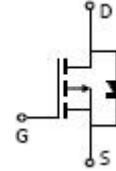


**P-Channel 20-V(D-S) MOSFET**
**Equivalent Circuit**
 $V_{DSS}=-20V I_D=-5.0A$ 
 $R_{DS(on)}<55m @V_{GS}=4.5V$ 
 $R_{DS(on)}<63m @V_{GS}=2.5V$ 
 $R_{DS(on)}<86m @V_{GS}=1.8V$ 

**FEATURE**

- TrenchFET Power MOSFET

**APPLICATIONS**

- Load Switch for Portable Devices
- DC/DC Converter


**Maximum ratings ( $T_a=25^{\circ}C$  unless otherwise noted)**

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	
Continuous Drain Current	$I_D$	-5.0	A
Continuous Source-Drain Diode Current	$I_S$	-0.8	
Maximum Power Dissipation	$P_D$	0.4	W
Thermal Resistance from Junction to Ambient( $t \leq 10s$ )	$R_{\theta JA}$	312.5	$^{\circ}C/W$
Junction Temperature	$T_J$	150	$^{\circ}C$
Storage Temperature	$T_{STG}$	-50 ~+150	



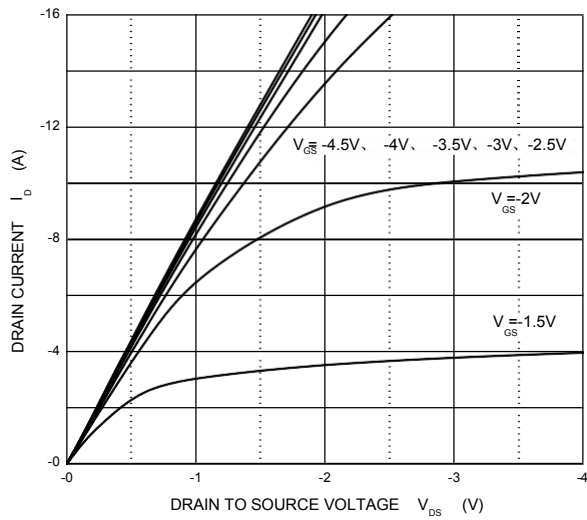
**MOSFETELE CTRICALCHARACTER ISTICS**  $T_a=25^{\circ}\text{C}$  unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
<b>Static</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-12			V
Gate-source threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.5		-0.9	
Gate-source leakage	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 8V$			$\pm 100$	nA
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = -8V, V_{GS} = 0V$			-1	$\mu A$
Drain-source on-state resistanc <sup>a,e</sup>	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -5.0A$		45	55	m $\Omega$
		$V_{GS} = -2.5V, I_D = -4A$		58	63	
		$V_{GS} = -1.8V, I_D = -2.0A$		65	86	
Forward transconductance <sup>a</sup>	$g_{fs}$	$V_{DS} = -5V, I_D = -4.1A$	6			S
<b>Dynamic</b>						
Input capacitance <sup>b,c</sup>	$C_{iss}$	$V_{DS} = -4V, V_{GS} = 0V, f = 1MHz$		740		pF
Output capacitance <sup>b,c</sup>	$C_{oss}$			290		
Reverse transfer capacitance <sup>b,c</sup>	$C_{rss}$			190		
Total gate charge <sup>b</sup>	$Q_g$	$V_{DS} = -4V, V_{GS} = -4.5V, I_D = -4.1A$		7.8	15	nC
		$V_{DS} = -4V, V_{GS} = -2.5V, I_D = -4.1A$		4.5	9	
Gate-source charge <sup>b</sup>	$Q_{gs}$	$V_{DS} = -4V, V_{GS} = -2.5V, I_D = -4.1A$		1.2		
Gate-drain charge <sup>b</sup>	$Q_{gd}$			1.6		
Gate resistance <sup>b,c</sup>	$R_g$	$f = 1MHz$	1.4	7	14	$\Omega$
Turn-on delay time <sup>b,c</sup>	$t_{d(on)}$	$V_{DD} = -4V, R_L = 1.2\Omega, I_D \approx 3.3A, V_{GEN} = -4.5V, R_g = 1\Omega$		13	20	ns
Rise time <sup>b,c</sup>	$t_r$			35	53	
Turn-off Delay time <sup>b,c</sup>	$t_{d(off)}$			32	48	
Fall time <sup>b,c</sup>	$t_f$			10	20	
Turn-on delay time <sup>b,c</sup>	$t_{d(on)}$			5	10	
Rise time <sup>b,c</sup>	$t_r$			11	17	
Turn-off delay time <sup>b,c</sup>	$t_{d(off)}$			22	33	
Fall time <sup>b,c</sup>	$t_f$			16	24	
<b>Drain-source body diode characteristics</b>						
Continuous source-drain diode current	$I_S$	$T_C = 25^{\circ}\text{C}$			-1.4	A
Pulse diode forward current <sup>a</sup>	$I_{SM}$				-10	
Body ciode voltage	$V_{SD}$	$I_F = -3.3A$			-1.2	V

