



PJM09N40PA

N-Channel Enhancement Mode Power MOSFET

Product Summary

- $V_{DS} = 40V, I_D = 9A$
- $R_{DS(on)} < 25m\Omega @ V_{GS} = 10V$
- $R_{DS(on)} < 35m\Omega @ V_{GS} = 4.5V$

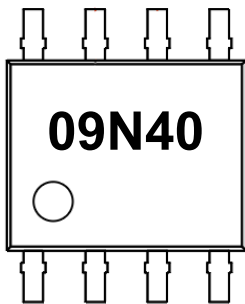
Features

- Advanced Trench Technology
- 100% Avalanche Tested
- RoHS and Reach Compliant
- Halogen and Antimony Free
- Moisture Sensitivity Level 3

Application

- Load Switch
- PWM Applications
- Power Management

Marking Code



Absolute Maximum Ratings

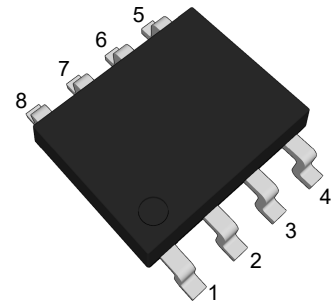
Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	9	A
Drain Current-Pulsed ^{Note1}	I_{DM}	32	A
Single Pulsed Avalanche Energy ^{Note4}	E_{AS}	12.9	mJ
Maximum Power Dissipation	P_D	2.5	W
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Ambient ^{Note2}	$R_{\theta JA}$	50.0	°C/W
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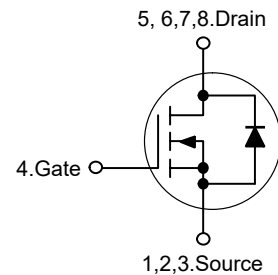
SOP-8



(Top View)

Pin	Description
1,2,3	Source
4	Gate
5,6,7,8	Drain

Schematic Diagram





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Electrical Characteristics

($T_J=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	40	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=40V, V_{GS}=0V$	--	--	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	--	--	± 100	nA
Gate Threshold Voltage ^{Note3}	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.65	2.5	V
Drain-Source On-Resistance ^{Note3}	$R_{DS(on)}$	$V_{GS}=10V, I_D=8A$	--	18	25	m Ω
		$V_{GS}=4.5V, I_D=5A$	--	25	35	m Ω
Forward Transconductance ^{Note3}	g_{FS}	$V_{DS}=5V, I_D=2A$	--	6.6	--	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=20V, V_{GS}=0V, f=1\text{MHz}$	--	708	--	pF
Output Capacitance	C_{oss}		--	61	--	pF
Reverse Transfer Capacitance	C_{rss}		--	50	--	pF
Gate Resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	--	2	--	Ω
Total Gate Charge	Q_g	$V_{DS}=20V, I_D=8A, V_{GS}=10V$	--	12	--	nC
Gate-Source Charge	Q_{gs}		--	3.2	--	nC
Gate-Drain Charge	Q_{gd}		--	3.1	--	nC
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=20V, R_L=2.5\Omega, V_{GS}=10V, R_{GEN}=3\Omega$	--	4	--	nS
Turn-on Rise Time	t_r		--	3	--	nS
Turn-off Delay Time	$t_{d(off)}$		--	15	--	nS
Turn-off Fall Time	t_f		--	2	--	nS
Source-Drain Diode Characteristics						
Diode Forward Voltage ^{Note3}	V_{SD}	$V_{GS}=0V, I_S=9A$	--	--	1.2	V
Diode Forward Current ^{Note2}	I_S		--	--	9	A

