



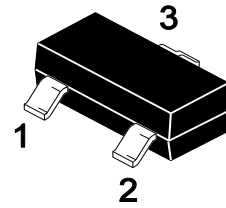
PJM02N60SA

N- Enhancement Mode Field Effect Transistor

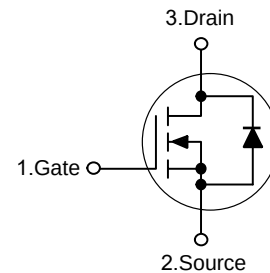
Features

- ◆ $R_{DS(ON)} < 85m\Omega @ V_{GS} = 10V$
 $R_{DS(ON)} < 120m\Omega @ V_{GS} = 4.5V$
 $V_{DS}=60V, I_D=2A$
- ◆ High power and current handling capability

SOT-23



Schematic diagram



Applications

- ◆ DC/DC Converter
- ◆ Battery Switch

Absolute Maximum Ratings

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	2	A
Pulsed Drain Current ^{Note1}	I_{DM}	10	A
Total Power Dissipation	P_D	0.9	W
Operating Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	- 55 to + 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction to Ambient ^{Note2}	$R_{\theta JA}$	139	°C/W



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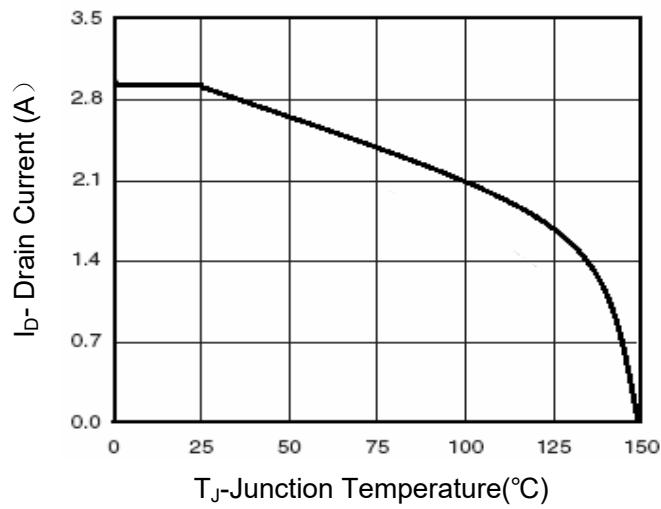
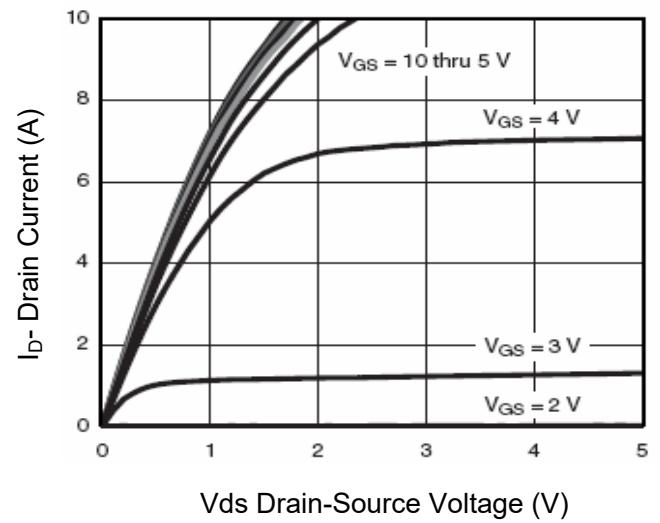
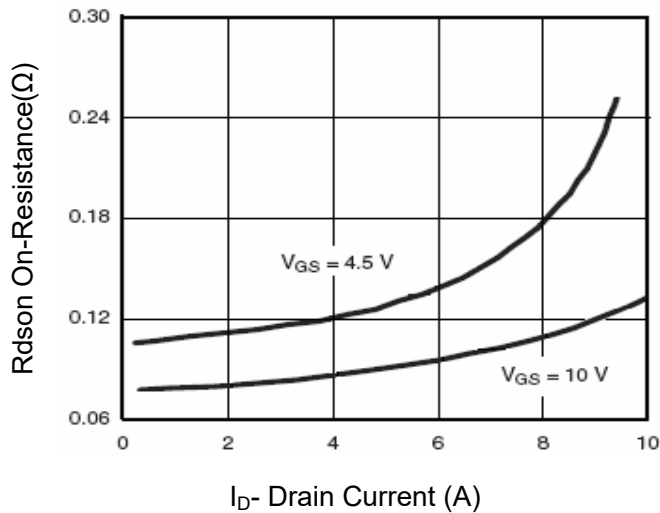
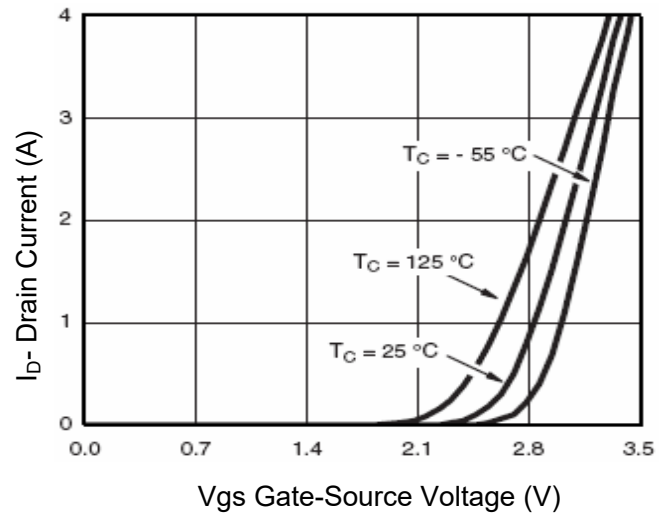
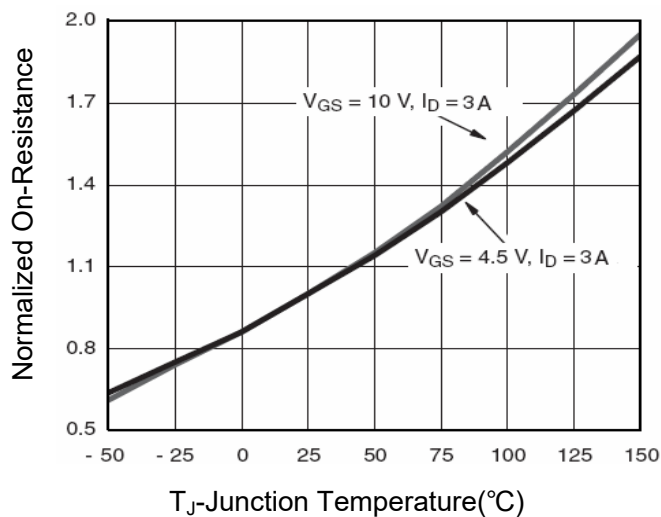
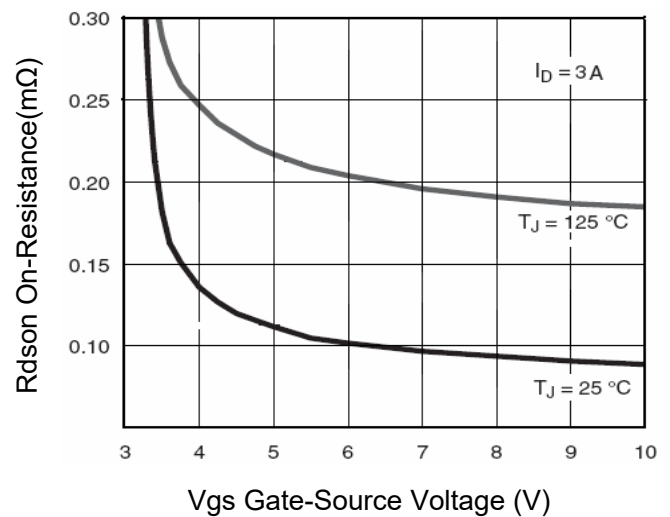
N- Enhancement Mode Field Effect Transistor

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	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 ^{Note3}	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	1.3	2	V
Drain-Source On-Resistance ^{Note3}	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 3A$			105	m Ω
		$V_{GS} = 4.5V, I_D = 2A$			125	
Forward Tranconductance ^{Note3}	g_{FS}	$V_{DS} = 15V, I_D = 2A$		3		S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 30V, V_{GS} = 0V, f = 1MHz$		510		pF
Output Capacitance	C_{oss}			34		
Reverse Transfer Capacitance	C_{rss}			26		
SWITCHING Characteristics						
Total Gate Charge	Q_g	$V_{DS} = 30V, I_D = 3A, V_{GS} = 4.5V$		7.5		nC
Gate-Source Charge	Q_{gs}			1.4		
Gate-Drain Charge	Q_{gd}			3		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = 10V, V_{DD} = 30V, I_D = 1.5A, R_G = 1\Omega$		6		ns
Turn-On Rise Time	t_r			15		
Turn-Off Delay Time	$t_{d(off)}$			15		
Turn-Off Fall Time	t_f			10		
Source-Drain Diode characteristics						
Body Diode Voltage	V_{SD}	$I_S = 3A, V_{GS} = 0V$			1.2	V

