



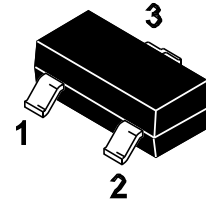
# PJM123NSA

## N-Channel Enhancement Mode Power MOSFET

### Features

- Surface mount package
- Low gate charge and  $R_{DS(on)}$
- ESD protected(HBM) up to 2KV
- $V_{DS}= 100V, I_D= 0.17A$   
 $R_{DS(on)} < 6\Omega @ V_{GS}= 10V$

### SOT-23



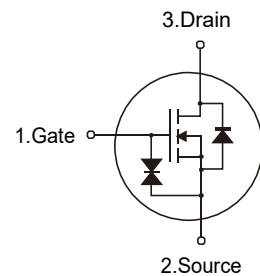
1. Gate 2. Source 3. Drain

Marking Code: B123

### Applications

- Switching application
- Small servo motor controls

### Schematic Diagram



### Absolute Maximum Ratings

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous	$I_D$	0.17	A
Drain Current-Pulsed	$I_{DM}$	0.68	A
	$t_p=10\mu s$		
Maximum Power Dissipation	$P_D$	0.9	W
Junction Temperature	$T_J$	150	°C
Storage Temperature Range	$T_{STG}$	-55 to +150	°C

### Thermal Characteristics

Thermal Resistance, Junction-to-Ambient <sup>Note1</sup>	$R_{\theta JA}$	139	°C/W
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### Electrical Characteristics

(Ta=25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100	--	--	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V$	--	--	1	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	--	--	$\pm 10$	$\mu A$
Gate Threshold Voltage <sup>Note2</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	--	3.0	V
Drain-Source On-Resistance <sup>Note2</sup>	$R_{DS(on)}$	$V_{GS}=10V, I_D=0.17A$	--	3.5	6	$\Omega$
		$V_{GS}=4.5V, I_D=0.17A$	--	3.8	10	$\Omega$
Forward Transconductance <sup>Note2</sup>	$g_{FS}$	$V_{DS}=10V, I_D=0.17A$	80	--	--	S
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V, f=1MHz$	--	29	60	pF
Output Capacitance	$C_{oss}$		--	10	15	pF
Reverse Transfer Capacitance	$C_{rss}$		--	2	6	pF
<b>Switching Characteristics</b>						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=30V, I_D=0.28A$ $V_{GS}=10V, R_{GEN}=50\Omega$	--	--	8	nS
Turn-on Rise Time	$t_r$		--	--	8	nS
Turn-off Delay Time	$t_{d(off)}$		--	--	13	nS
Turn-off Fall Time	$t_f$		--	--	16	nS
Total Gate Charge	$Q_g$	$V_{DS}=10V, I_D=0.22A,$ $V_{GS}=10V$	--	1.4	2	nC
Gate-Source Charge	$Q_{gs}$		--	0.15	0.25	nC
Gate-Drain Charge	$Q_{gd}$		--	0.2	0.4	nC
<b>Source-Drain Diode Characteristics</b>						
Diode Forward Voltage <sup>Note2</sup>	$V_{SD}$	$V_{GS}=0V, I_S=0.34A$	--	0.75	1.3	V
Diode Forward Current <sup>Note1</sup>	$I_S$		--	--	0.17	A

Note: 1. Surface mounted on FR4 board using the minimum recommended pad size.