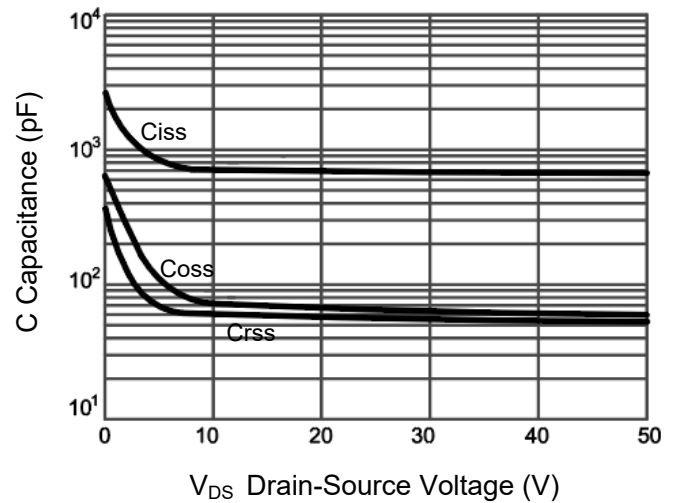
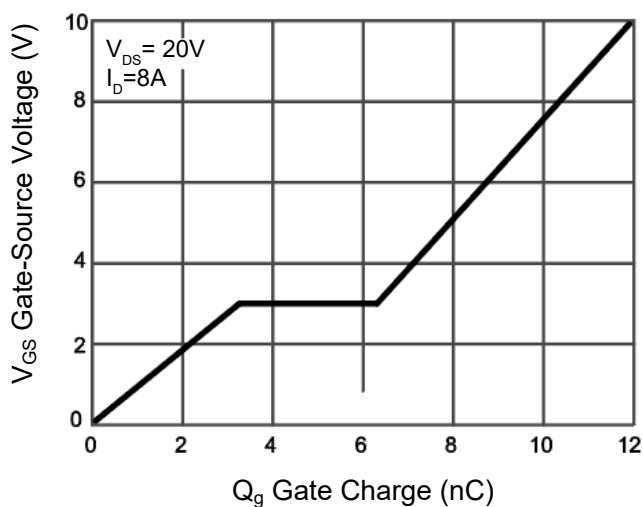
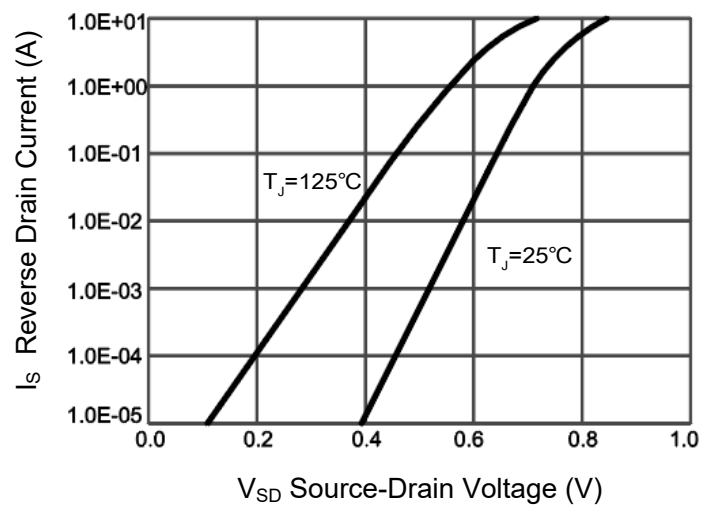
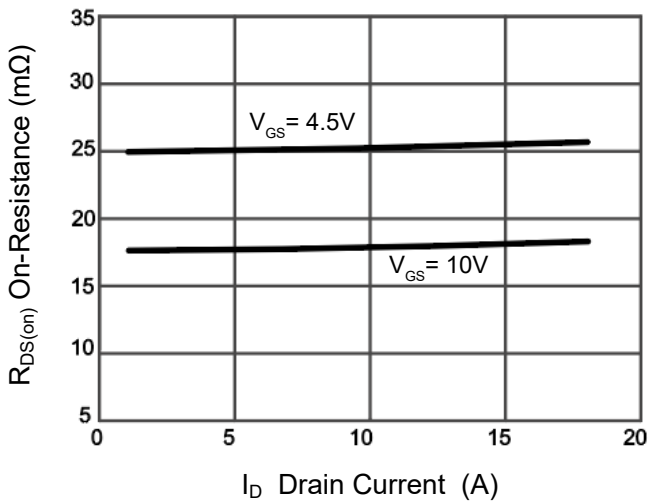
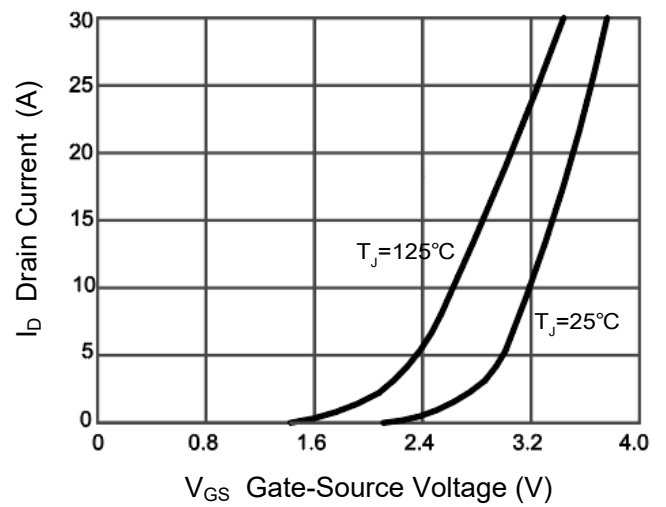
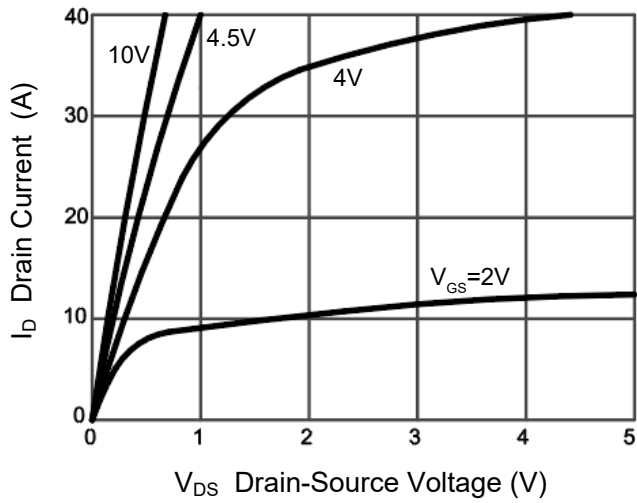
- Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.
 2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
 3. Pulse Test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 4. The test condition is $V_{DD}=30V, V_{GS}=10V, L=0.5\text{mH}, I_{AS}=7.3A, R_G=25\Omega, T_J=25^{\circ}\text{C}$.



