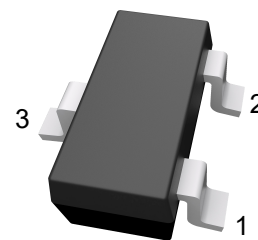




PJM2302NSC

N- Enhancement Mode Field Effect Transistor

SOT-23-3



1. Gate 2.Source 3.Drain

Marking: Q2

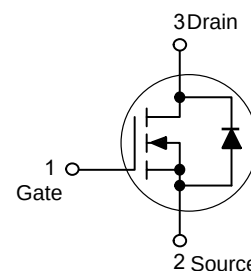
Features

- $V_{DS} = 20V, I_D = 4A$
 $R_{DS(ON)} < 55m\Omega @ V_{GS}=2.5V$
 $R_{DS(ON)} < 40m\Omega @ V_{GS}=4.5V$
- Low Gate Charge and $R_{DS(on)}$
- High power and current handing capability

Applications

- Load switch and in PWM applications
- Power management

Schematic diagram



Absolute Maximum Ratings

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous	I_D	4	A
Drain Current-Pulsed ^{Note1}	I_{DM}	20	A
Maximum Power Dissipation	P_D	1.25	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	150, -55 To 150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Ambient ^{Note2}	$R_{\theta JA}$	100	°C/W
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**Electrical Characteristics**(T_A=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V I _D =250μA	20	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V,V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±12V,V _{DS} =0V	-	-	±100	nA
Gate Threshold Voltage ^{Note3}	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250μA	0.5	0.8	1.2	V
Drain-Source On-State Resistance ^{Note3}	R _{DS(ON)}	V _{GS} =2.5V, I _D =2.8A	-	-	55	mΩ
		V _{GS} =4.5V, I _D =3A	-	-	40	mΩ
Forward Transconductance ^{Note3}	g _{FS}	V _{DS} =5V,I _D =3A	-	8	-	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =10V,V _{GS} =0V, f=1.0MHz	-	300	-	pF
Output Capacitance	C _{oss}		-	120	-	pF
Reverse Transfer Capacitance	C _{rss}		-	80	-	pF
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =10V, I _D =3A V _{GS} =4.5V,R _{GEN} =6Ω	-	10	-	nS
Turn-on Rise Time	t _r		-	50	-	nS
Turn-Off Delay Time	t _{d(off)}		-	17	-	nS
Turn-Off Fall Time	t _f		-	10	-	nS
Total Gate Charge	Q _g	V _{DS} =10V,I _D =3A, V _{GS} =4.5V	-	4	-	nC
Gate-Source Charge	Q _{gs}		-	0.7	-	nC
Gate-Drain Charge	Q _{gd}		-	1.5	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage ^{Note 3}	V _{SD}	V _{GS} =0V,I _S =4A	-	-	1.2	V
Diode Forward Current ^{Note 2}	I _S		-	-	4	A

Notes:

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%.