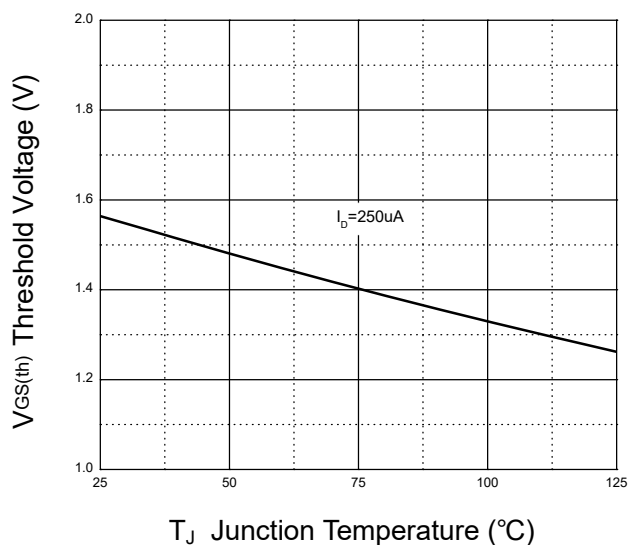
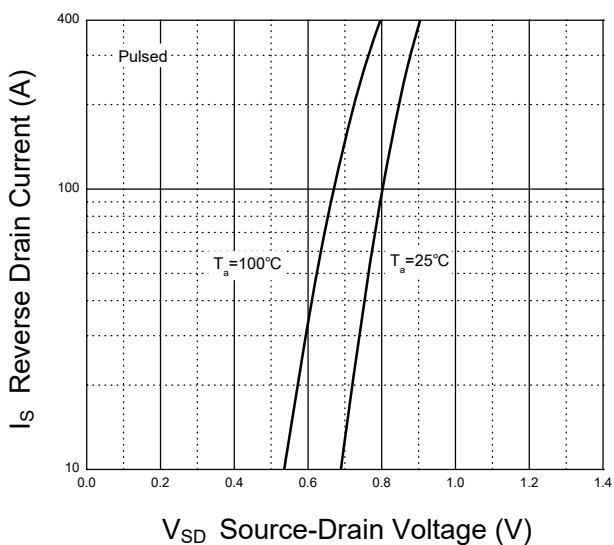
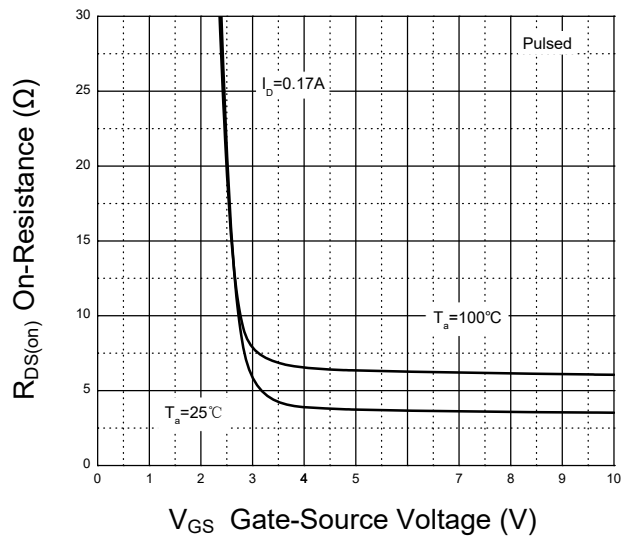
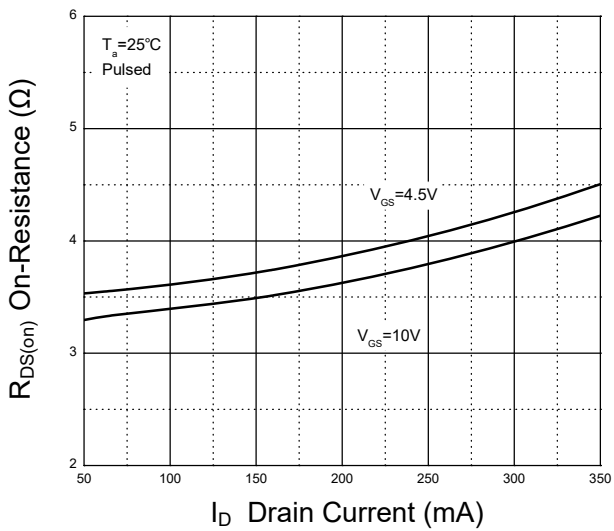
