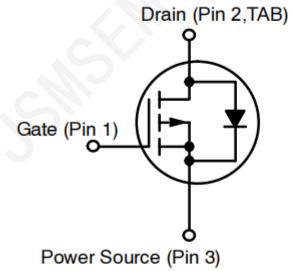
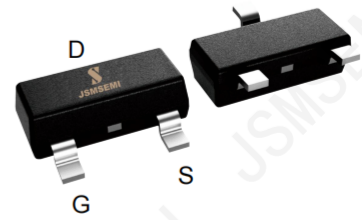


### Features

- Low  $R_{DS(on)}$  @  $V_{GS} = -4.5V$
- -3.3V Logic Level Control
- P Channel SOT23 Package
- Pb-Free, RoHS Compliant

### Applications

- High-side Load Switch
- Switching Circuits
- High Speed line Driver


**SOT23**

### Absolute Maximum Ratings

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

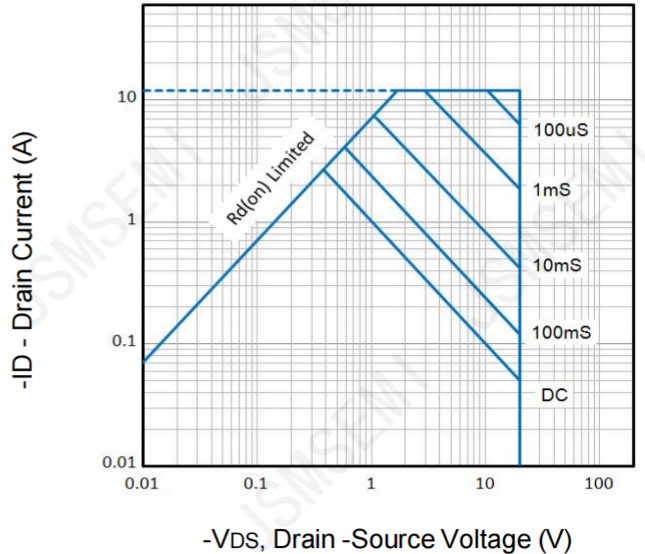
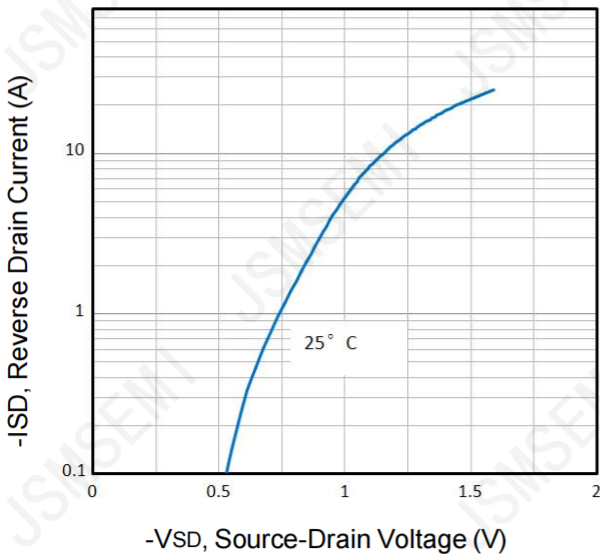
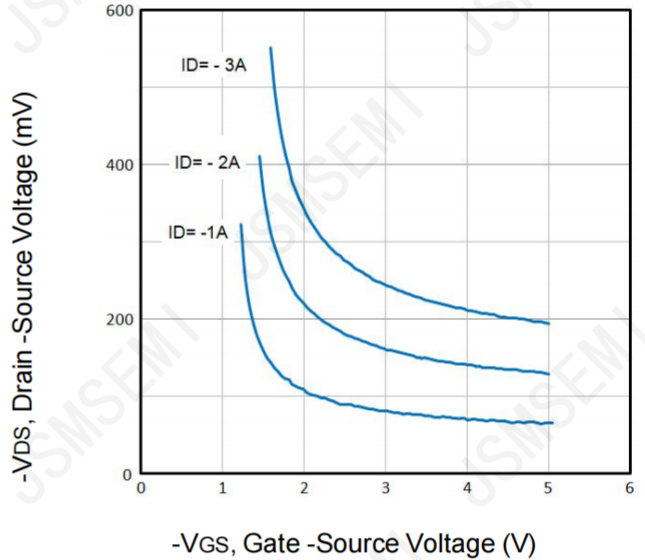
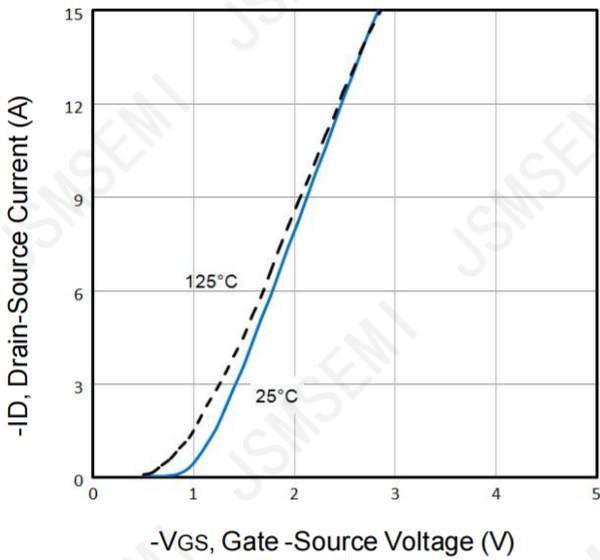
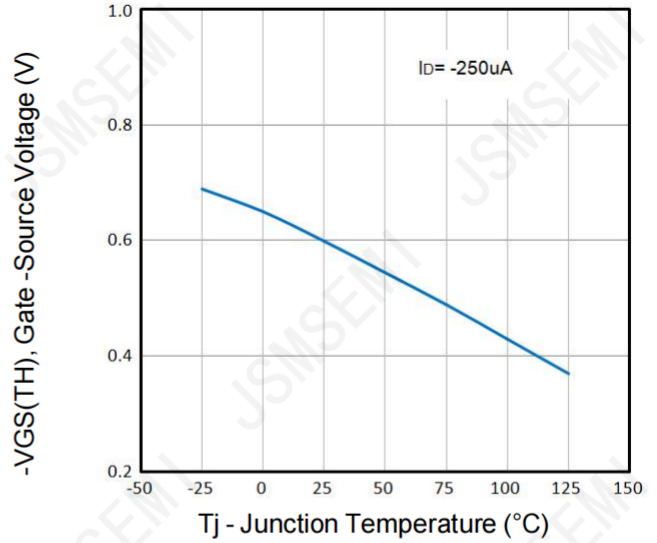
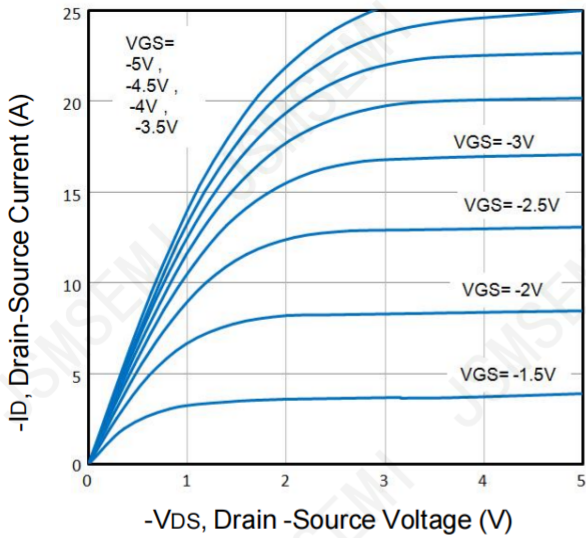
Symbol	Parameter	Rating	Unit
<b>Common Ratings (<math>T_A = 25^\circ C</math> Unless Otherwise Noted)</b>			
$V_{GS}$	Gate-Source Voltage	$\pm 12$	V
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	-20	V
$T_J$	Maximum Junction Temperature	150	$^\circ C$
$T_{STG}$	Storage Temperature Range	-50 to 150	$^\circ C$
<b>Mounted on Large Heat Sink</b>			
$I_{DM}$	Pulse Drain Current Tested <sup>①</sup>	$T_A = 25^\circ C$	-12 A
$I_D$	Continuous Drain Current	$T_A = 25^\circ C$	-3.5 A
		$T_A = 70^\circ C$	-2.5 A
$P_D$	Maximum Power Dissipation	$T_A = 25^\circ C$	1.2 W
		$T_A = 70^\circ C$	0.9 W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	100	$^\circ C/W$