Typical Characteristics Curves

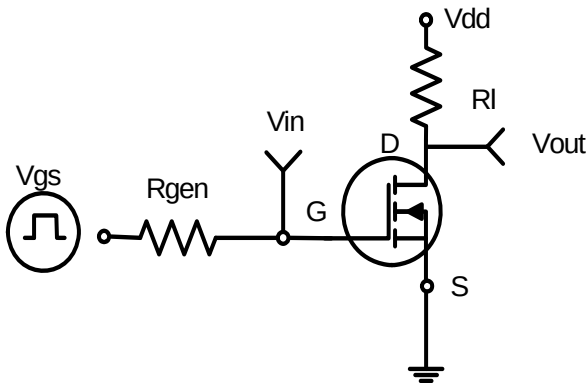


Figure 1: Switching Test Circuit

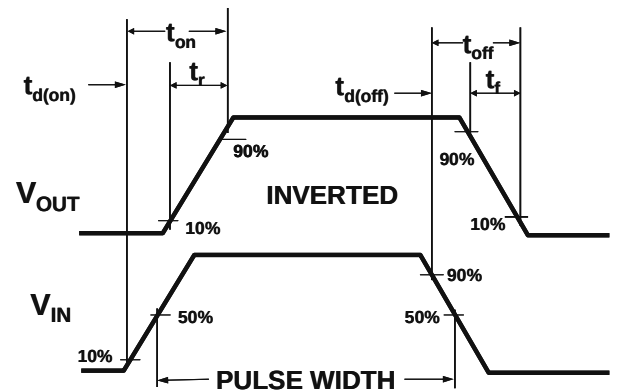


Figure 2: Switching Waveforms

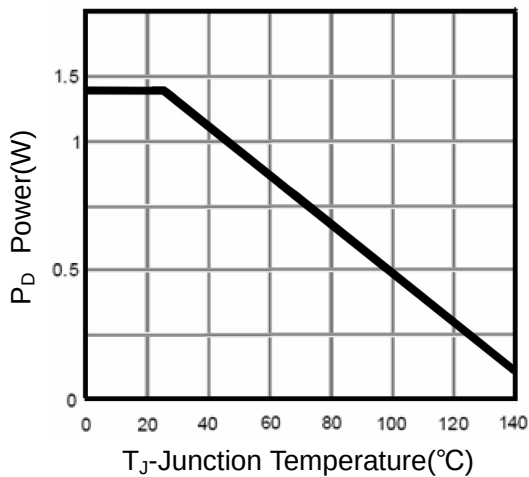


Figure 3 Power Dissipation

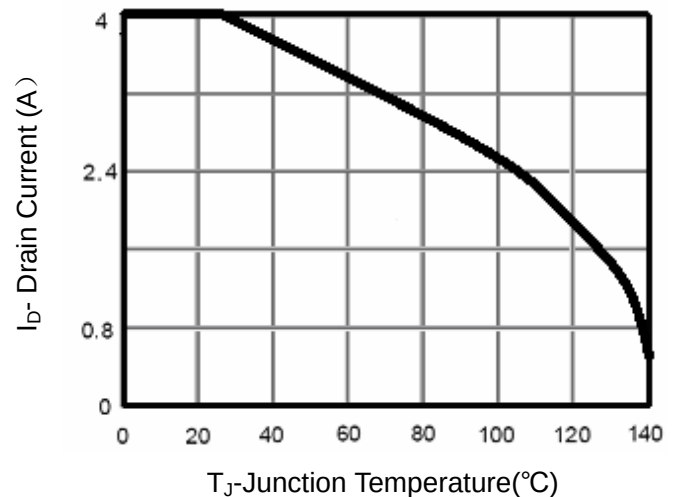


Figure 4 Drain Current

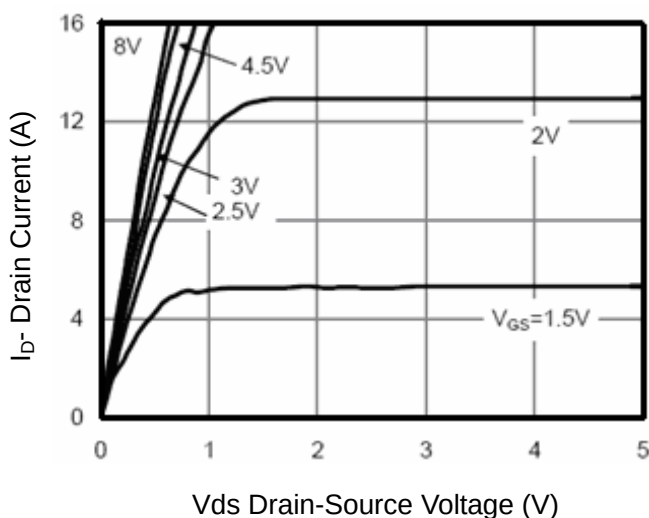