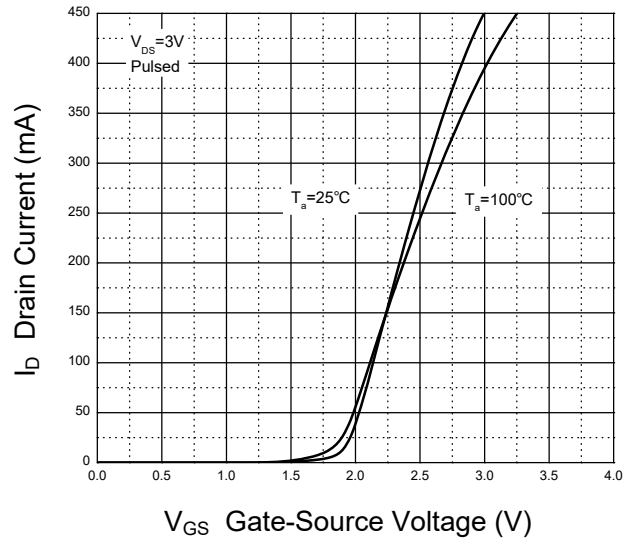
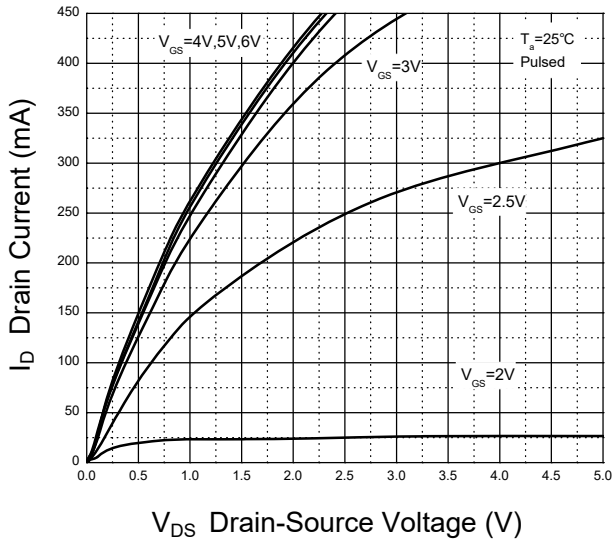
2. Pulse Test: Pulse width $\leq 300\mu s$ , duty cycle $\leq 2\%$ .



