Curves





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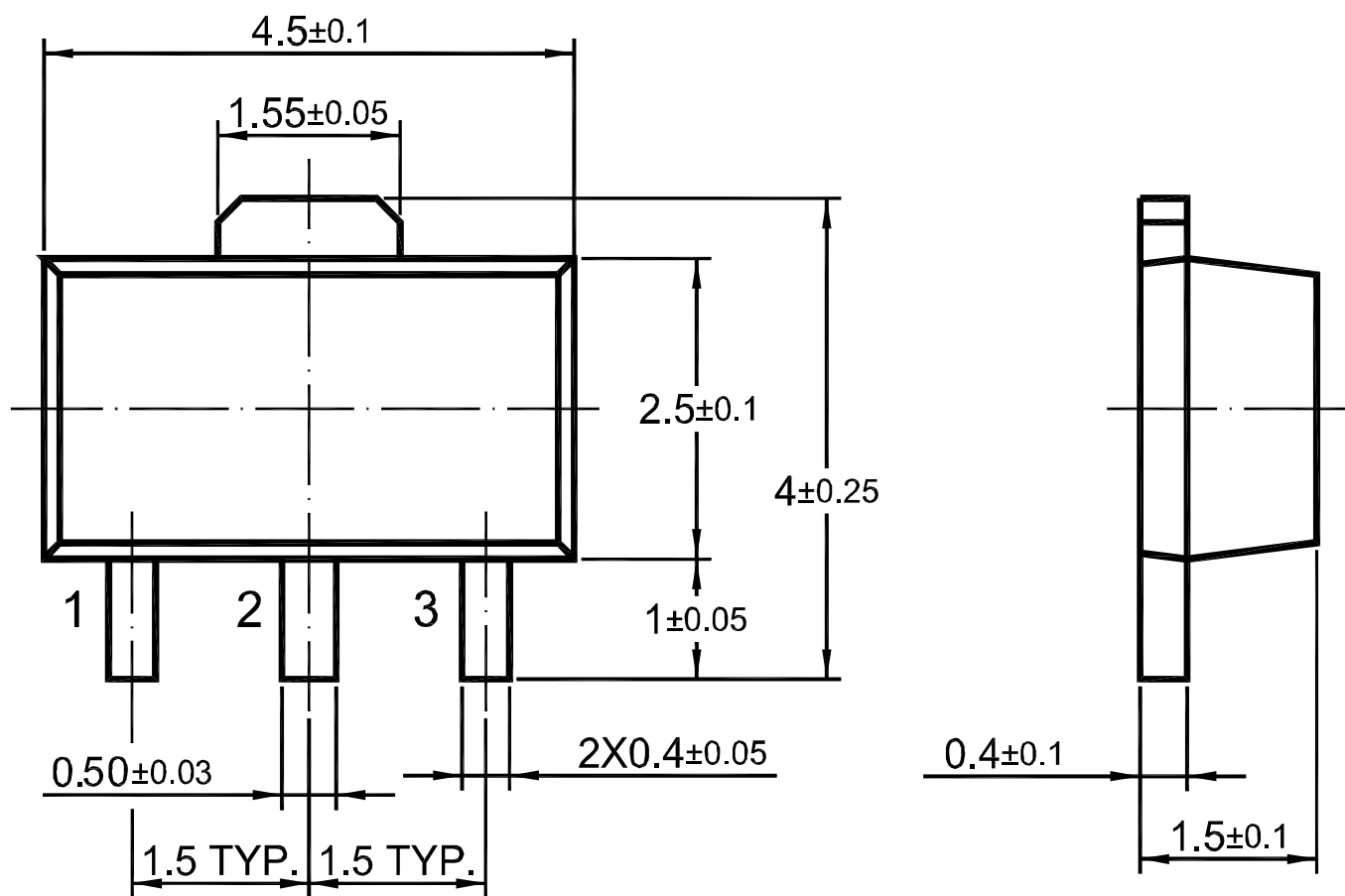
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Package Outline