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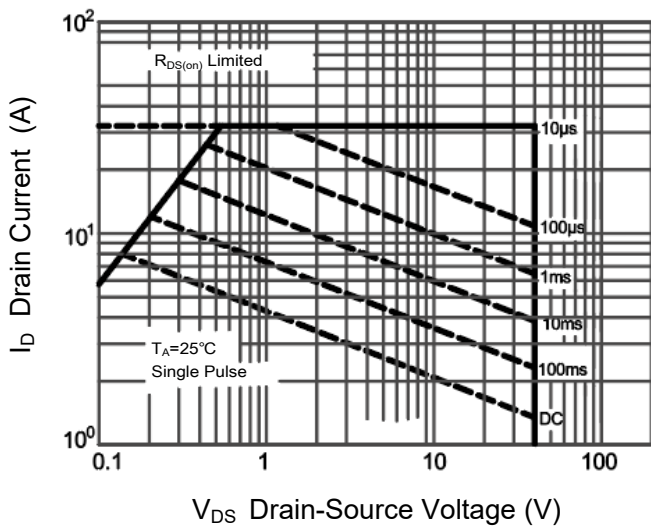
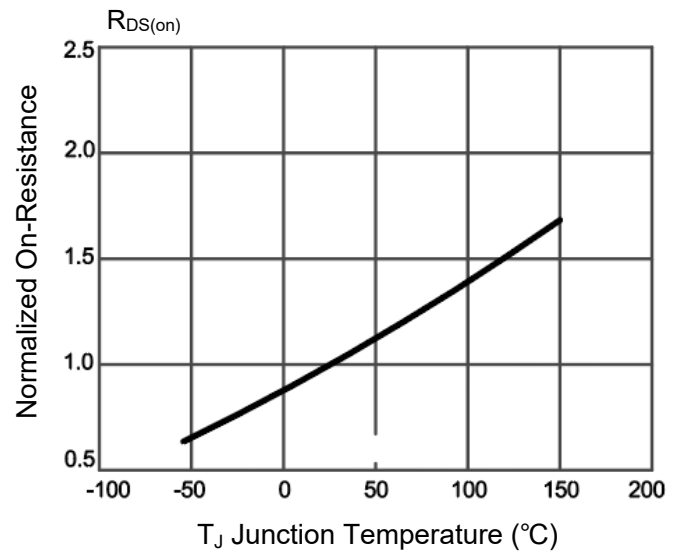
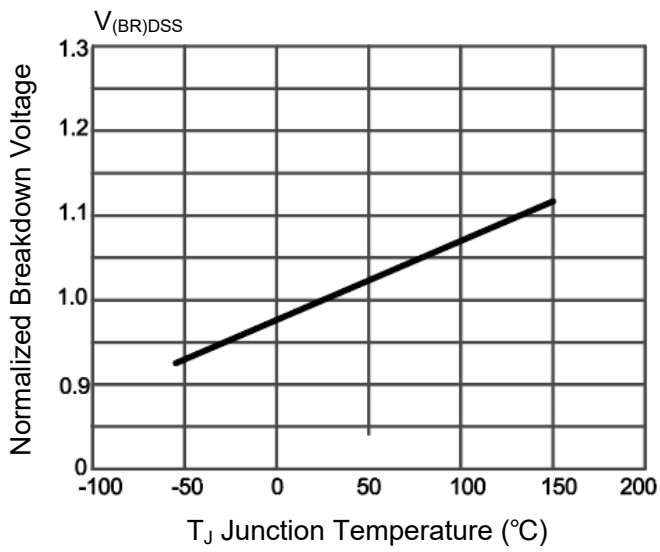
Typical Characteristic Curves