Figure 5 Output Characteristics

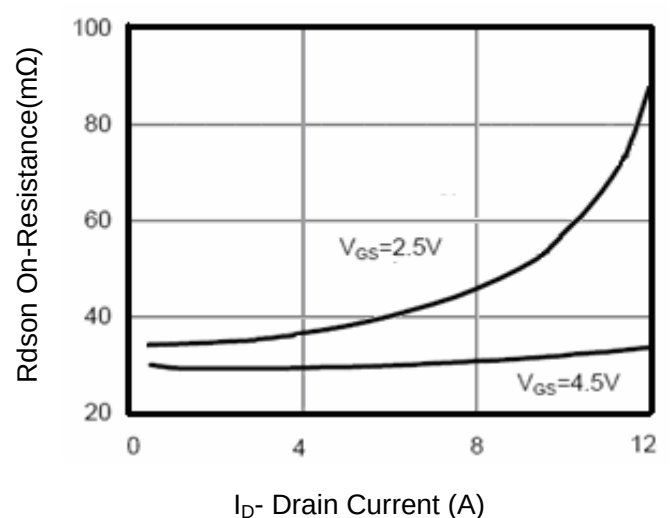
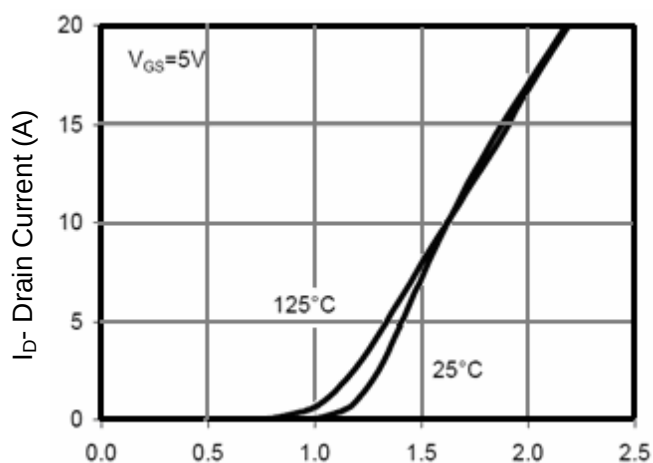
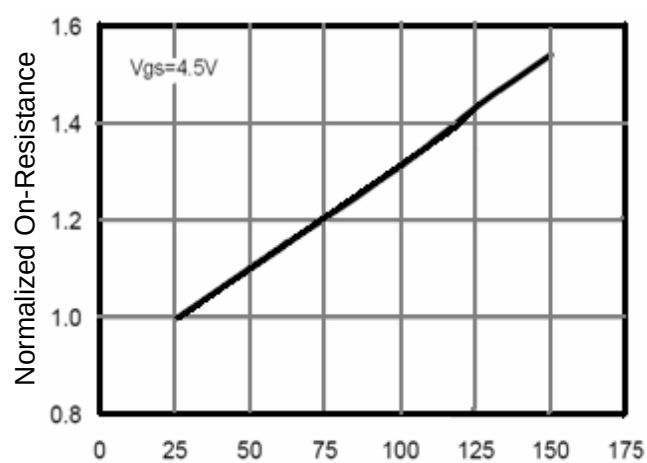


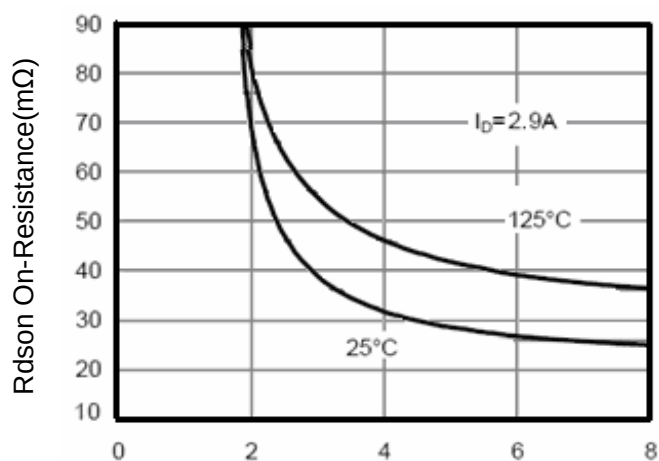
Figure 6 Drain-Source On-Resistance



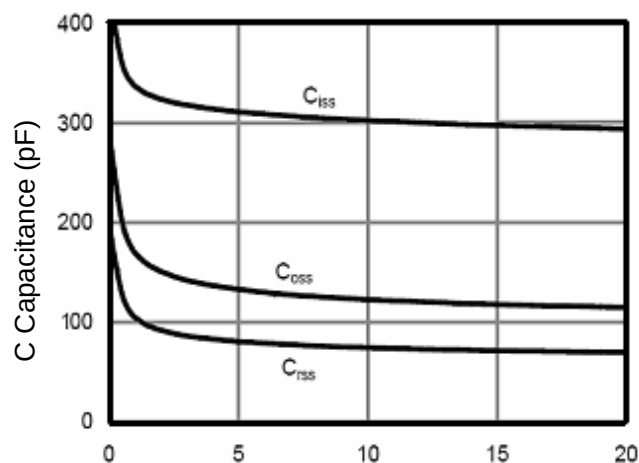
V_{gs} Gate-Source Voltage (V)
Figure 7 Transfer Characteristics



