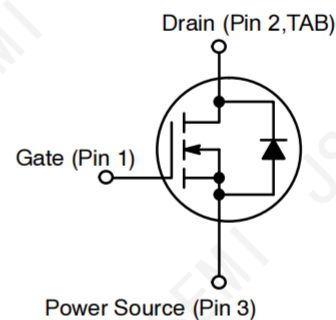
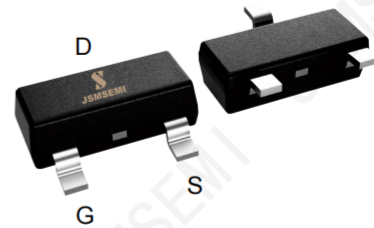


Features

- $I_D=6A@V_{GS}=10V$
- $I_D=5A@V_{GS}=4.5V$
- $R_{DS(on)}=19m\Omega(Typ.)@V_{GS}=10V$
- $R_{DS(on)}=23m\Omega(Typ.)@V_{GS}=4.5V$
- $R_{DS(on)}=31m\Omega(Typ.)@V_{GS}=2.5V$
- $R_{DS(on)}=42m\Omega(Typ.)@V_{GS}=1.8V$
- 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}	± 10	V
Drain Current ^a	I_D	6.0	A
		3.6	
Drain Current – Pulsed ^a	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	W/ $^{\circ}C$
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^{\circ}C$
Operating Junction Temperature Range	T_J	$-55 \sim +150$	$^{\circ}C$
Thermal Resistance, Junction-to-Ambient ¹	$R_{\theta JA}$	90	$^{\circ}C/W$

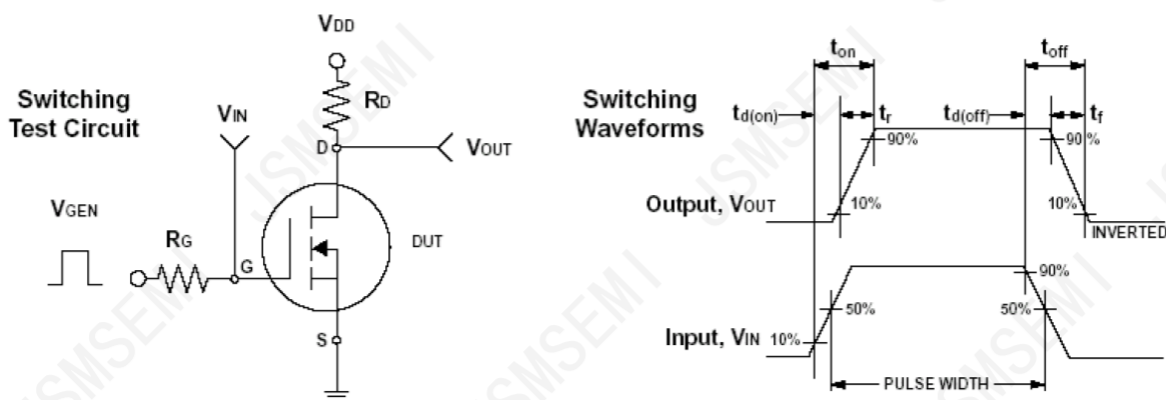
Electrical Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	20	---	---	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V, T _J =25°C	---	---	1	nA
Gate-Body Leakage	I _{GSS}	V _{GS} =±10V, V _{DS} =0V	---	---	±100	μA
On Characteristics ^a						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.4	0.75	1.1	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =6.0A	---	19	24	mΩ
		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
Drain-Source Diode Characteristics ^a						
Continuous Source Current	I _S	V _G =V _D =0V, Force Current	---	---	6.0	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =1A	---	---	1.2	V
Dynamic Characteristics ^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	---	
Switching Characteristics ^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 =3Ω, R _L =1.5Ω	---	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 $\leq 2\%$.

