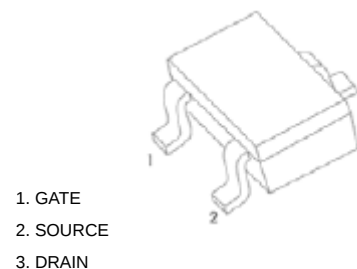


SOT-523 Plastic-Encapsulate MOSFETS

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
20V	380 mΩ@4.5V	0.75A
	450 mΩ@2.5V	
	800 mΩ@1.8V	

SOT-523



FEATURE

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

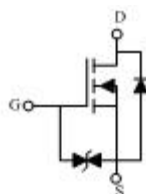
APPLICATION

- 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 ($T_a=25^{\circ}\text{C}$ 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	0.75	A
Drain Current -Pulsed(note1)	I_{DM}	3	
Power Dissipation (note 2)	P_D	150	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	833	$^{\circ}\text{C/W}$
Operation Junction and Storage Temperature Range	T_J, T_{stg}	-55 ~+150	$^{\circ}\text{C}$

MOSFET ELECTRICAL CHARACTERISTICS

$T_a=25^{\circ}\text{C}$ unless otherwise specified

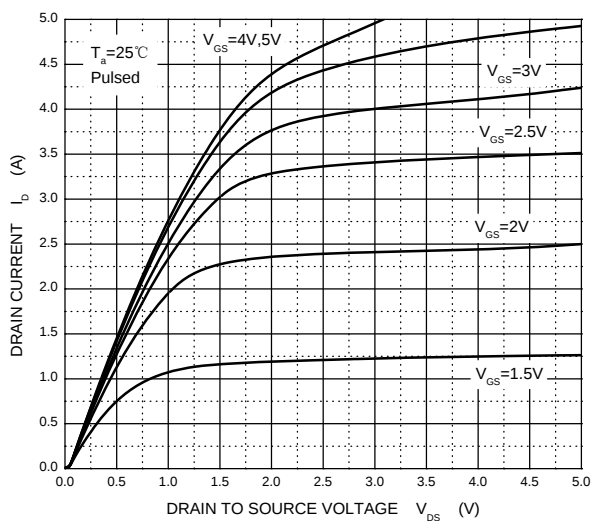
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
On/Off States						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	20			V
Gate-Threshold Voltage(note 3)	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.35	0.54	1.1	
Gate-Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±10V			±20	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 =650mA		260	380	mΩ
		V _{GS} =2.5V, I _D =550mA		310	450	
		V _{GS} =1.8V, I _D =450mA		380	800	
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =800mA	1			S
Dynamic Characteristics(note 4)						
Input Capacitance	C _{iSS}	V _{DS} =16V, V _{GS} =0V, f =1MHz			120	pF
Output Capacitance	C _{oSS}				20	
Reverse Transfer Capacitance	C _{rSS}				15	
Switching Times (note 4)						
Turn-On Delay Time	t _{d(on)}	V _{DD} =10V, I _D =500mA, V _{GS} =4.5V, R _G =10Ω		6.7		ns
Rise Time	t _r			4.8		
Turn-Off Delay Time	t _{d(off)}			17.3		
Fall Time	t _f			7.4		
Drain-Source Diode Characteristics						
Drain-Source Diode Forward Voltage (note 3)	V _{SD}	I _S =0.15A, V _{GS} = 0V			1.2	V

Notes:

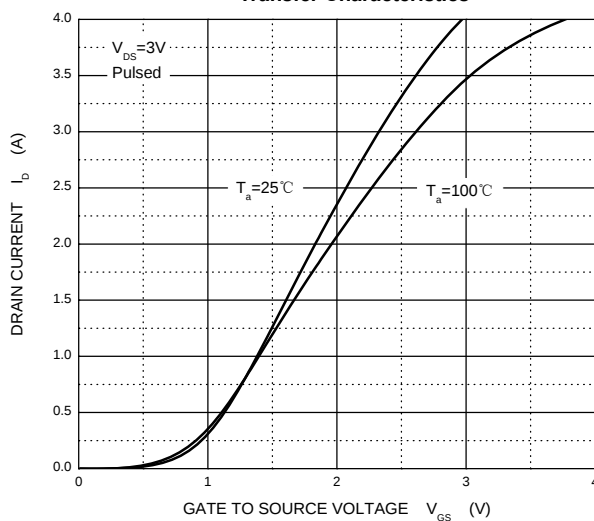
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. This test is performed with no heat sink at $T_a=25^{\circ}\text{C}$.
3. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$.
4. These parameters have no way to verify.