Notes :

1. Repetitive rating : Pulse width limited by junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

**Typical Characteristics Curves****Figure 1 Drain Current****Figure 2 Output Characteristics****Figure 3 Drain-Source On-Resistance****Figure 4 Transfer Characteristics****Figure 5 Drain-Source On-Resistance****Figure 6 $R_{DS(on)}$ vs V_{GS}**



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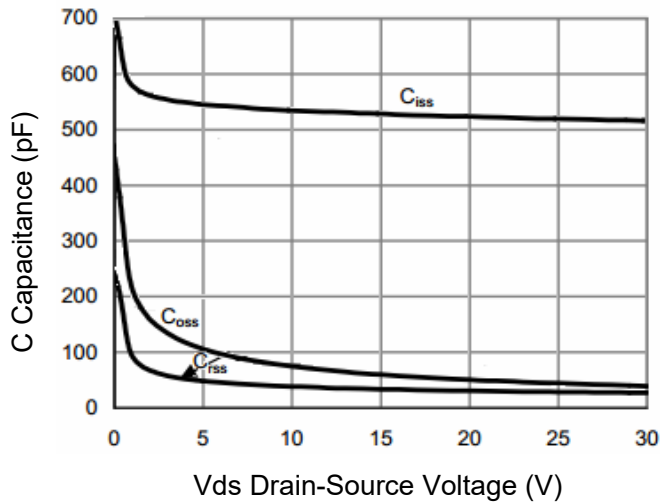