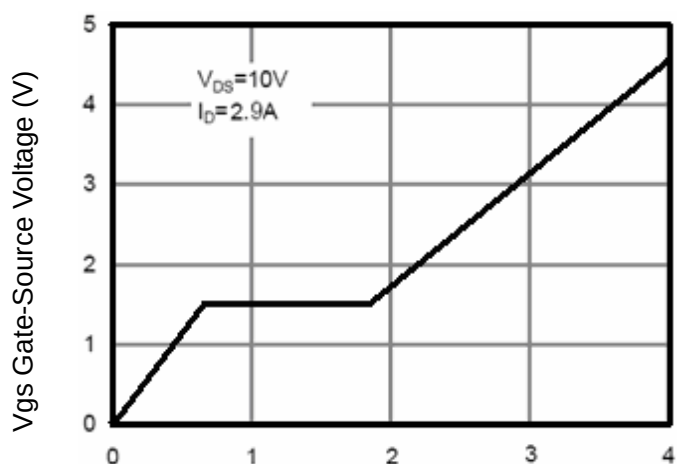
T_j-Junction Temperature(°C)
Figure 8 Drain-Source On-Resistance



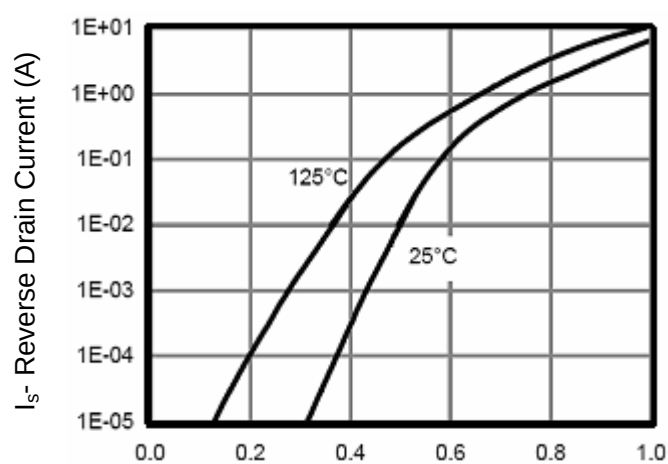
V_{gs} Gate-Source Voltage (V)
Figure 9 Rdson vs Vgs



V_{ds} Drain-Source Voltage (V)
Figure 10 Capacitance vs Vds



Q_g Gate Charge (nC)
Figure 11 Gate Charge



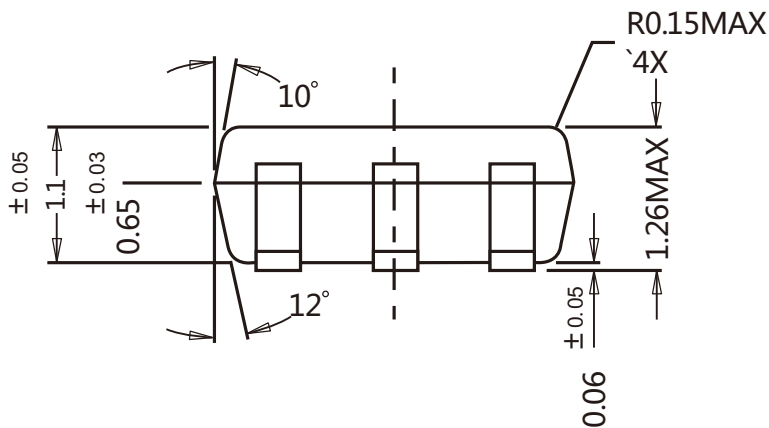
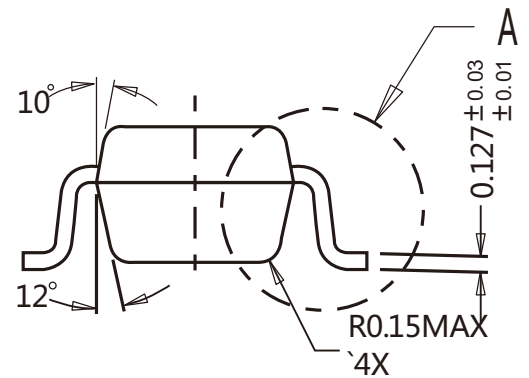
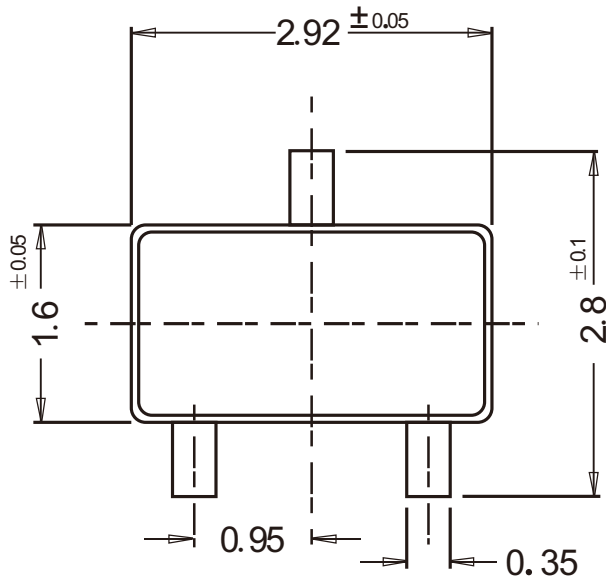
V_{sd} Source-Drain Voltage (V)
Figure 12 Source- Drain Diode Forward



