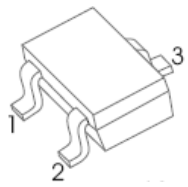
SOT-523 Plastic-Encapsulate MOSFETS

$V_{(BR)DSS}$	$R_{DS(on)}$MAX	I_D
-20V	520mΩ@-4.5V	-0.66A
	700mΩ@-2.5V	
	950mΩ（TYP）@-1.8V	

SOT-523



1. GATE
2. SOURCE
3. DRAIN

GENERRAL DESCRIPTION

This Single P-Channel MOSFET has been designed using advanced Power Trench process to optimize the $R_{DS(ON)}$.

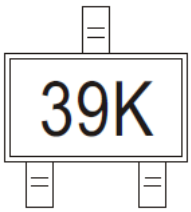
FEATURE

- High-Side Switching
- Low On-Resistance
- Low Threshold
- Fast Switching Speed

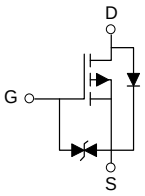
APPLICATION

- Drivers:Relays, Solenoids, Lamps, Hammers, Displays, Memories
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Cell Phones, Pagers

MARKING



Equivalent Circuit



Maximum ratings (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source voltage	V_{DSS}	-20	V
Typical Gate-Source Voltage	V_{GS}	±12	
Drain Current-Continuous	I_D	-0.66	A
Drain Current -Pulsed(note1)	I_{DM}	-2.64	
Power Dissipation (note 2)	P_D	200	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	625	℃/W
Operation Junction and Storage Temperature Range	T_J,T_{stg}	-55 ~+150	℃

MOSFET ELECTRICAL CHARACTERISTICS

T_a=25℃ unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
On/Off States						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	-20			V
Gate-Threshold Voltage(note 3)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-0.35	-0.45	- 1.1	
Gate-Body Leakage Current	I_{GSS}	V_{DS} =0V, V_{GS} =±10V			±20	μA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =-20V, V_{GS} =0V			-1	μA
Drain-Source On-State Resistance(note 3)	$R_{DS(on)}$	V_{GS} =-4.5V, I_D =-1A		430	520	mΩ
		V_{GS} =-2.5V, I_D =-800mA		624	700	
		V_{GS} =-1.8V, I_D =-500mA		950		
Forward Transconductance	g_{FS}	V_{DS} =-10V, I_D =-540mA	0.8			S
Dynamic Characteristics(note 4)						
Input Capacitance	C_{iss}	V_{DS} =-16V,V_{GS} =0V,f =1MHz			170	pF
Output Capacitance	C_{oss}				25	
Reverse Transfer Capacitance	C_{rss}				15	
Switching Times (note 4)						
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=-10V, I_D=-200mA, V_{GS}=-4.5V,R_G=10Ω		9		ns
Rise Time	t_r			5.8		
Turn-Off Delay Time	$t_{d(off)}$			32.7		
Fall Time	t_f			20.3		
Drain-Source Diode Characteristics						
Drain-Source Diode Forward Voltage (note 3)	V_{SD}	I_S=-0.5A, V_{GS} = 0V			-1.2	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.2

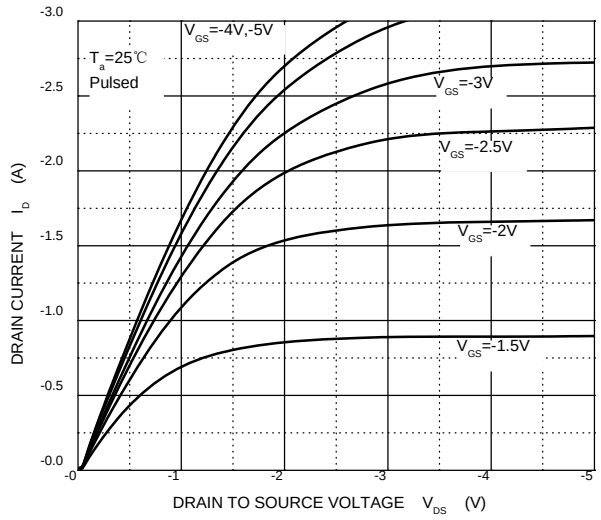
. This test is performed with no heat sink at T_a=25℃.

3. Pulse Test : Pulse Width≤300μs, Duty Cycle≤0.5%.

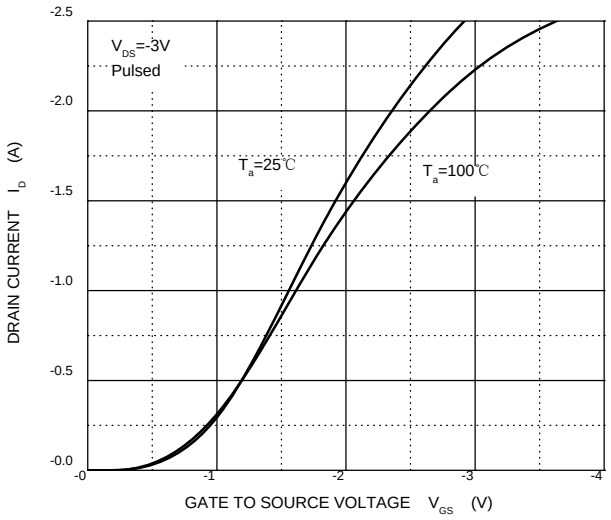
4. These parameters have no way to verify.