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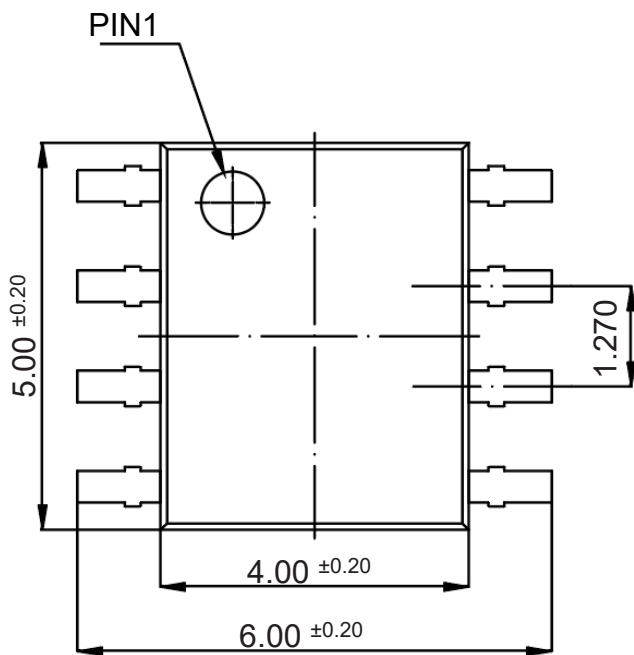
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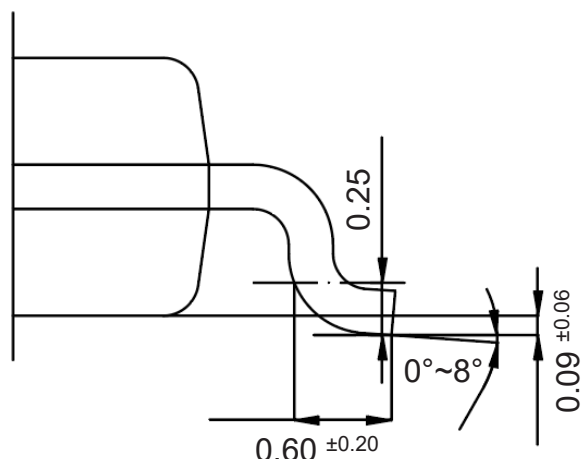
Package Outline