SOT-89

Dimensions in mm



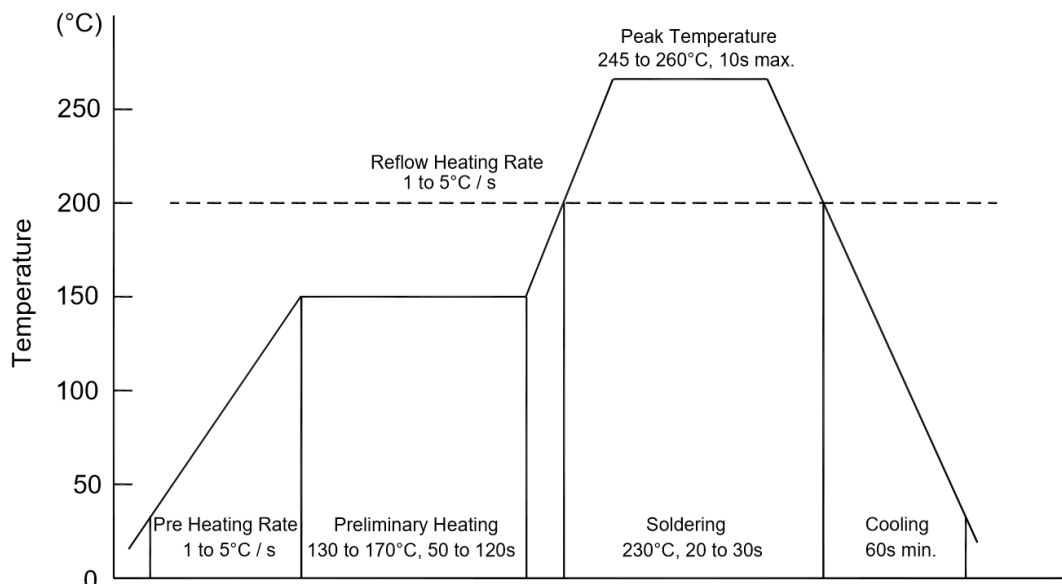
Ordering Information

Device	Package	Shipping
PJM20N60SQ	SOT-89	1,000PCS/Reel&7inches
		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

