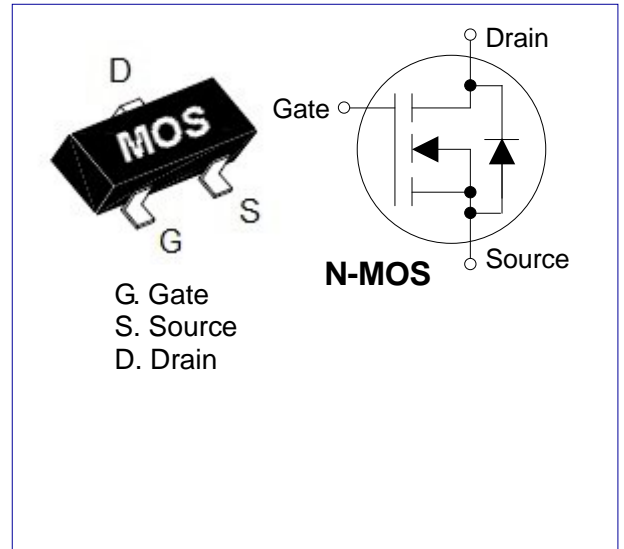


**Features**

- $I_D=6A @ V_{GS}=10V$
- $I_D=5A @ V_{GS}=4.5V$
- $R_{DS(on)}=19m\Omega(Typ.) @ V_{GS}=10V$
- $R_{DS(on)}=23m\Omega(Typ.) @ V_{GS}=4.5V$
- $R_{DS(on)}=31m\Omega(Typ.) @ V_{GS}=2.5V$
- $R_{DS(on)}=42m\Omega(Typ.) @ V_{GS}=1.8V$
- Low On-Resistance
- Low input capacitance
- Fast switching speed
- Low input/output leakage
- Application:
  - Power Management
  - Battery Power System
  - Automobile Electronics
  - Portable Appliances
  - Load Switch
  - DSC
- Package: SOT23, SOT23-3L
- Lead free and green device


**Absolute Maximum Ratings ( $T_A=25^\circ C$  unless otherwise noted)**

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		$V_{DS}$	20	V
Gate-Source Voltage		$V_{GS}$	$\pm 10$	V
Drain Current <sup>a</sup>	$T_C=25^\circ C$	$I_D$	6.0	A
	$T_C=70^\circ C$		3.6	
Drain Current – Pulsed <sup>a</sup>		$I_{DM}$	24	A
Power Dissipation ( $T_C=25^\circ C$ )		$P_D$	1.56	W
Power Dissipation – Derate Above $25^\circ C$			0.012	
Storage Temperature Range		$T_{STG}$	-55 ~ +150	$^\circ C$
Operating Junction Temperature Range		$T_J$	-55 ~ +150	$^\circ C$
Thermal Resistance, Junction-to-Ambient1		$R_{\theta JA}$	90	$^\circ C/W$

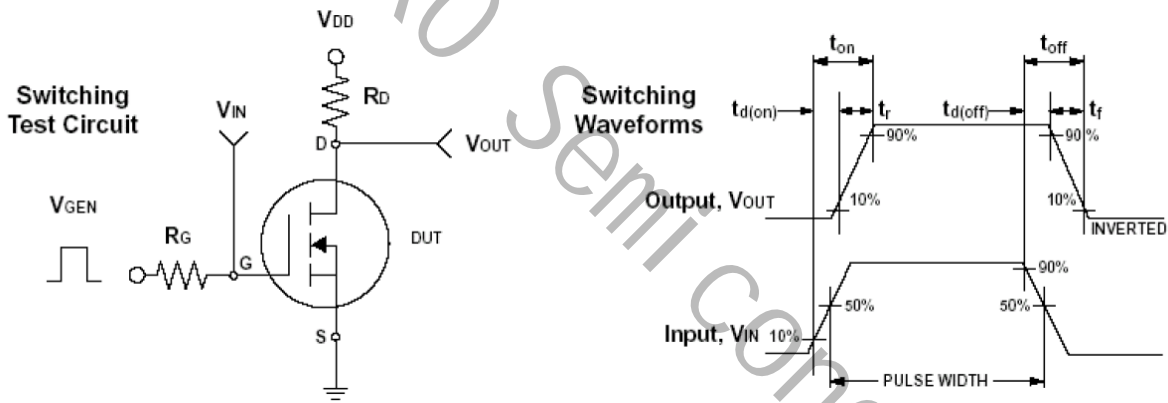
**Electrical Characteristics ( $T_J=25^\circ C$  unless otherwise noted)**

Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	20	---	---	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=20V, V_{GS}=0V, T_J=25^\circ C$	---	---	1	nA
Gate-Body Leakage	$I_{GSS}$	$V_{GS}=\pm 10V, V_{DS}=0V$	---	---	$\pm 100$	$\mu A$
<b>On Characteristics <sup>a</sup></b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.4	0.75	1.1	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=6.0A$	---	19	24	m $\Omega$
		$V_{GS}=4.5V, I_D=5.0A$	---	22	28	
		$V_{GS}=2.5V, I_D=4.0A$	---	31	42	
		$V_{GS}=1.8V, I_D=2.0A$	---	42	63	
Forward Transconductance	$g_{fs}$	$V_{DS}=10V, I_D=6A$	---	9.5	---	S
<b>Drain-Source Diode Characteristics <sup>a</sup></b>						
Continuous Source Current	$I_S$	$V_G=V_D=0V, \text{Force Current}$	---	---	6.0	A

Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=1A$	---	---	1.2	V
<b>Dynamic Characteristics <sup>b</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=10V, V_{GS}=0V, F=1.0MHz$	---	600	---	pF
Output Capacitance	$C_{oss}$		---	113	---	
Reverse Transfer Capacitance	$C_{rss}$		---	60	---	
<b>Switching Characteristics <sup>b</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS}=10V, V_{GS}=4.5V, I_D=6.0A$	---	7.2	---	nC
Gate-Source Charge	$Q_{gs}$		---	1.5	---	
Gate-Drain Charge	$Q_{gd}$		---	1.9	---	
Turn-On Delay Time	$T_{d(on)}$	$V_{DD}=10V, V_{GS}=4.5V$ $R_G=3\Omega, R_L=1.5\Omega$	---	13	---	ns
Rise Time	$T_r$		---	53	---	
Turn-Off Delay Time	$T_{d(off)}$		---	18.2	---	
Fall Time	$T_f$		---	10.8	---	

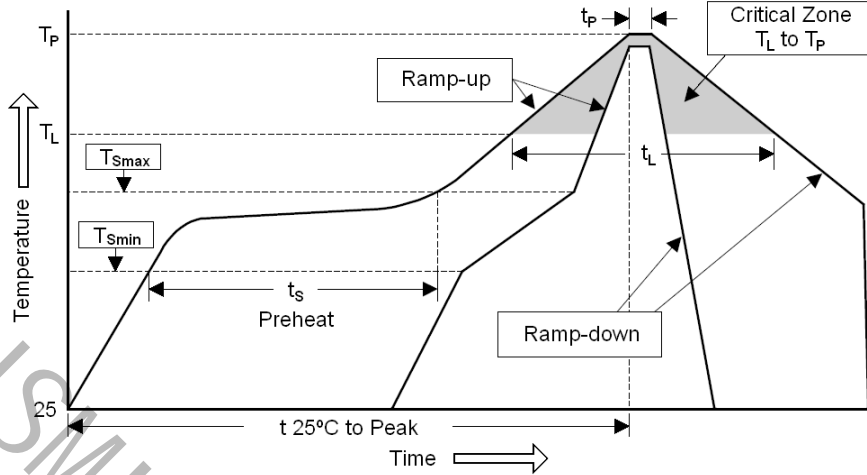
Notes: a. Repetitive Rating: Pulsed width limited by maximum junction temperature.  
 b. Pulse test: pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .  
 c. Guaranteed by design, not subject to production testing.

### Switching Time Test Circuit and Waveforms



**Soldering Methods For Products**

1. Storage environment : Temperature=10°C~35°C, Humidity=65%±15%
2. Reflow soldering of surface mount devices


**Figure : Temperature Profile**

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average ramp-up rate ( $T_L$ to $T_P$ )	< 3°C/sec	< 3°C/sec
Preheat		
- Temperature Min ( $T_{Smin}$ )	100°C	100°C
- Temperature Max ( $T_{Smax}$ )	150°C	200°C
- Time (Min to Max) ( $t_s$ )	60 ~ 120 sec	60 ~ 180 sec
$T_{Smax}$ to $T_L$		
- Ramp-up rate	< 3°C/sec	< 3°C/sec
Time maintained above:		
- Temperature ( $T_L$ )	183°C	217°C
- Time ( $t_L$ )	60 ~ 150 sec	60 ~ 150 sec
Peak Temperature ( $T_P$ )	240°C +0/-5°C	260°C +0/-5°C
Time within 5°C of actual Peak Temperature ( $t_p$ )	10 ~ 30 sec	20 ~ 40 sec
Ramp-down rate	< 6°C/sec	< 6°C/sec
Time 25°C to Peak Temperature	< 6 minutes	< 8 minutes