Symbol	Parameter	Condition	Min	Typ	Max	Unit
<b>Static Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V I <sub>D</sub> =-250μA	-20	--	--	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current(T <sub>A</sub> =25°C)	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V	--	--	-1	μA
	Zero Gate Voltage Drain Current(T <sub>A</sub> =125°C)	V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V	--	--	-100	uA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V	--	--	±100	nA
V <sub>GS(TH)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-0.3	-0.6	-1.0	V
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance②	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-3A	--	49	60	mΩ
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance②	V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-2.5A	--	60	66	mΩ
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance②	V <sub>GS</sub> =-1.8V, I <sub>D</sub> =-1.5A	--	78	87	mΩ
<b>Dynamic Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =-10V, V <sub>GS</sub> =0V, f=1MHz	--	330	--	pF
C <sub>oss</sub>	Output Capacitance		--	50	--	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		--	45	--	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =-10V I <sub>D</sub> =-3A, V <sub>GS</sub> =-4.5V	--	6.6	--	nC
Q <sub>gs</sub>	Gate Source Charge		--	0.8	--	nC
Q <sub>gd</sub>	Gate Drain Charge		--	1.4	--	nC
<b>Switching Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>						
t <sub>d(on)</sub>	Turn on Delay Time	V <sub>DD</sub> =-10V, I <sub>D</sub> =-3A, R <sub>G</sub> =3.3Ω, V <sub>GS</sub> =-4.5V	--	11	--	ns
t <sub>r</sub>	Turn on Rise Time		--	12	--	ns
t <sub>d(off)</sub>	Turn Off Delay Time		-	18	--	ns
t <sub>f</sub>	Turn Off Fall Time		--	30	--	ns
<b>Source Drain Diode Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>						
I <sub>SD</sub>	Source drain current(Body Diode)	T <sub>A</sub> =25°C	--	--	-1.5	A
V <sub>SD</sub>	Forward on voltage②	T <sub>J</sub> =25°C, I <sub>SD</sub> =-2A, V <sub>GS</sub> =0V	--	-0.85	-1.2	V

Notes:

① Pulse width limited by maximum allowable junction temperature

② Pulse test ; Pulse width≤300μs, duty cycle≤2%.