Typical Characteristics

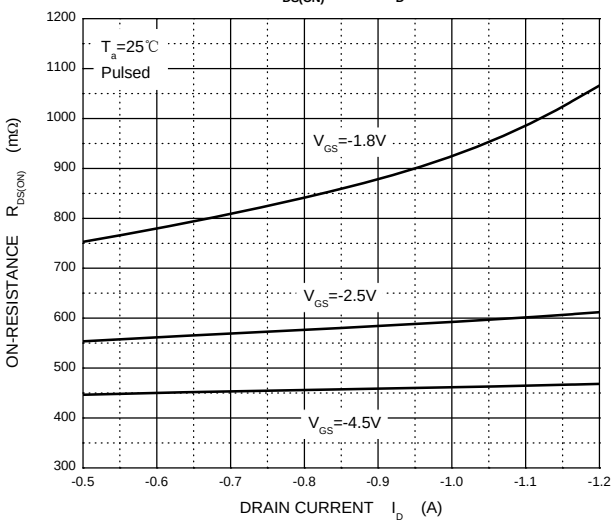
Output Characteristics



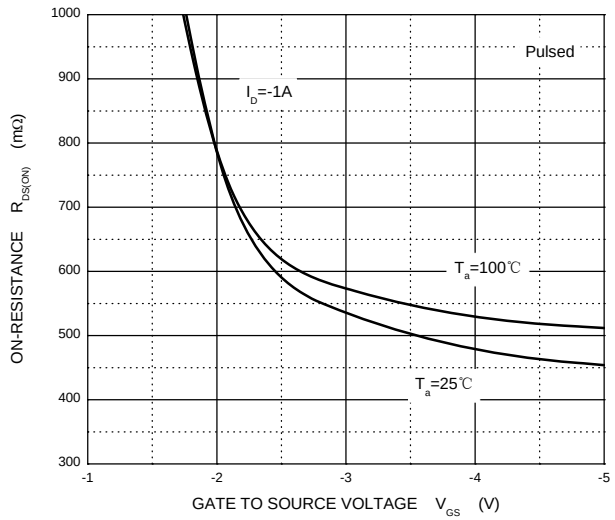
Transfer Characteristics



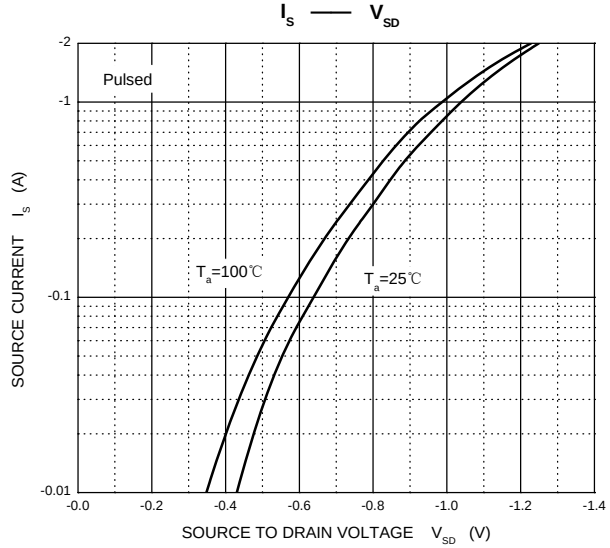
$R_{DS(ON)}$ —— I_D



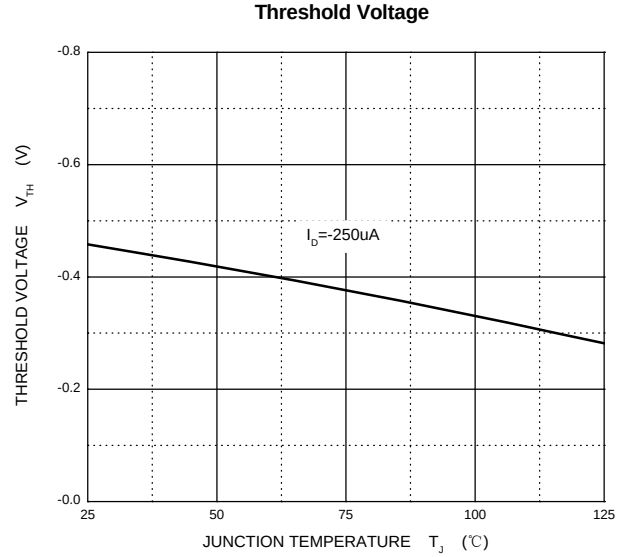
$R_{DS(ON)}$ —— V_{GS}



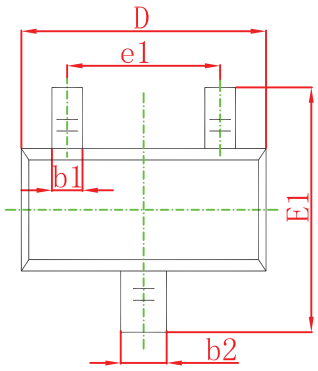
I_S —— V_{SD}

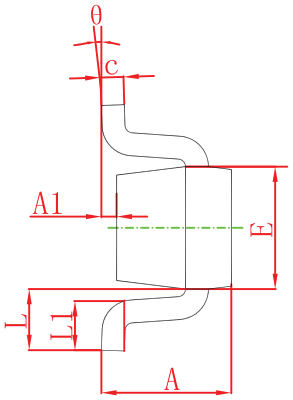


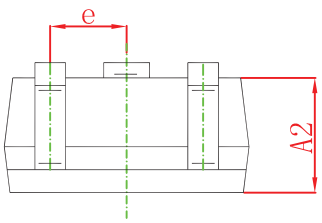
Threshold Voltage



SOT-523 Package Outline Dimensions

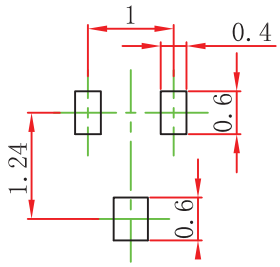






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

SOT-523 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.