Figure 7 Capacitance vs Vds

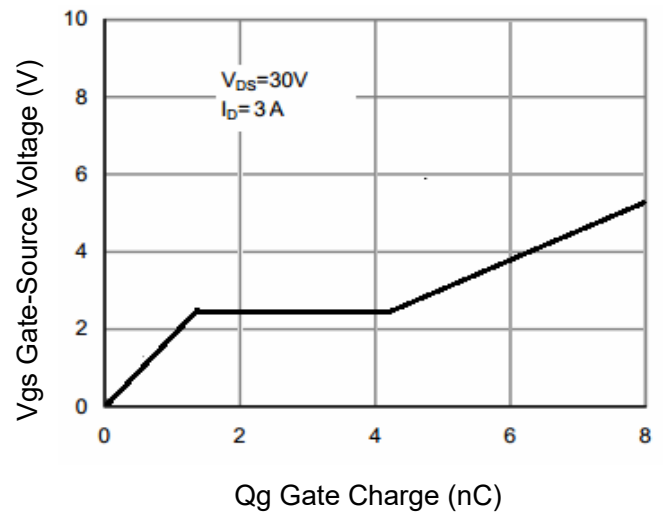


Figure 8 Gate Charge

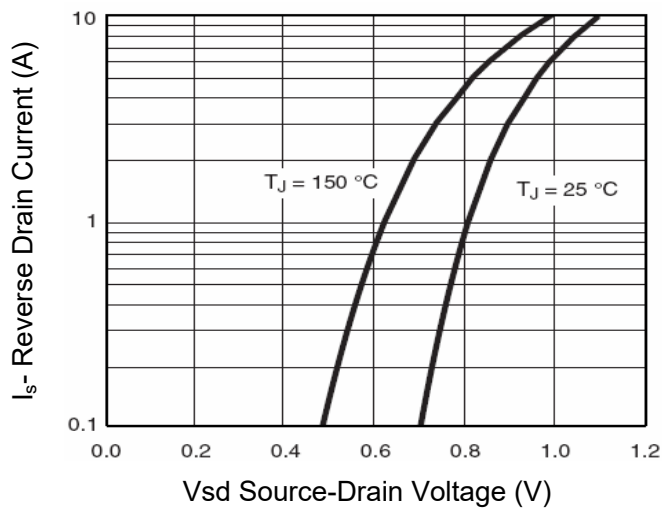


Figure 9 Source- Drain Diode Forward

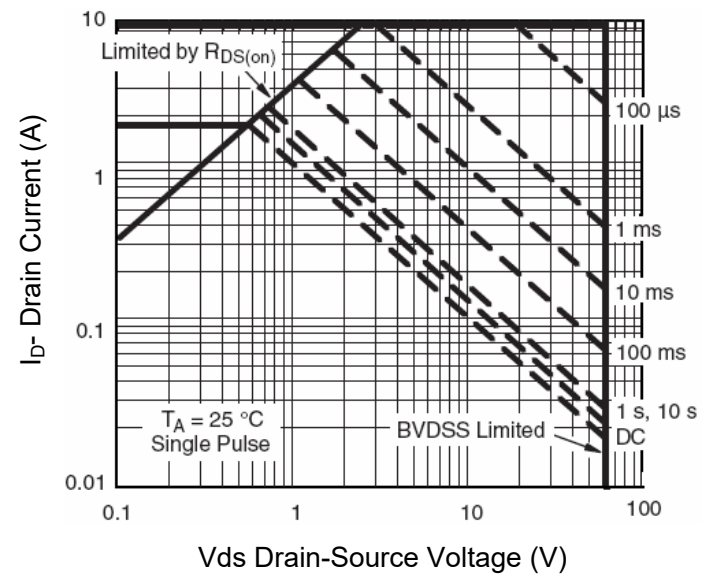


Figure 10 Safe Operation Area

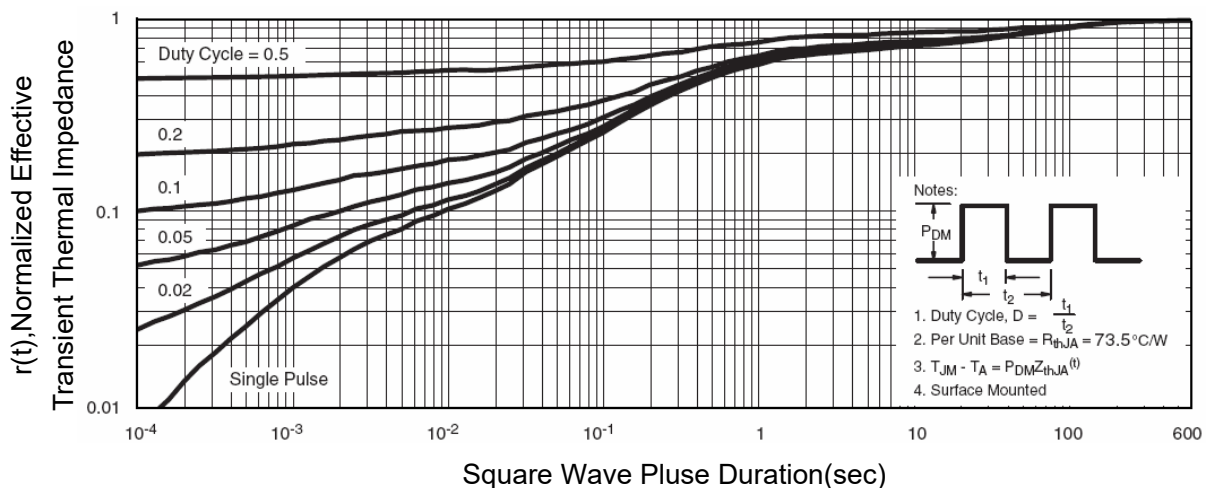
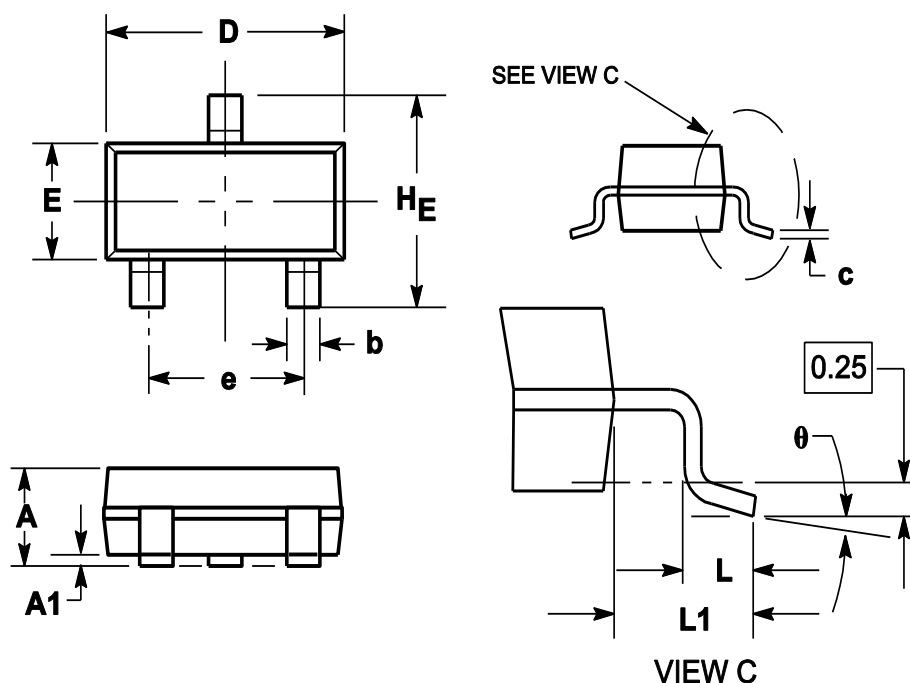