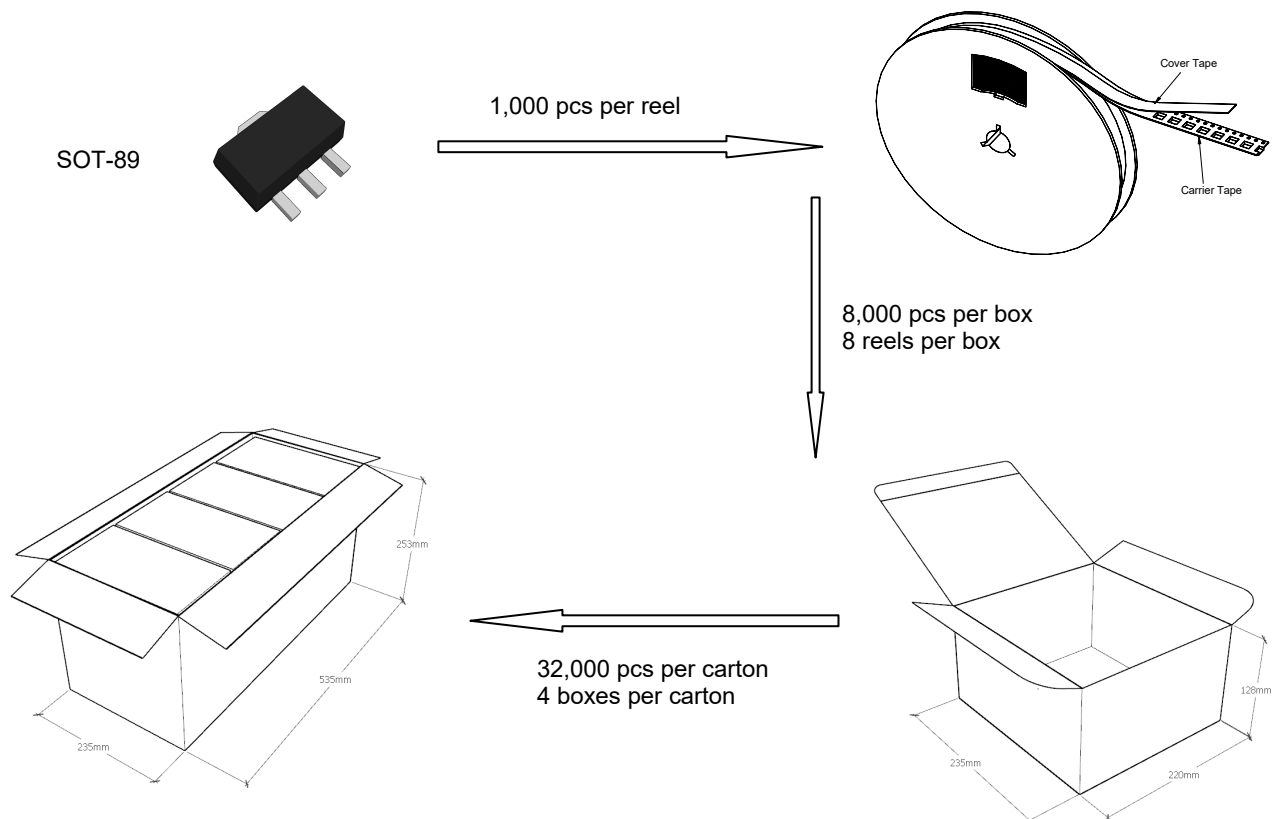


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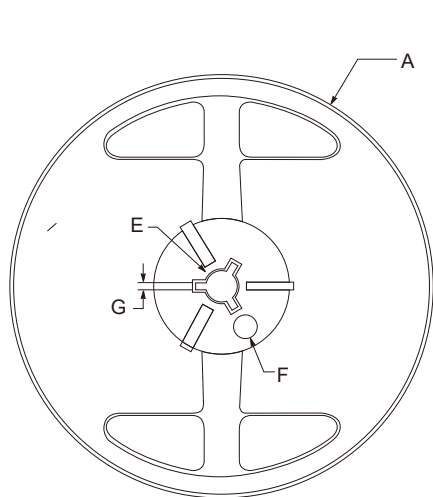
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Package Specifications

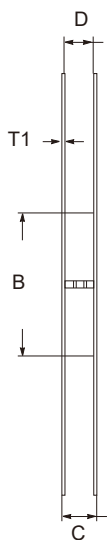
- The method of packaging (1,000PCS/Reel&7inches)



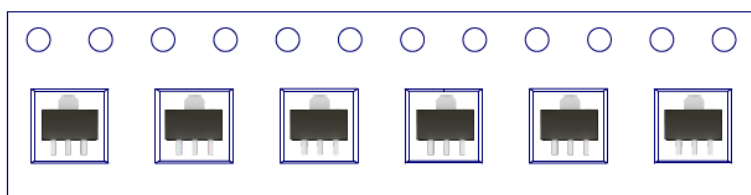
◆ Embossed tape and reel data



Reel (7")



symbol	Value(unit:mm)
A	$\Phi 179 \pm 1$
B	60.5 ± 0.2
C	15.3 ± 0.3
D	$12.5 \sim 13.7$
E	$\Phi 13.5 \pm 0.2$
F	$\Phi 10.0 \pm 0.2$
G	2.7 ± 0.2
T1	1.0 ± 0.2