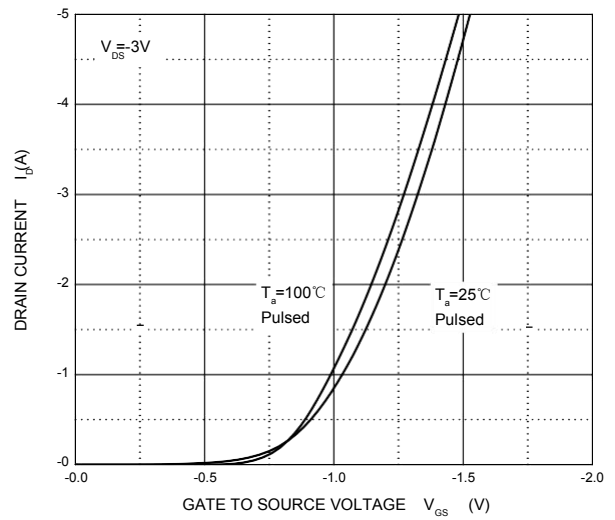
**Note :**

- a. Pulse Test ; Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
- b. Guaranteed by design, not subject to production testing.
- c. These parameters have no way to verify.

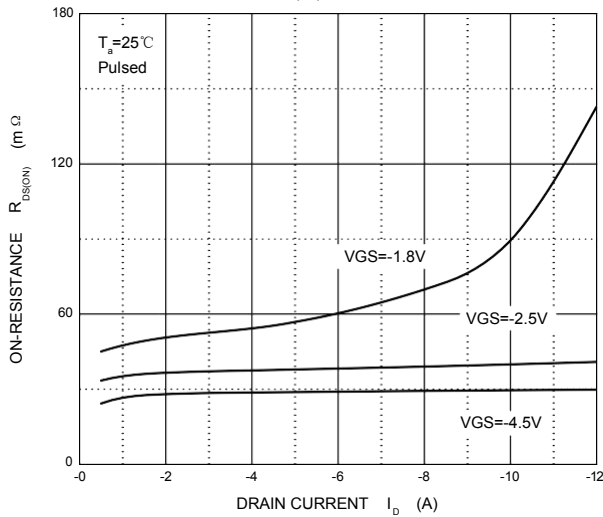
**Output Characteristics**



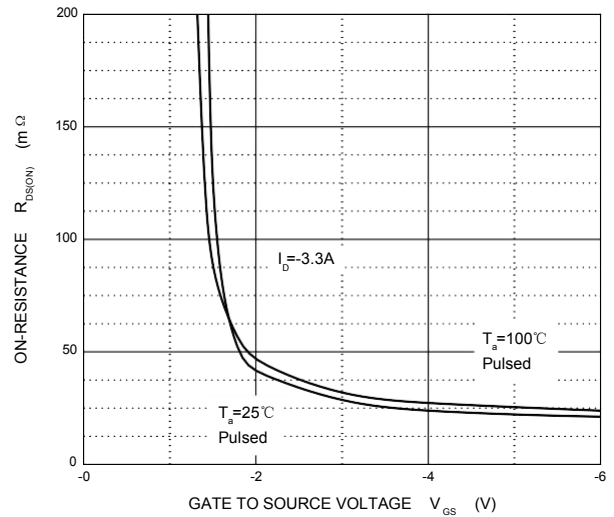
**Transfer Characteristics**



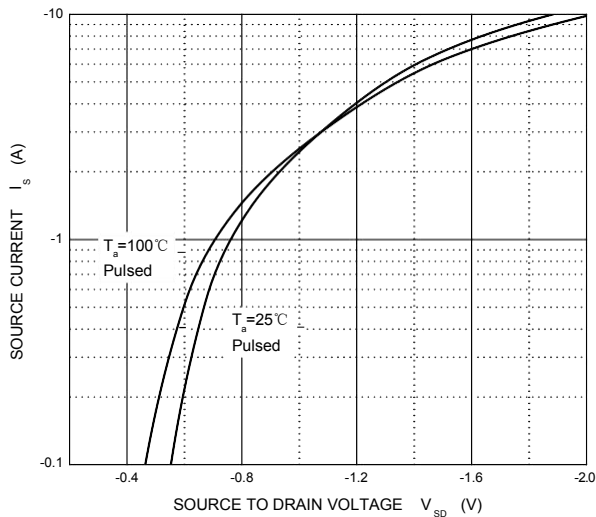
**$R_{DS(ON)}$  —  $I_D$**



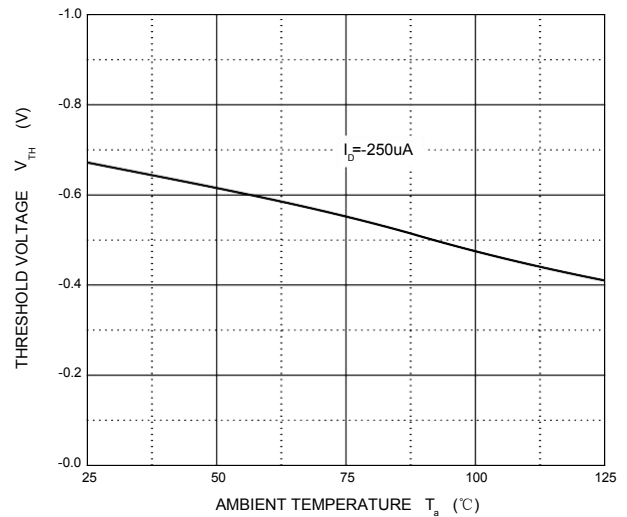
**$R_{DS(ON)}$  —  $V_{GS}$**



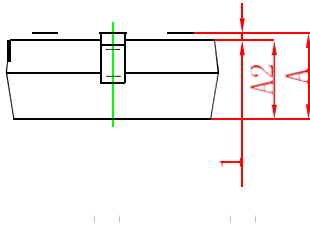
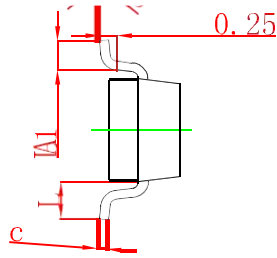
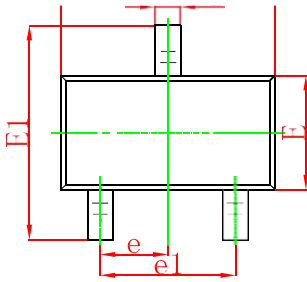
**$I_S$  —  $V_{SD}$**



**Threshold Voltage**

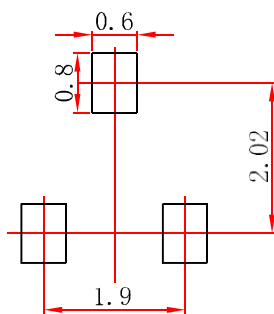


# SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.9000	1.1500	0.0350	0.0450
A1	.0000.	.1001.	.0000.	.0040.
A2	9000.	0500.	0350.	0410.
bc	3000.	5000.	0120.	0200.
D	0802.	1503.	0030.	0060.
E	8001.	0001.	1100.	1180.
E1	2002.	4002.	0470.	0550.
e	250	550	089	100
e1	1.800	2.000	0.071	0.079
L	0.550 REF	0.950 TYP	0.022 REF	0.037 TYP
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

## SOT-23 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.