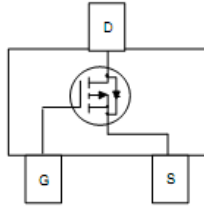
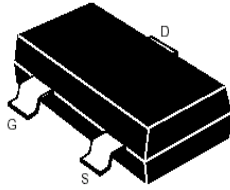


**SOT-23**

**Features**

- Low  $R_{DS(on)}$  @  $V_{GS} = -10V$
- -5V Logic Level Control
- P Channel SOT23 Package
- Pb-Free, RoHS Compliant

**Applications**

- Load Switch
- Switching Circuits
- High Speed line Driver

$V_{(BR)DSS}$	$R_{DS(ON)}$ Typ	$I_D$ Max
-60V	170m $\Omega$ @ 10V	-1.9A
	200m $\Omega$ @ 4.5V	

**Order Information**

Product	Package	Marking	Packing	Min Unit Quantity
SI2309S	SOT23	WMGCF	3000PCS/Reel	3000PCS

**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\text{C}</math> Unless Otherwise Noted)</b>			
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	-60	V
$T_J$	Maximum Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-50 to 150	$^\circ\text{C}$
<b>Mounted on Large Heat Sink</b>			
$I_{DM}$	Pulse Drain Current Tested①	$T_A = 25^\circ\text{C}$	-7.6 A
$I_D$	Continuous Drain Current	$T_A = 25^\circ\text{C}$	-1.9 A
		$T_A = 70^\circ\text{C}$	-1.5 A
$P_D$	Maximum Power Dissipation	$T_A = 25^\circ\text{C}$	1.4 W
		$T_A = 70^\circ\text{C}$	0.9 W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	90	$^\circ\text{C/W}$

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	-60	--	--	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current(T <sub>A</sub> =25°C)	V <sub>DS</sub> =-60V, V <sub>GS</sub> =0V	--	--	-10	μA
	Zero Gate Voltage Drain Current(T <sub>A</sub> =125°C)	V <sub>DS</sub> =-60V, V <sub>GS</sub> =0V	--	--	-100	uA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	--	--	±1 00	nA
V <sub>GS(TH)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-1.0		-3	V
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance②	V <sub>GS</sub> =-10V, I <sub>D</sub> =-1.8A	--	170	215	mΩ
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance②	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-1.4A	--	200	260	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> =-25V, V <sub>GS</sub> =0V, f=1MHz	--	364	--	pF
C <sub>oss</sub>	Output Capacitance		--	41	--	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		--	12	--	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =-48V I <sub>D</sub> =-1A, V <sub>GS</sub> =-4.5V	--	6.3	--	nC
Q <sub>gs</sub>	Gate Source Charge		--	2.3	--	nC
Q <sub>gd</sub>	Gate Drain Charge		--	1.8	--	nC
<b>Switching Characteristics</b>						
t <sub>d(on)</sub>	Turn on Delay Time	V <sub>DD</sub> =-30V, I <sub>D</sub> =-1A, R <sub>G</sub> =3.3Ω, V <sub>GS</sub> =-10V R <sub>L</sub> =30Ω	--	20	--	ns
t <sub>r</sub>	Turn on Rise Time		--	33.1	--	ns
t <sub>d(off)</sub>	Turn Off Delay Time		-	5.2	--	ns
t <sub>f</sub>	Turn Off Fall Time		--	3.8	--	ns