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### Typical Characteristic Curves





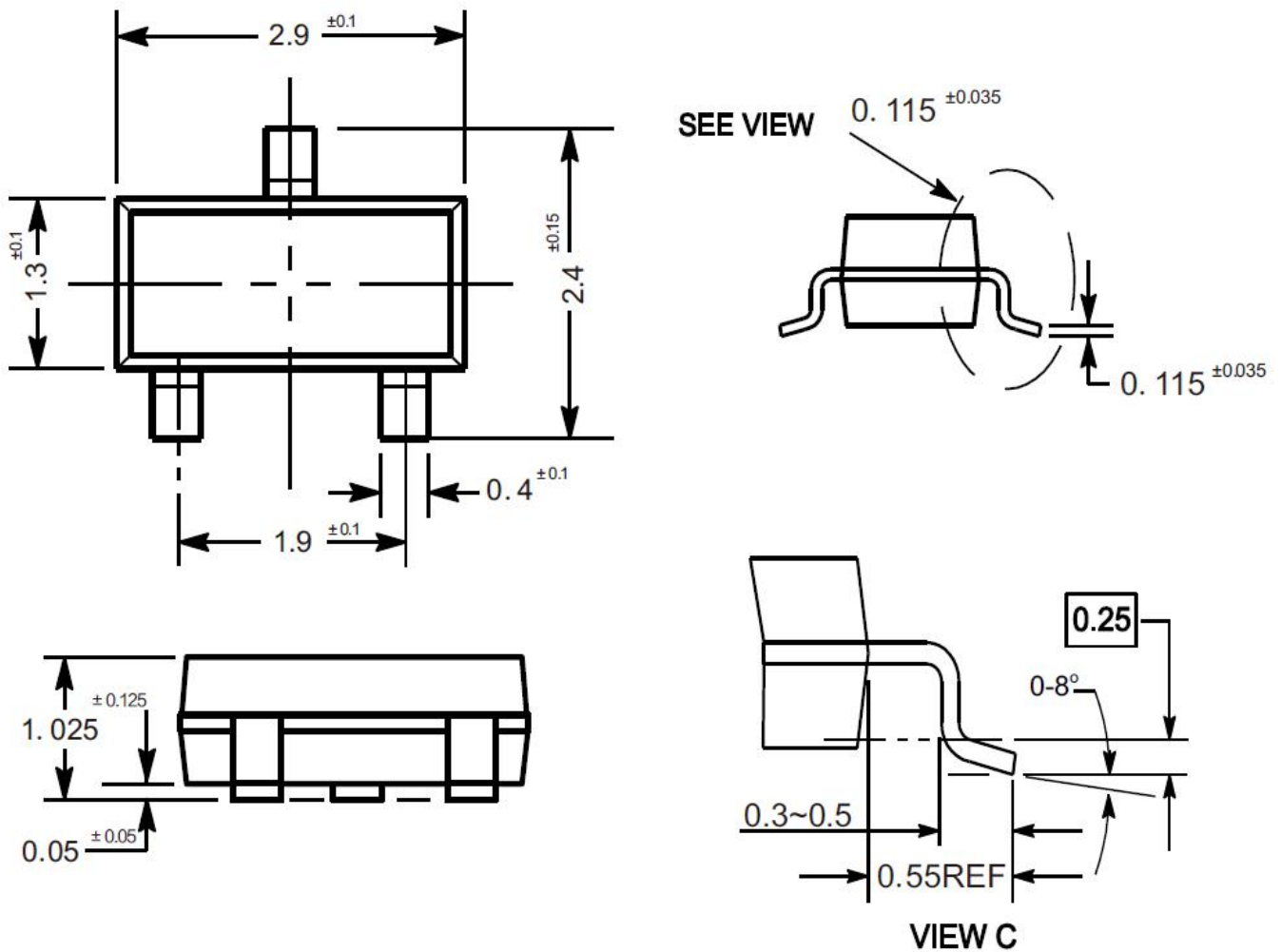
# PJM123NSA

## N-Channel Enhancement Mode Power MOSFET

### Package Outline

SOT-23

Dimensions in mm



### Ordering Information

Device	Package	Shipping
PJM123NSA	SOT-23	3,000PCS/Reel&7inches



### 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

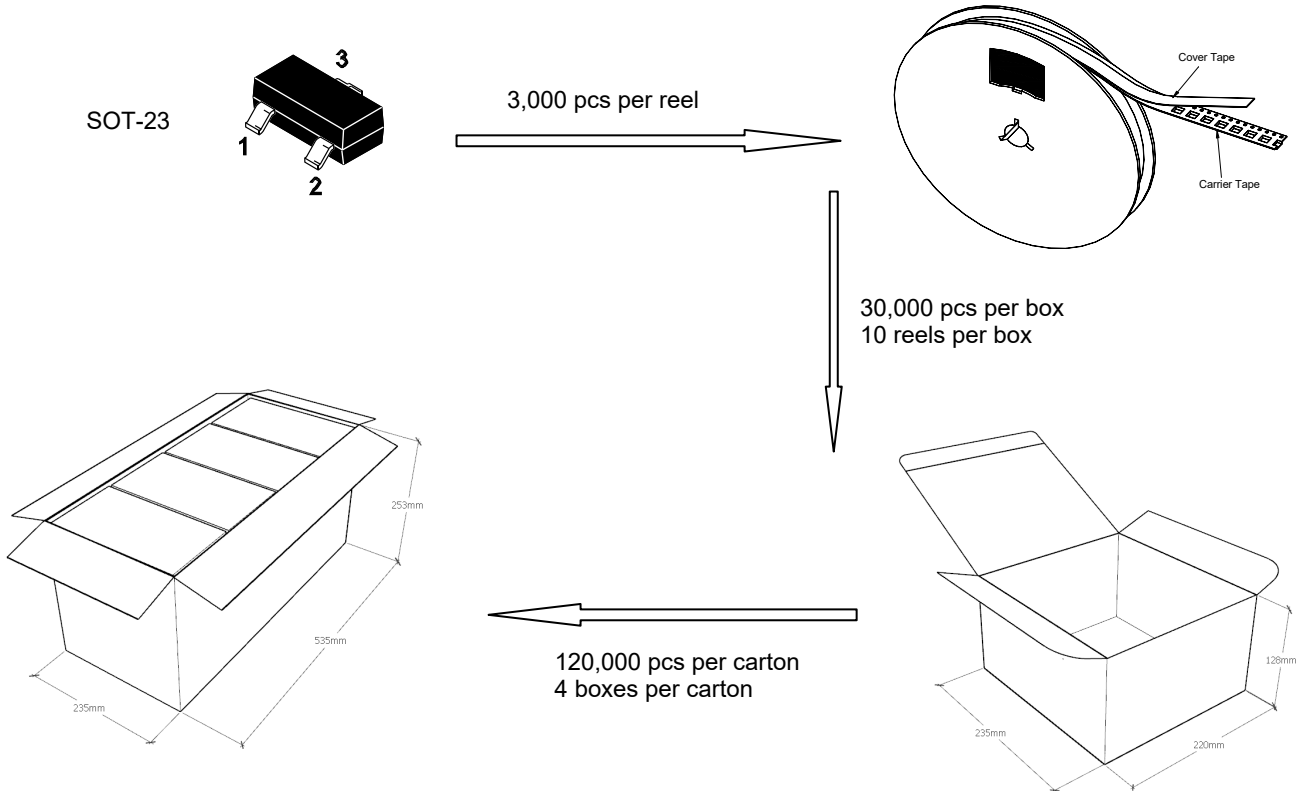
- Temperature: 370 °C