Figure 11 Normalized Maximum Transient Thermal Impedance

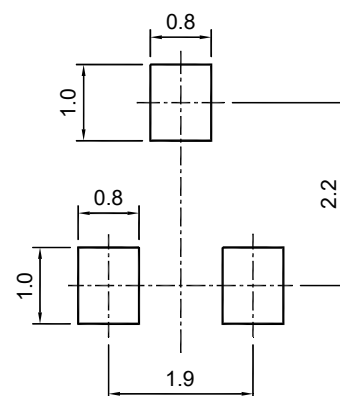


Package Outline

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
H _E	2.250	2.400	2.550
e	1.800	1.900	2.000
L1	0.550REF		
L	0.300		0.500
θ	0°		8°



SOT-23

Recommended soldering pad

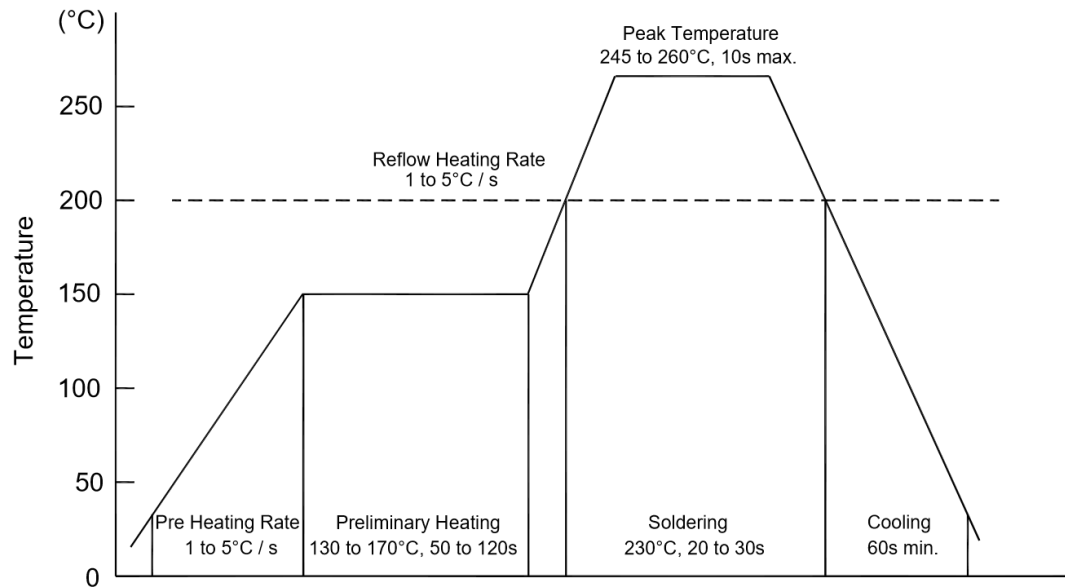
Ordering Information

Device	Package	Shipping
PJM02N60SA	SOT-23	3000/Reel&Tape(7inch)