**Source Drain Diode Characteristics**

V <sub>SD</sub>	Forward on voltage②	T <sub>J</sub> =25°C, I <sub>SD</sub> =-1.2A, V <sub>GS</sub> =0V	--		-1.2	V
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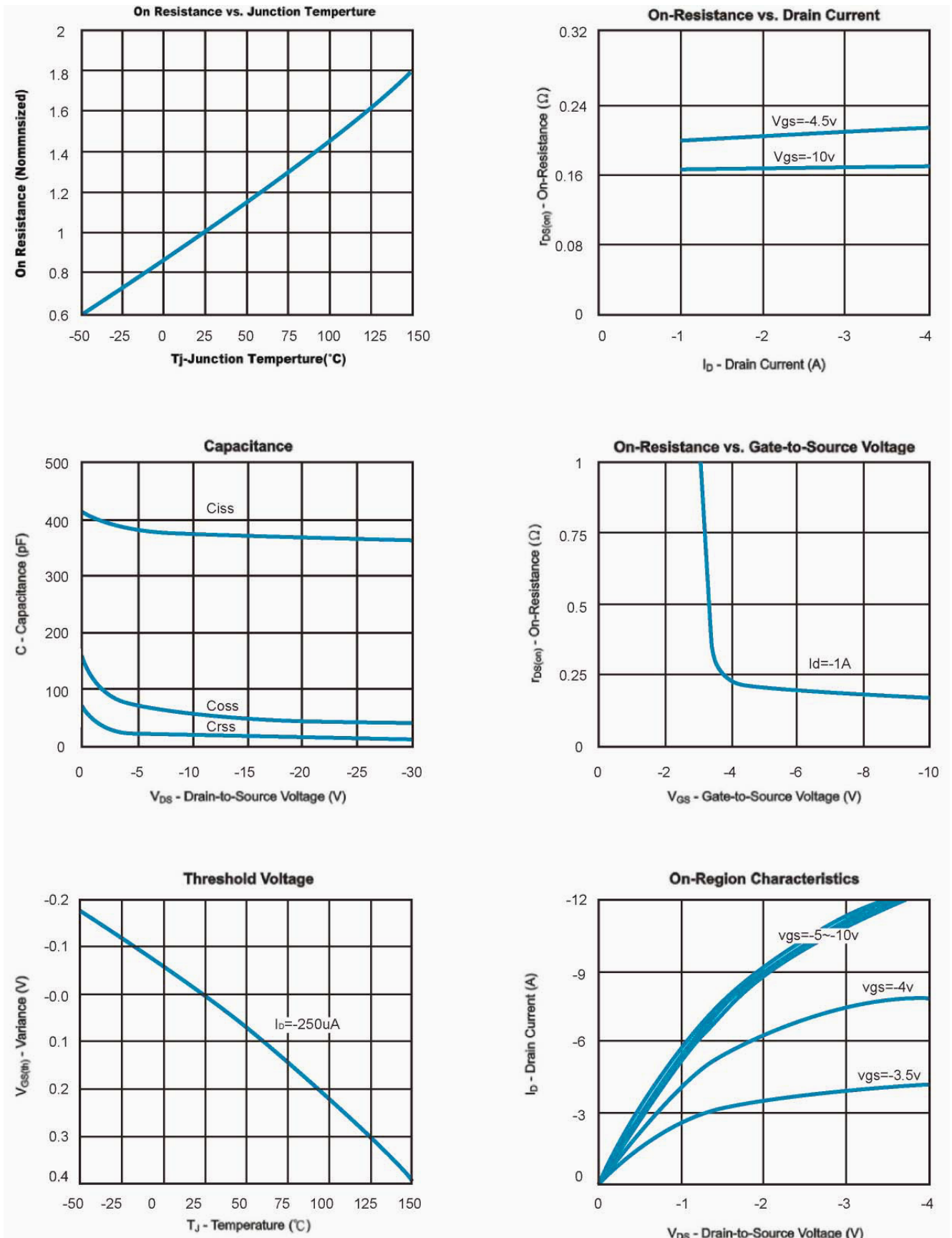
Notes:

① Pulse width limited by maximum allowable junction temperature

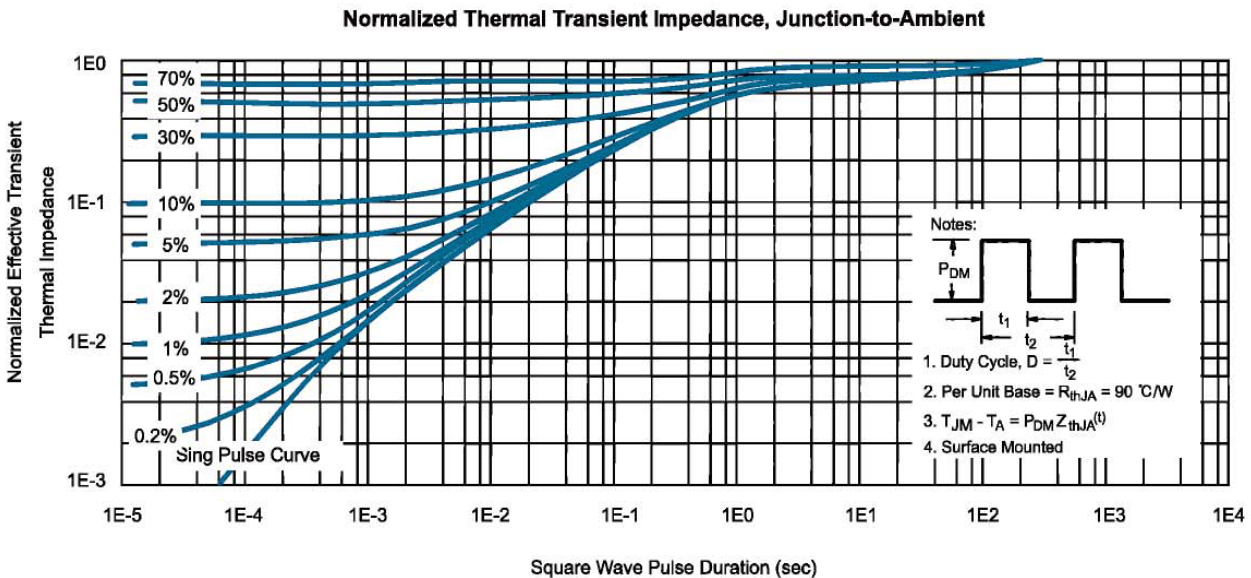
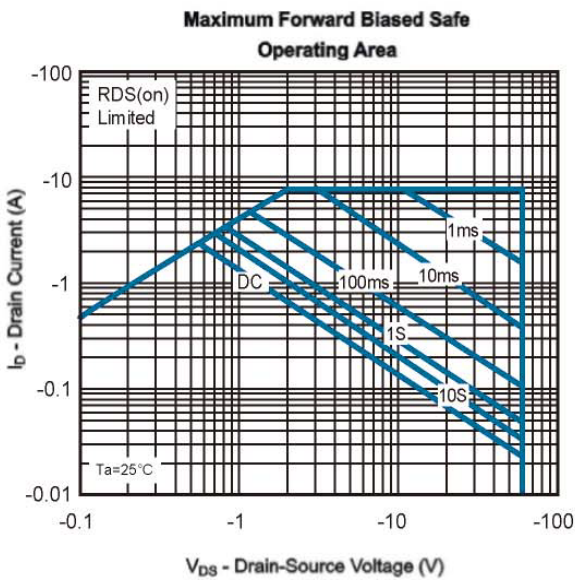
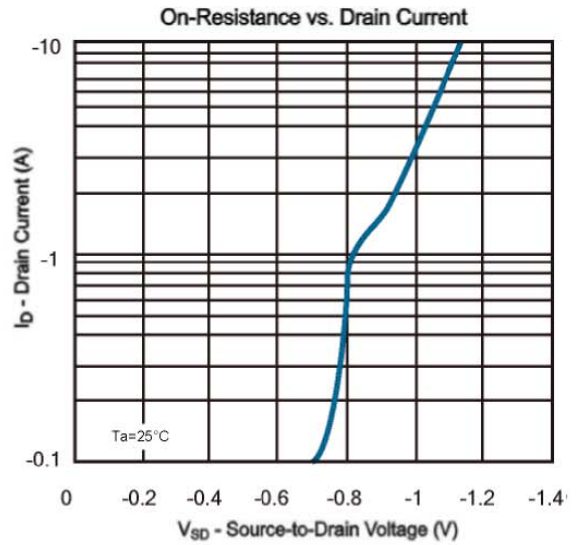
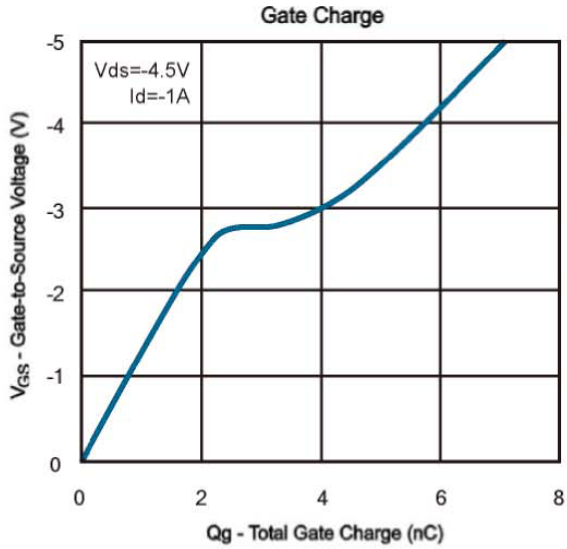
②Pulse test ; Pulse width≤300μs, duty cycle≤2%.

# P-Channel Enhancement Mode Mosfet

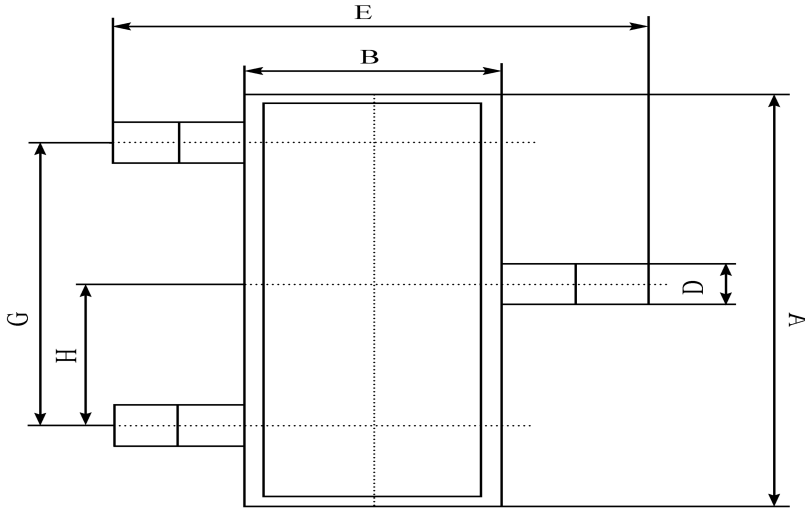
## Typical Characteristics (T<sub>J</sub> =25°C Noted)



**P-Channel Enhancement Mode Mosfet**  
**Typical Characteristics (T<sub>J</sub> =25°C Noted)**



**SOT-23 PACKAGE OUTLINE** Plastic surface mounted package



SOT-23

A	2.90 ± 0.10
B	1.30 ± 0.10
C	1.00 ± 0.10
D	0.40 ± 0.10
E	2.40 ± 0.20
G	1.90 ± 0.10
H	0.95 ± 0.05
J	0.13 ± 0.05
K	0.00 - 0.10
M	≥ 0.2
N	0.60 ± 0.10
P	7 ± 2°

(UNIT): mm