- Time: 3s max.
- Times: one time

#### ◆ Storage conditions

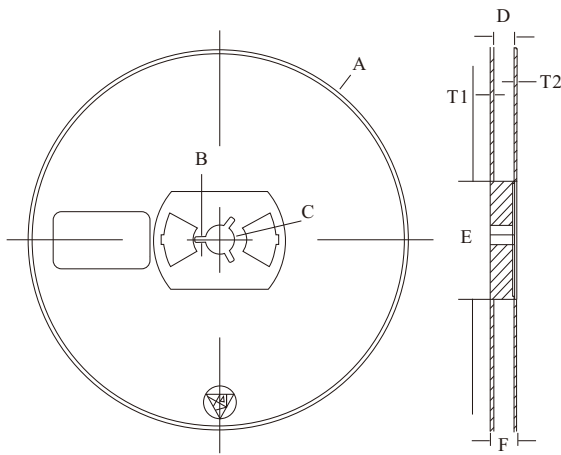
- **Temperature**  
5 to 40 °C
- **Humidity**  
30 to 80% RH
- **Recommended period**  
One year after manufacturing

### Package Specifications

- The method of packaging



### ◆ Embossed tape and reel data



Symbol	Value (unit: mm)
A	Ø 177.8±1
B	2.7±0.2
C	Ø 13.5±0.2
E	Ø 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

Reel (7")