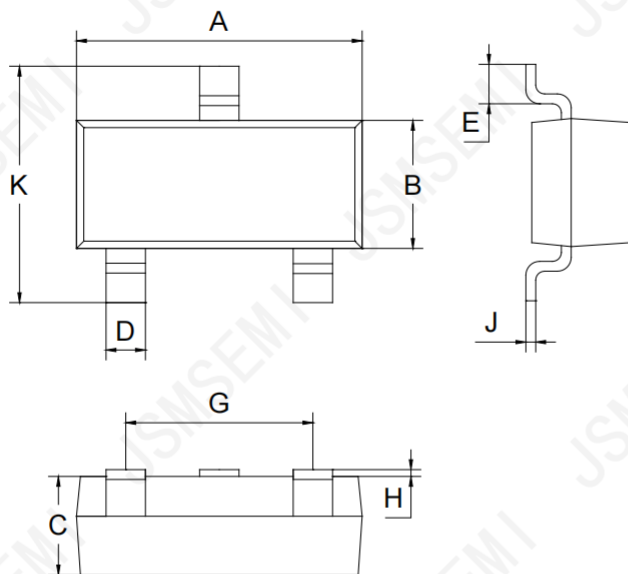
c. Guaranteed by design, not subject to production testing.

Switching Time Test Circuit and Waveforms


尺寸图/PACKAGE OUTLINE

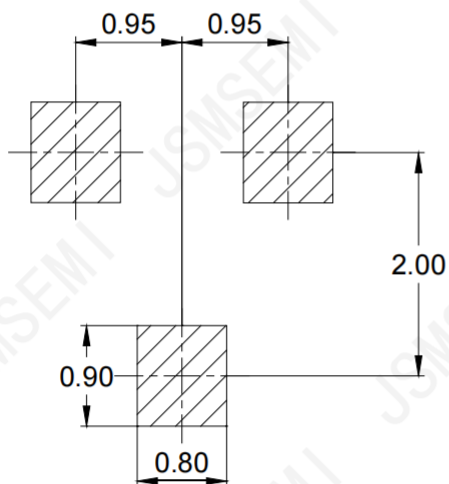
Plastic surface mounted package

SOT-23



SOT-23		
Dim	Min	Max
A	2.70	3.10
B	1.10	1.50
C	0.90	1.10
D	0.30	0.50
E	0.35	0.48
G	1.80	2.00
H	0.02	0.10
J	0.05	0.15
K	2.20	2.60
All Dimensions in mm		

SOLDERING FOOTPRINT



Unit: mm

Soldering Methods For Products

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

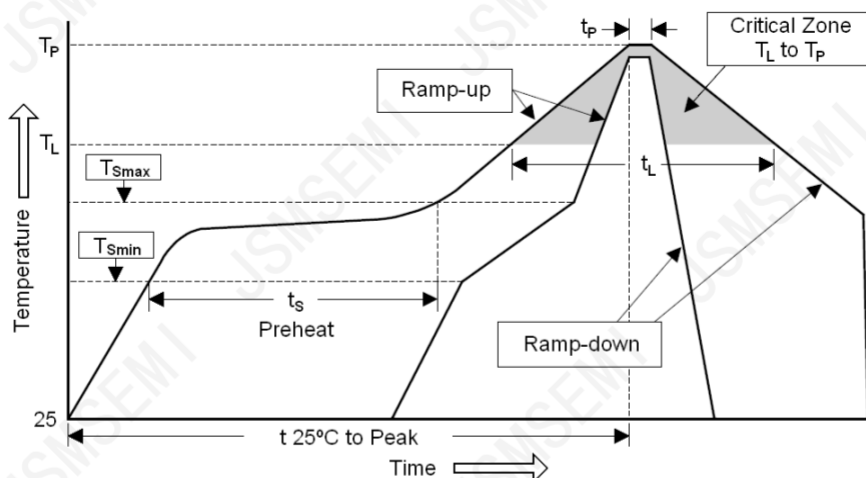


Figure : Temperature Profile

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}) - Temperature Max (T_{Smax})- Time (Min to Max) (t_s)	100°C 150°C 60 ~ 120 sec	100°C 200°C 60 ~ 180 sec
T_{Smax} to T_L - Ramp-up rate	< 3°C/sec	< 3°C/sec
Time maintained above:- Temperature (T_L) - Time (t_L)	183°C 60 ~ 150 sec	217°C 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)。

Revision History

Rev.	Change	Date
V1.0	Initial version	2/23/2024

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