Package Outline

SOT-23-3

Dimensions in mm



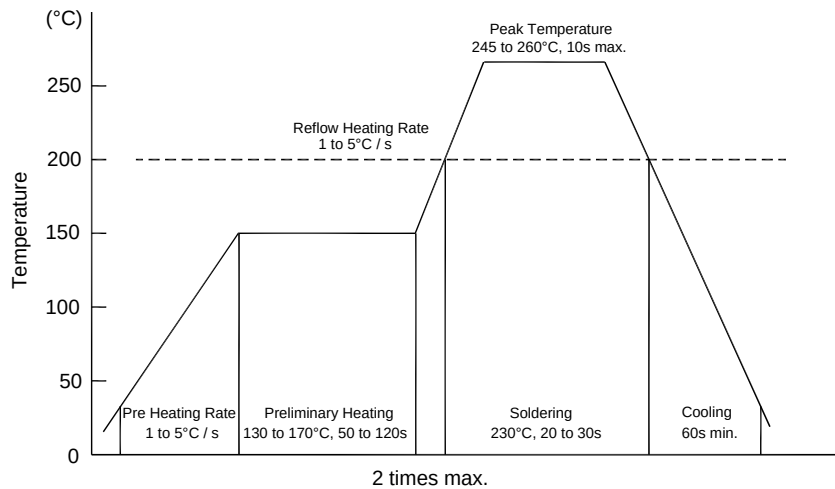
Ordering Information

Device	Package	Shipping
PJM2302NSC	SOT-23-3	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

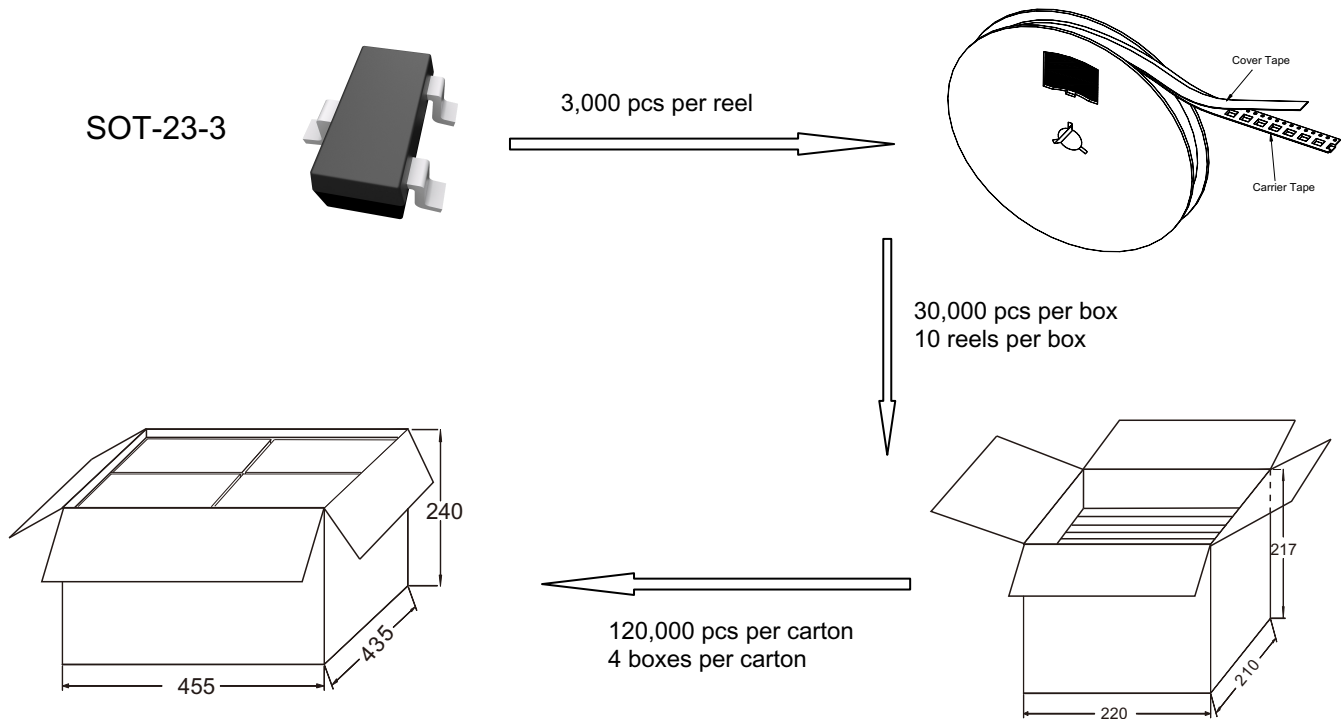
- **Temperature**
5 to 40 °C
- **Humidity**
30 to 80% RH
- **Recommended period**
One year after manufacturing