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

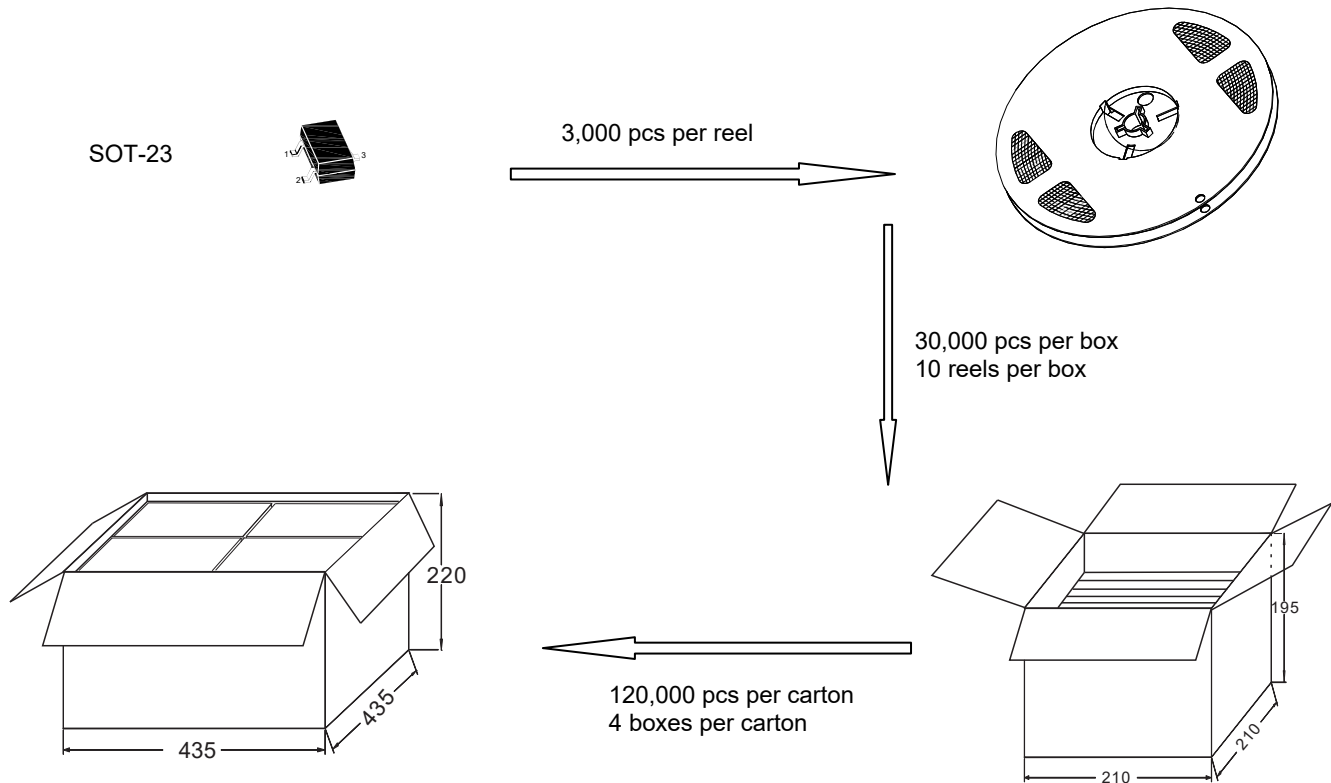


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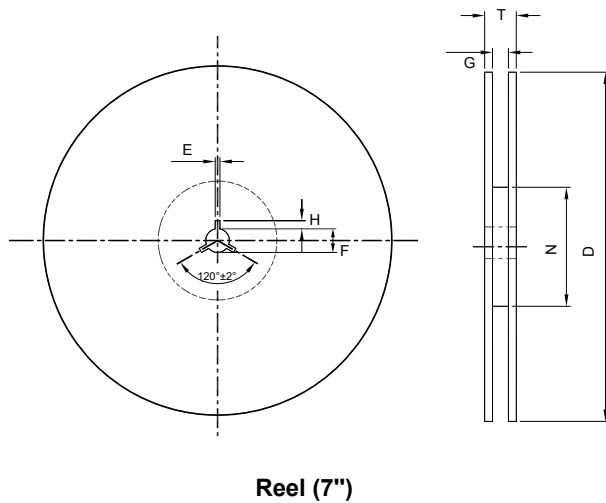
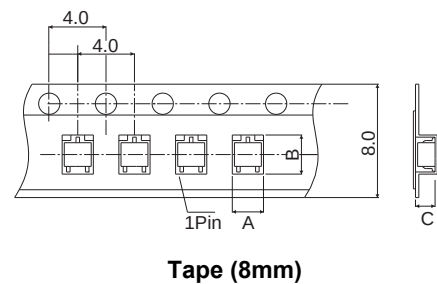
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Package Specifications

◆ The method of packaging



◆ Embossed tape and reel data



Symbol	Value (unit: mm)
A	3.15 ± 0.1
B	2.7 ± 0.1
C	1.25 ± 0.1
E	2 ± 0.5
F	13 ± 0.5
D	178 ± 2.0
G	8.4 ± 1.5
H	4 ± 0.5
N	60
T	< 14.9