



PJM2302NSA-S

N- Enhancement Mode Field Effect Transistor

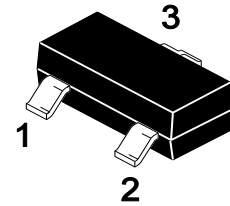
Features

- Fast Switching
- Low Gate Charge and $R_{DS(on)}$
- High power and current handling capability

Applications

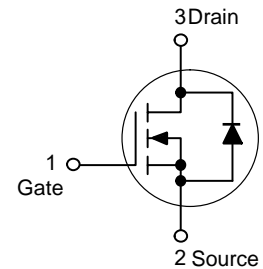
- Battery protection
- Load switch
- Power management

SOT-23



1. Gate 2. Source 3. Drain
Marking: 22S

Schematic diagram



Absolute Maximum Ratings

Ratings at $T_C = 25^\circ\text{C}$ 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	2	A
Maximum Power Dissipation	P_D	0.9	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Limit	Unit
Thermal Resistance, Junction-to-Ambient ^{Note 2}	$R_{\theta JA}$	139	$^\circ\text{C/W}$



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Electrical Characteristics

$T_A=25^\circ\text{C}$ unless otherwise noted

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.4	0.75	1.2	V
Drain-Source On-State Resistance ^{Note3}	$R_{DS(ON)}$	$V_{GS}=2.5V, I_D=1A$	-	45	80	$m\Omega$
		$V_{GS}=4.5V, I_D=2A$	-	35	50	$m\Omega$
Forward Transconductance ^{Note3}	g_{FS}	$V_{DS}=5V, I_D=2A$	-	5	-	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=10V, V_{GS}=0V,$ $f=1.0MHz$	-	260	-	pF
Output Capacitance	C_{oss}		-	48	-	pF
Reverse Transfer Capacitance	C_{rss}		-	27	-	pF
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=10V, R_L=3.3\Omega$ $V_{GS}=4.5V, R_{GEN}=6\Omega$	-	2.5	-	nS
Turn-on Rise Time	t_r		-	3.2	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	21	-	nS
Turn-Off Fall Time	t_f		-	3	-	nS
Total Gate Charge	Q_g	$V_{DS}=10V, I_D=2A,$ $V_{GS}=4.5V$	-	2.9	5	nC
Gate-Source Charge	Q_{gs}		-	0.4	-	nC
Gate-Drain Charge	Q_{gd}		-	0.6	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage ^{Note 3}	V_{SD}	$V_{GS}=0V, I_S=2A$	-	-	1.2	V
Diode Forward Current ^{Note 2}	I_S		-	-	2	A

Notes:

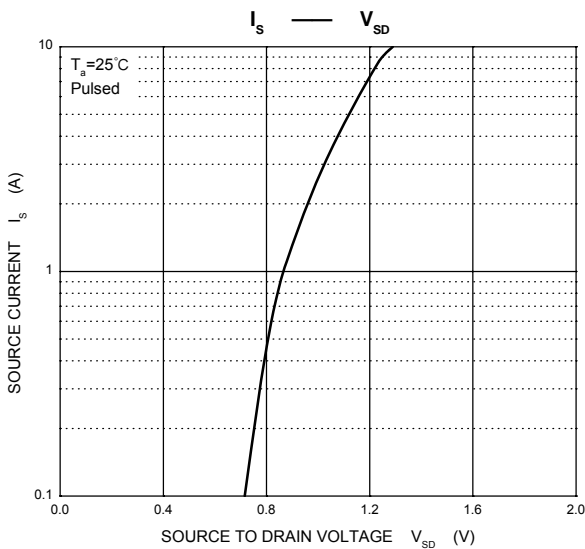
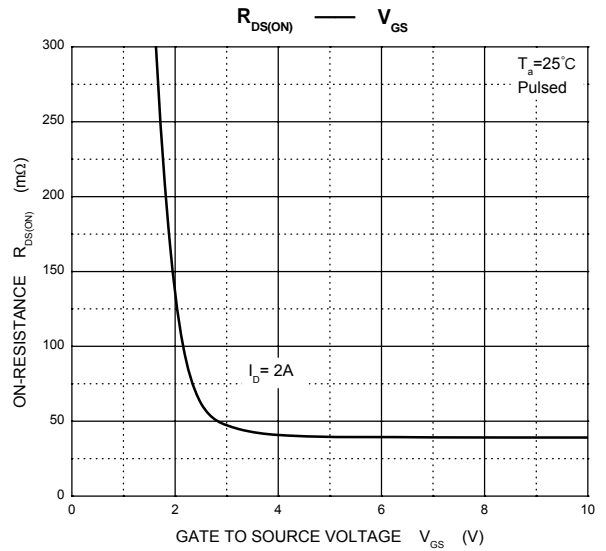
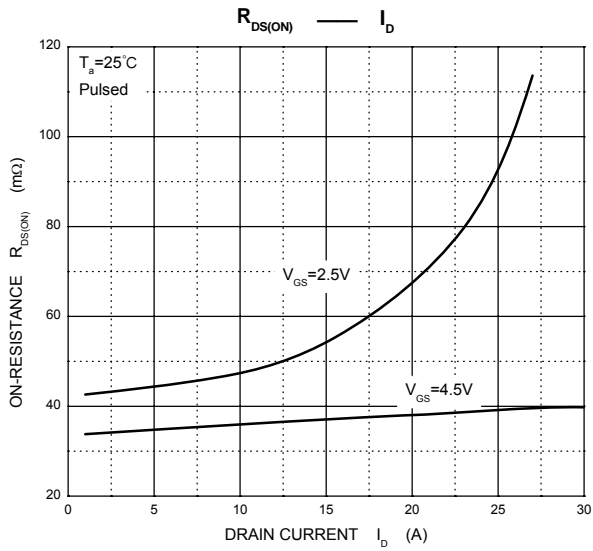
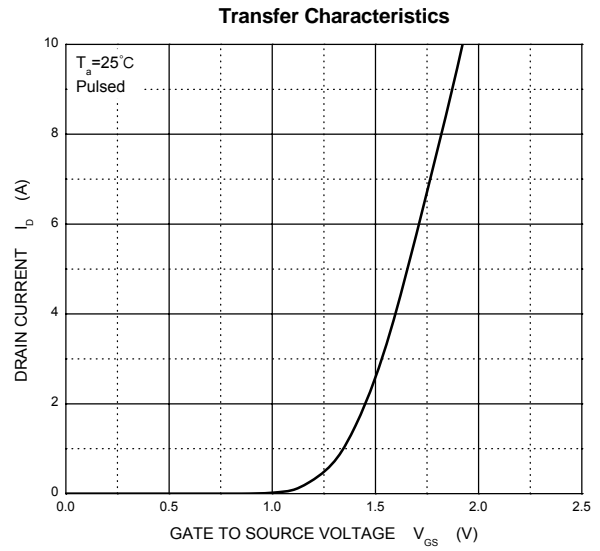
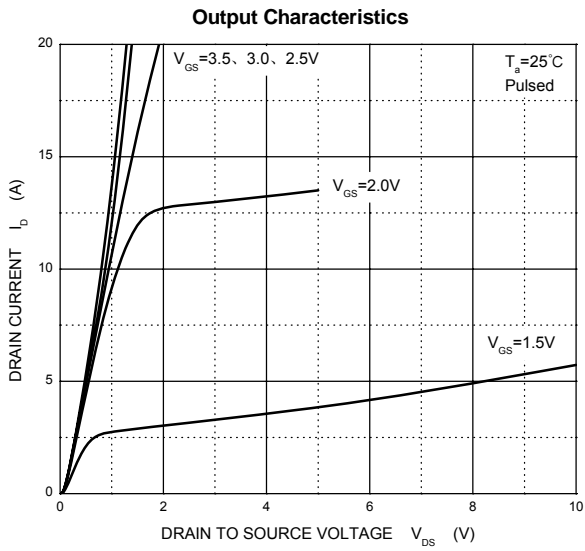
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.



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Typical Characteristics Curves