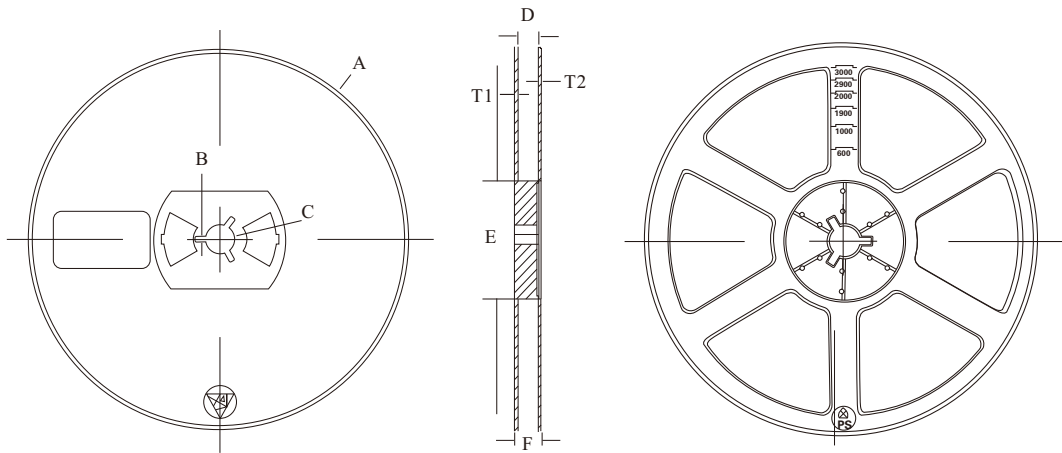
PJM2302NSC

N- Enhancement Mode Field Effect Transistor

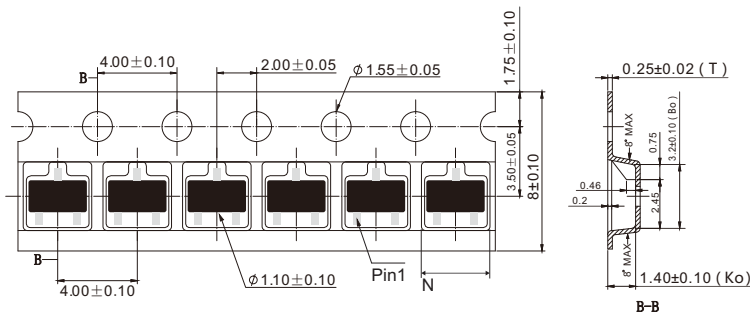
Package Specifications



2. Tape and reel data(7inch Units:mm)



Reel (7")



Tape (8mm)

Symbol	Value (unit: mm)
A	$\varnothing 177.8 \pm 1$
B	2.7 ± 0.2
C	$\varnothing 13.5 \pm 0.2$
E	$\varnothing 54.5 \pm 0.2$
F	12.3 ± 0.3
D	$9.6 \pm 2 / -0.3$
T1	1.0 ± 0.2
T2	1.2 ± 0.2
N	3.15 ± 0.1
G	1.22 ± 0.1