Typical Characteristics

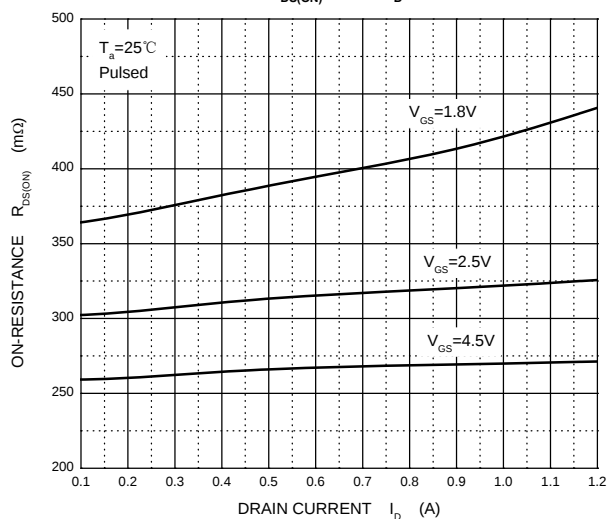
Output Characteristics



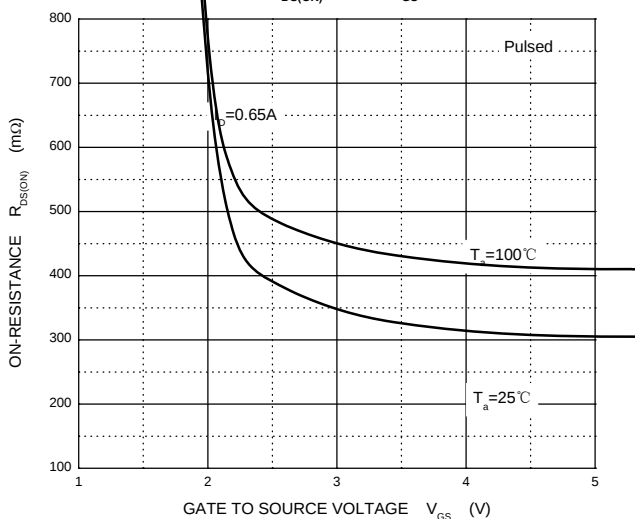
Transfer Characteristics



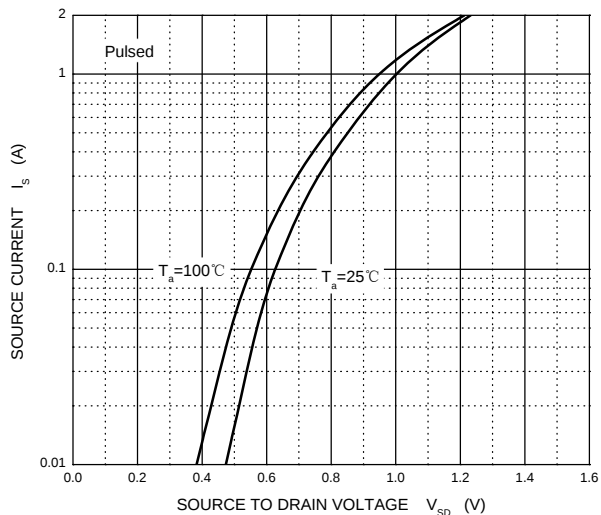
$R_{DS(ON)}$ — I_D



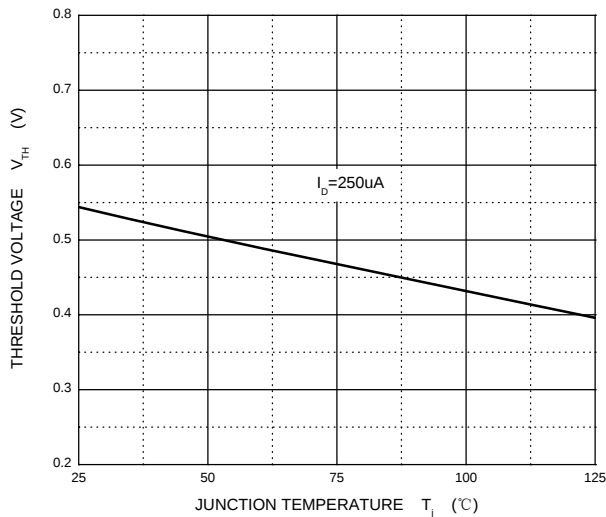
$R_{DS(ON)}$ — V_{GS}



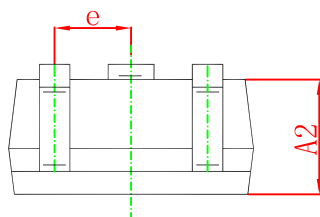
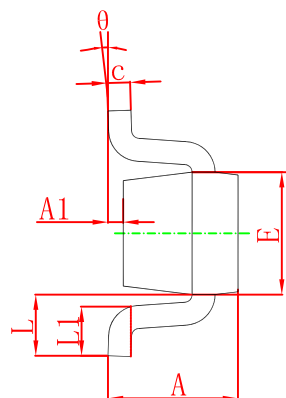
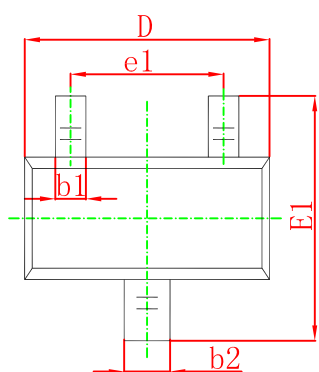
I_S — V_{SD}



Threshold Voltage

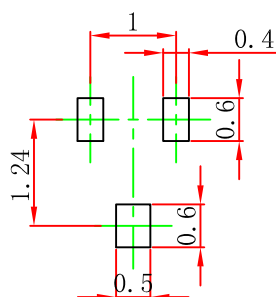


SOT-523 Package Outline Dimensions



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: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.