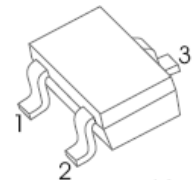


## N-Channel MOSFET

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

**SOT-323**



- 1. GATE
- 2. SOURCE
- 3. DRAIN

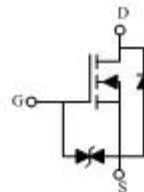
### FEATURE

- 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

### 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)	$P_D$	200	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	625	$^{\circ}\text{C}/\text{W}$
Storage Temperature	$T_j$	150	$^{\circ}\text{C}$
Junction Temperature	$T_{stg}$	-55 ~+150	

## MOSFET ELECTRICAL CHARACTERISTICS

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

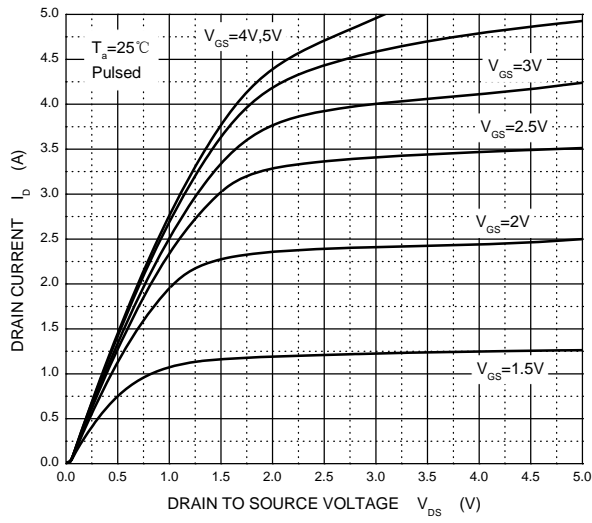
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>On/Off States</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Gate-Threshold Voltage(note 3)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.35		1.1	
Gate-Body Leakage Current	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 10V$			$\pm 20$	$\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 20V, V_{GS} = 0V$			1	$\mu A$
Drain-Source On-State Resistance(note 3)	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 650mA$			380	m $\Omega$
		$V_{GS} = 2.5V, I_D = 550mA$			450	
		$V_{GS} = 1.8V, I_D = 450mA$			800	
Forward Transconductance	$g_{FS}$	$V_{DS} = 10V, I_D = 800mA$	1			S
<b>Dynamic Characteristics(note 4)</b>						
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	
<b>Switching Times (note 4)</b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 10V, I_D = 500mA,$ $V_{GS} = 4.5V, R_G = 10\Omega$		6.7		ns
Rise Time	$t_r$			4.8		
Turn-Off Delay Time	$t_{d(off)}$			17.3		
Fall Time	$t_f$			7.4		
<b>Drain-Source Diode Characteristics</b>						
Drain-Source Diode Forward Voltage (note 3)	$V_{SD}$	$I_S = 0.15A, V_{GS} = 0V$			1.2	V

### Notes:

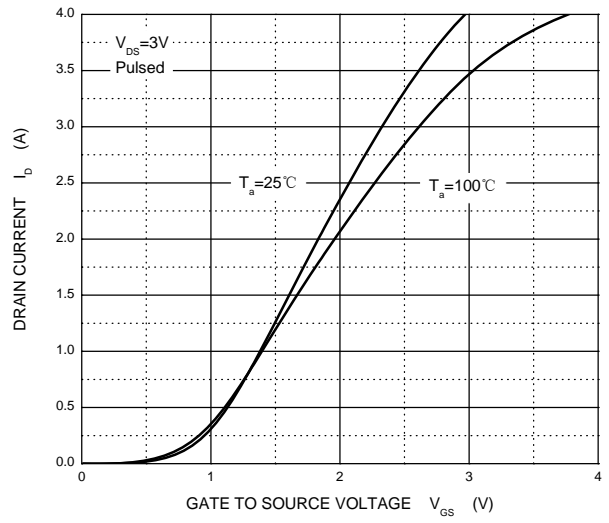
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. This test is performed with no heat sink at  $T_a=25^\circ\text{C}$ .
3. Pulse Test : Pulse Width $\leq 300\mu s$ , Duty Cycle $\leq 0.5\%$ .
4. These parameters have no way to verify.