SOP-8

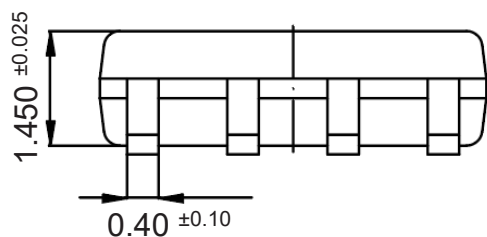
Dimensions in mm



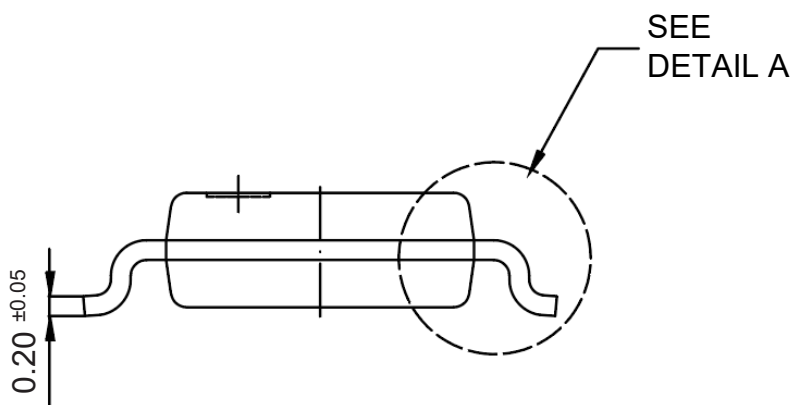
TOP VIEW



DETAIL A



SIDE VIEW



FRONT VIEW

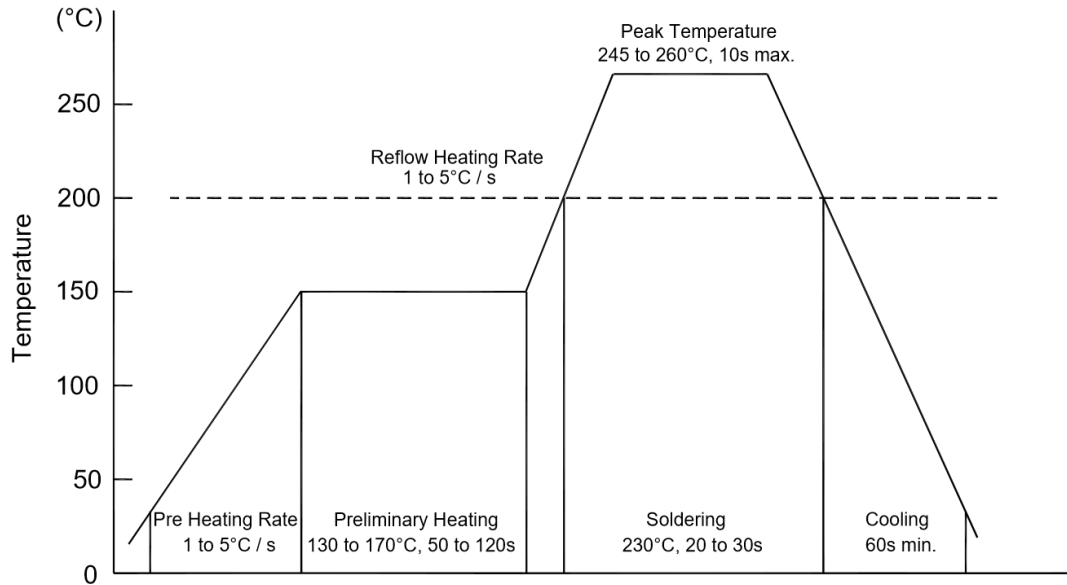
Ordering Information

Device	Package	Shipping
PJM09N40PA	SOP-8	4,000PCS/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: 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