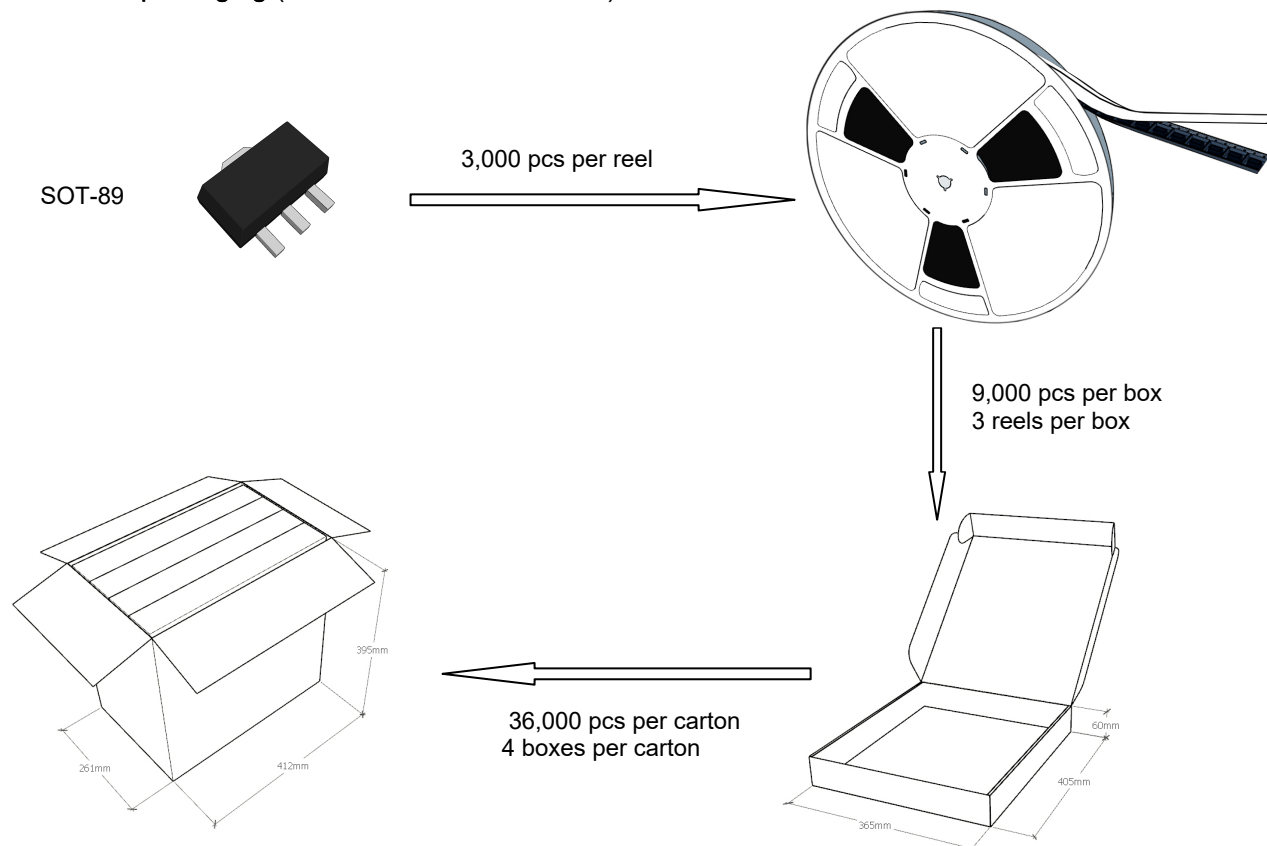


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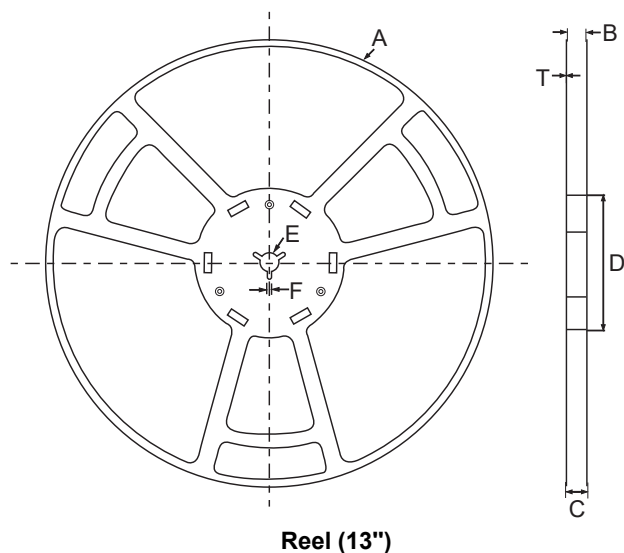
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Package Specifications

- The method of packaging (3,000PCS/Reel&13inches)



◆ Embossed tape and reel data



symbol	Value(unit:mm)
A	$\Phi 330 \pm 1$
B	12.7 ± 0.5
C	16.5 ± 0.3
D	$\Phi 99.5 \pm 0.5$
E	$\Phi 13.6 \pm 0.3$
F	2.8 ± 0.3
T1	1.9 ± 0.2