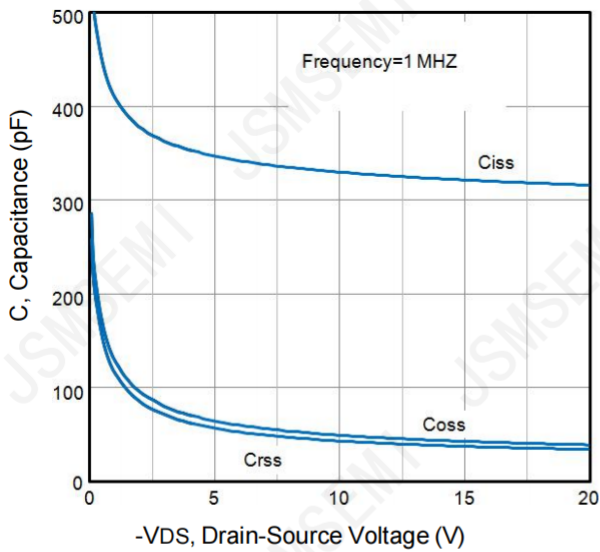


Fig7. Typical Capacitance Vs. Drain-Source Voltage

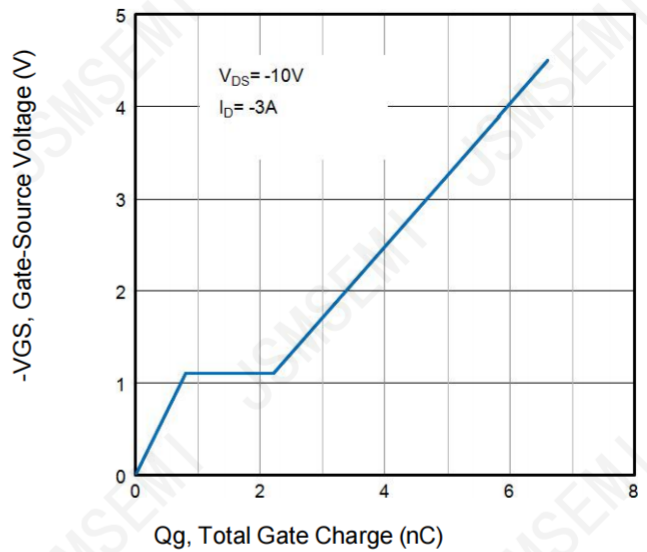


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

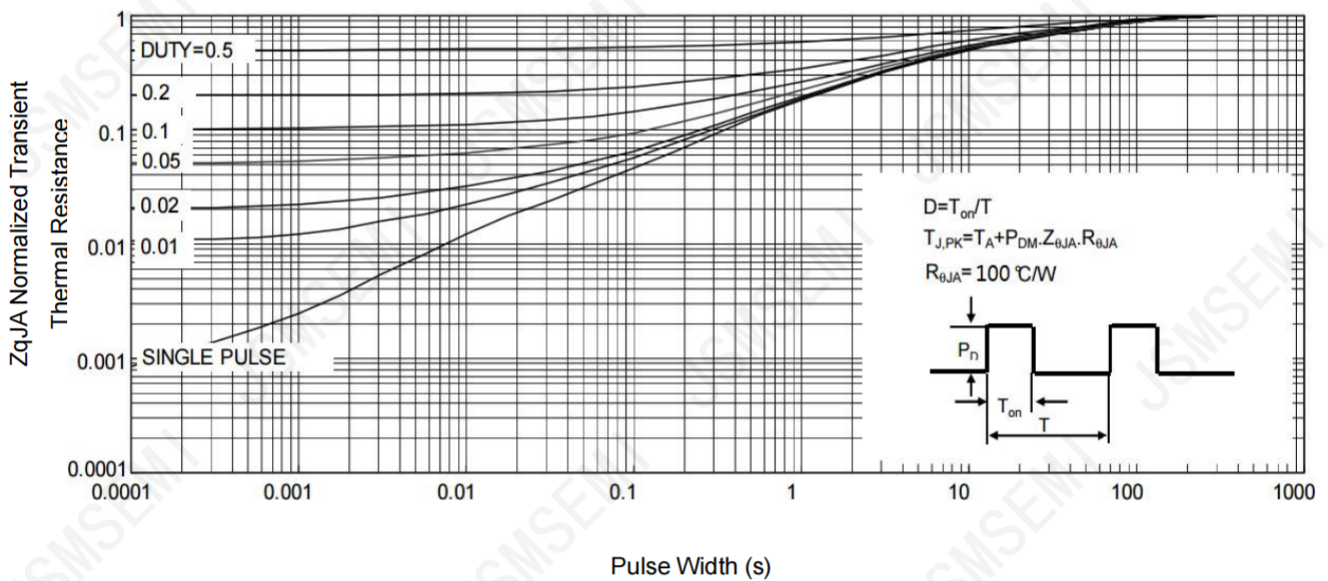


Fig9. Normalized Maximum Transient Thermal Impedance

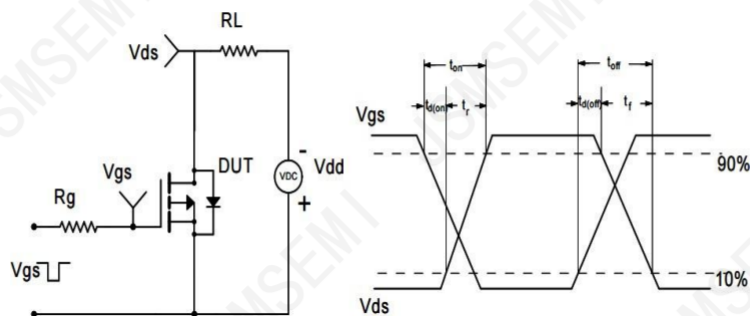
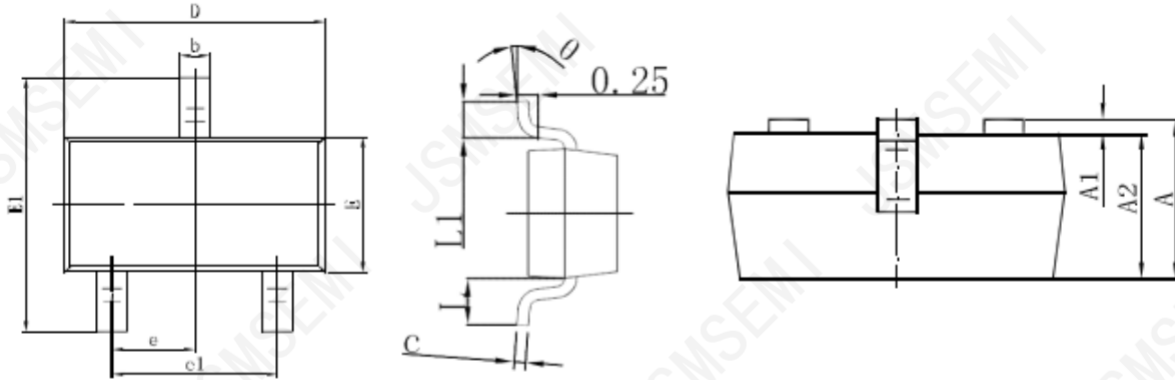


Fig10. Switching Time Test Circuit and waveforms

## LOW VOLTAGE MOSFET (P-CHANNEL)

## SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°