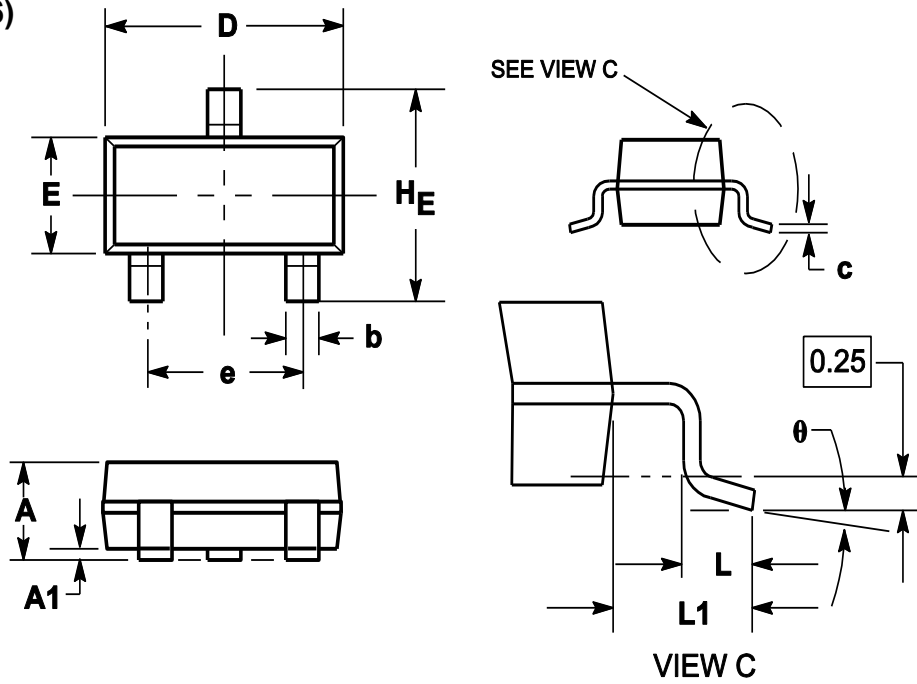


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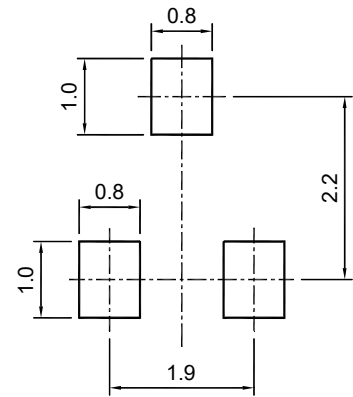
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Package Outline

SOT-23 (TO-236)



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

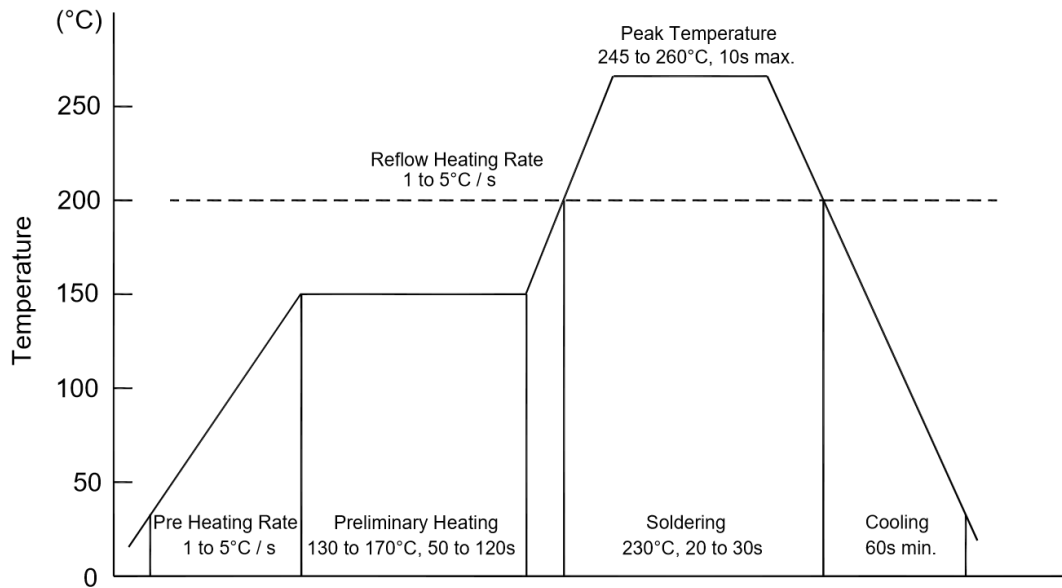


SOT-23 (TO-236)

Recommended soldering pad

Ordering Information

Device	Package	Shipping
PJM2302NSA-S	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