Typical Characteristics

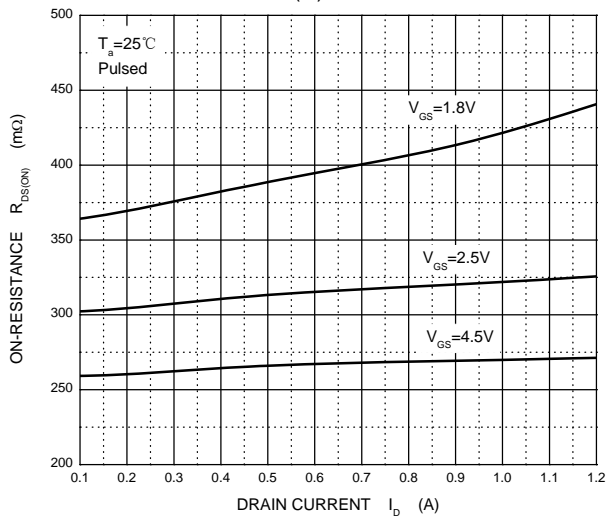
Output Characteristics



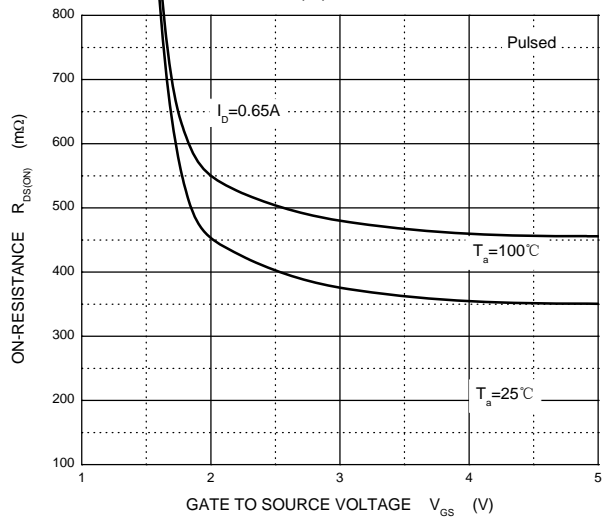
Transfer Characteristics



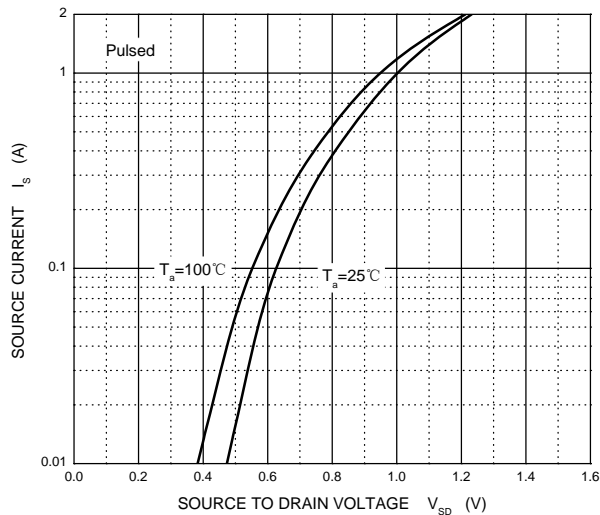
$R_{DS(ON)}$  —  $I_D$



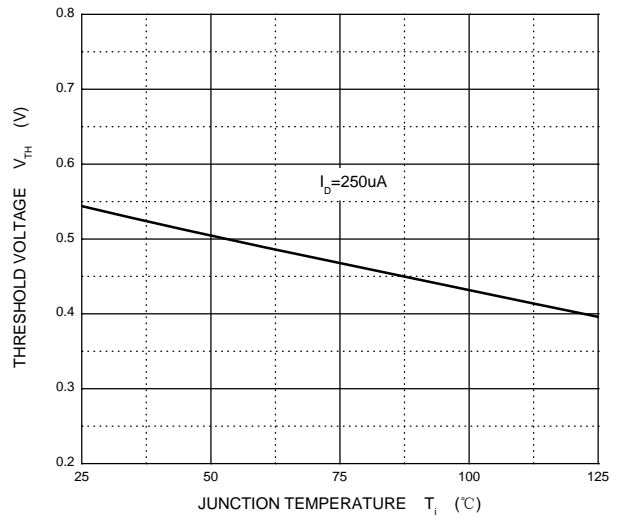
$R_{DS(ON)}$  —  $V_{GS}$



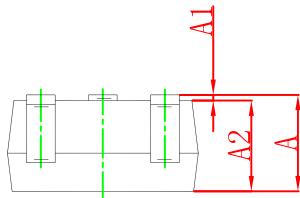
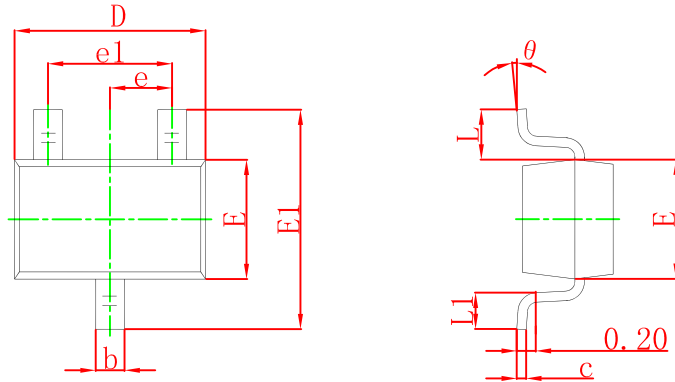
$I_S$  —  $V_{SD}$



Threshold Voltage

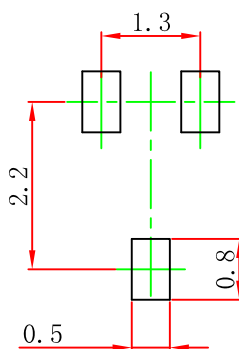


SOT-323 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
theta	0°	8°	0°	8°

SOT-323 Suggested Pad Layout



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