3. Flow (wave) soldering (solder dipping)

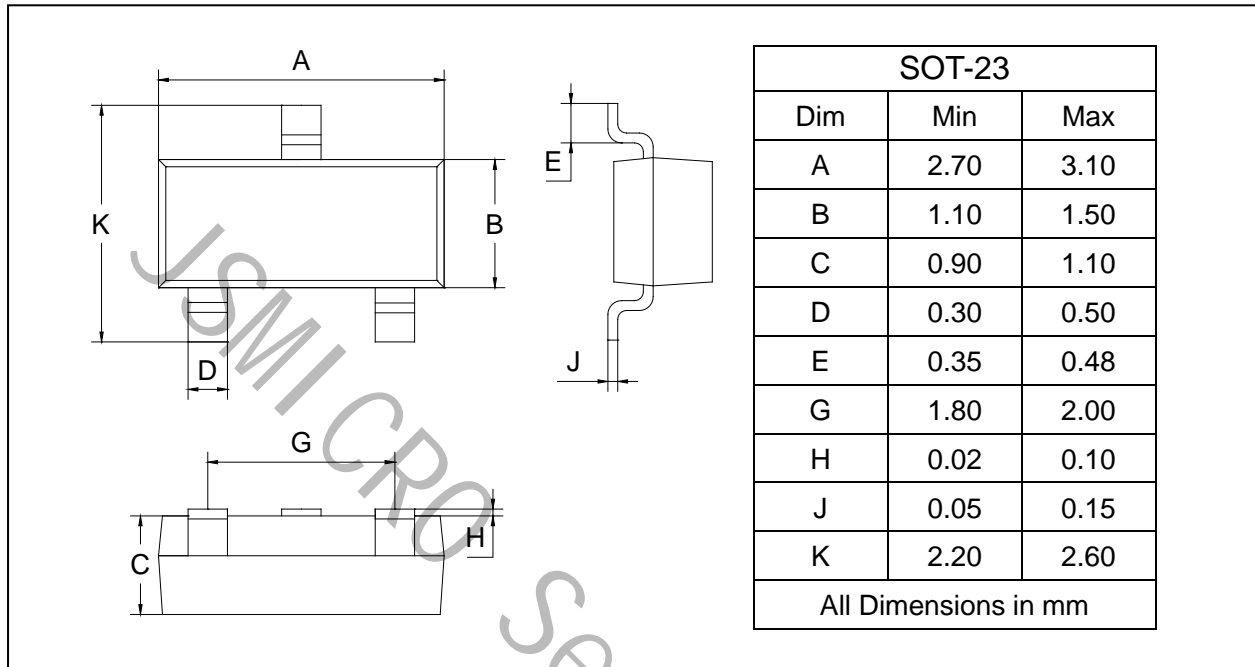
Product	Peak Temperature	Dipping Time
Pb devices	245°C ±5°C	5sec ±1sec
Pb-Free devices	260°C +0/-5°C	5sec ±1sec

- 经锡炉或回焊炉的温度切勿超过 260 °C (Max safe temperature: 260°C)。

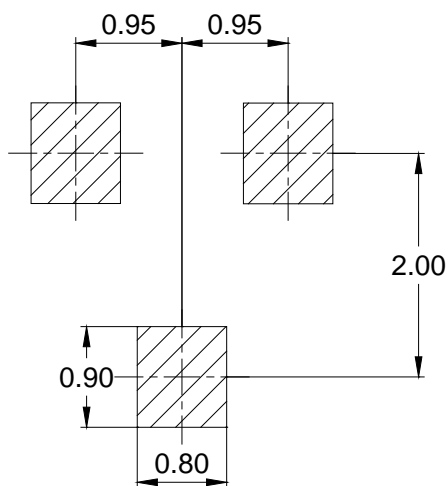
## 尺寸图/PACKAGE OUTLINE

Plastic surface mounted package

SOT-23



## SOLDERING FOOTPRINT



## 包装信息/PACKAGE INFORMATION

Part No.	Package	Shipping
JSM3420S	SOT-23	3000pcs / Tape & Reel

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