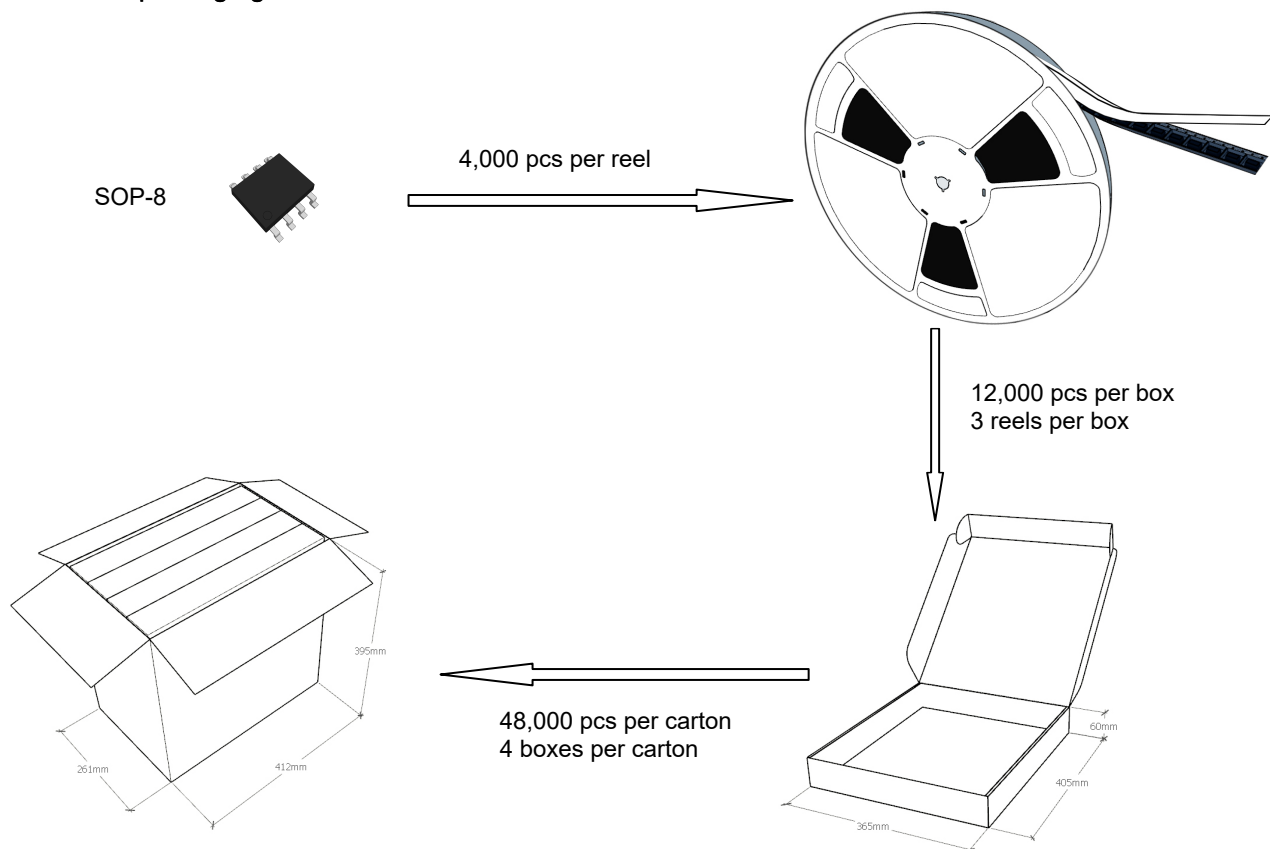


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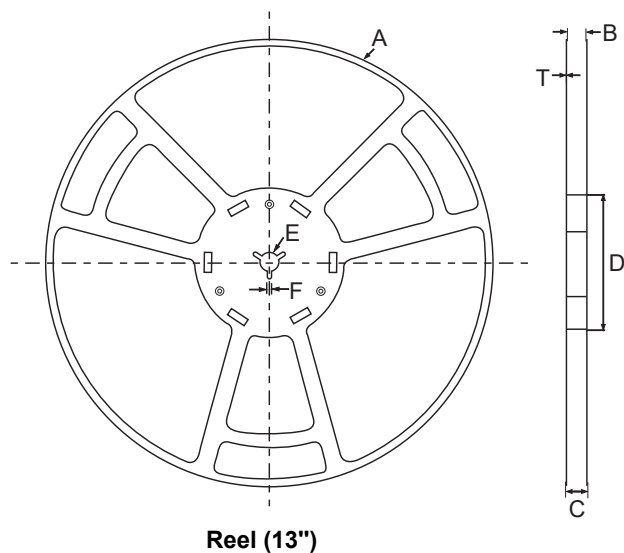
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Package Specifications

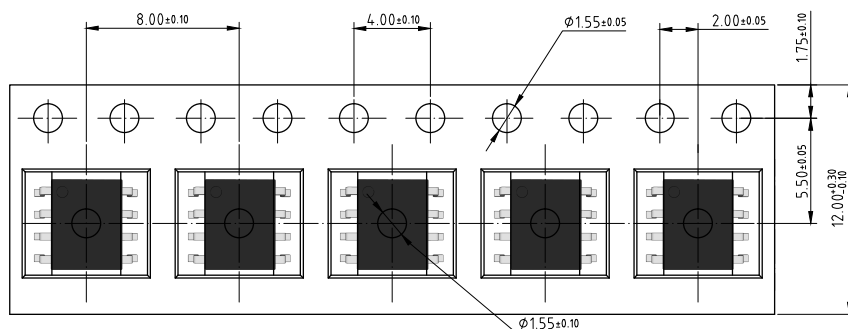
- The method of packaging



◆ 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
T	1.9 ± 0.2



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