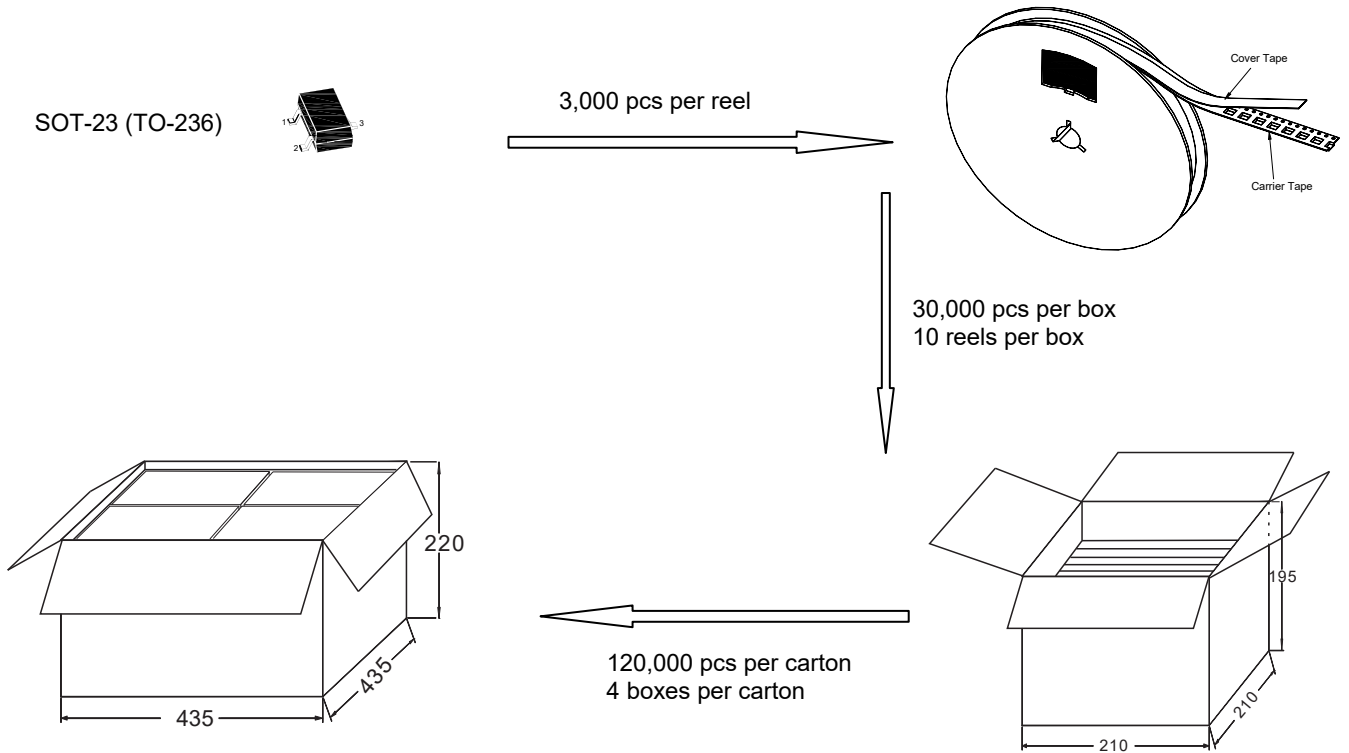


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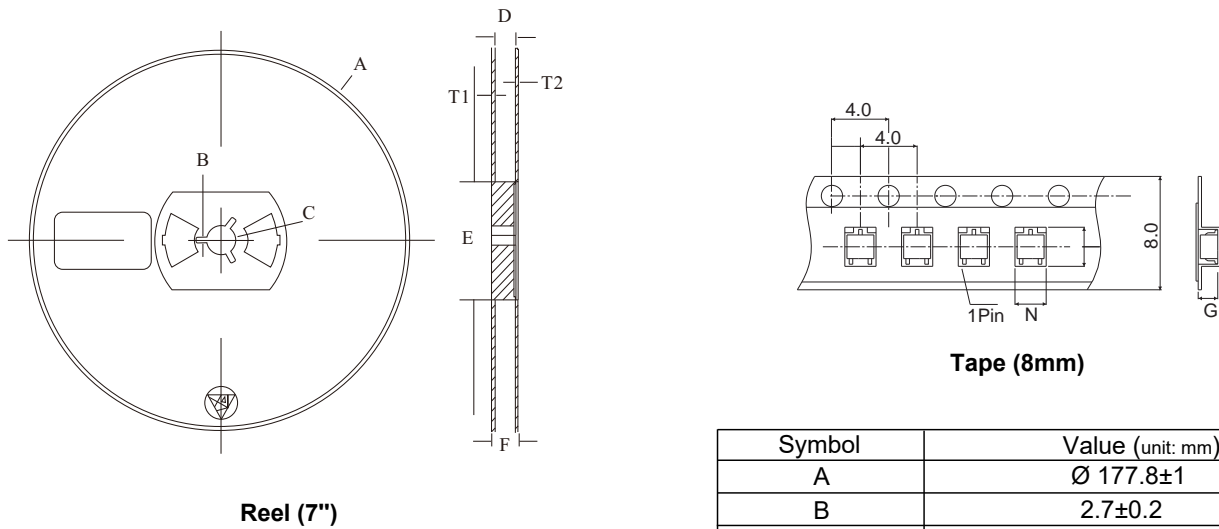
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Package Specifications

◆ The method of packaging



◆ Embossed tape and reel data



Symbol	Value (unit: mm)
A	∅ 177.8±1
B	2.7±0.2
C	∅ 13.5±0.2
E	∅ 54.5±0.2
F	12.3±0.3
D	9.6+2/-0.3
T1	1.0±0.2
T2	1.2±0.2
N	3.15±0.1
G	1.25±0.1