

SOT-23 Plastic-Encapsulate MOSFETS

P-Channel 20-V(D-S) MOSFET

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-20V	7.8 mΩ@-4.5V	-3.7A
	107mΩ@-2.5V	



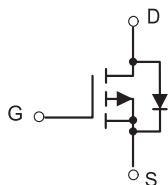
FEATURE

- TrenchFET Power MOSFET

APPLICATION

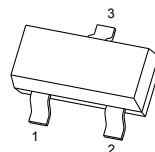
- Load Switch for Portable Devices
- DC/DC Converter

Equivalent Circuit



SOT-23

1. GATE
2. SOURCE
3. DRAIN



MARKING



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±8	
Continuous Drain Current	I_D	-3.7	A
Pulsed Drain Current	I_{DM}	-22	
Continuous Source-Drain Diode Current	I_S	-1.3	
Maximum Power Dissipation	P_D	0.8	W
Thermal Resistance from Junction to Ambient($t \leq 5s$)	$R_{\theta JA}$	312.5	$^{\circ}\text{C}/\text{W}$
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-55 ~ +150	

MOSFET ELECTRICAL CHARACTERISTICS

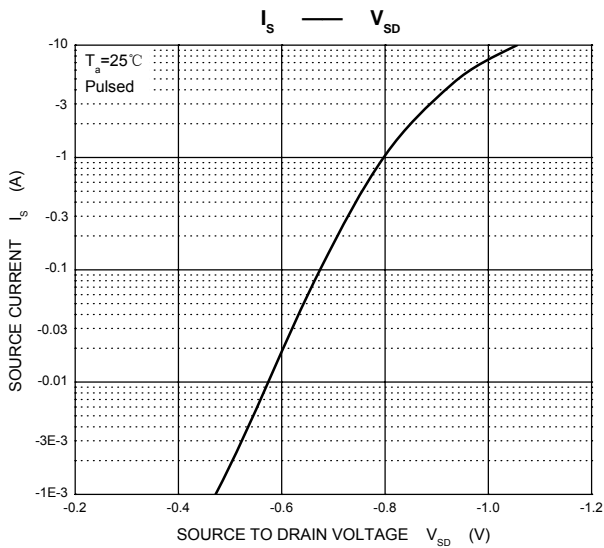
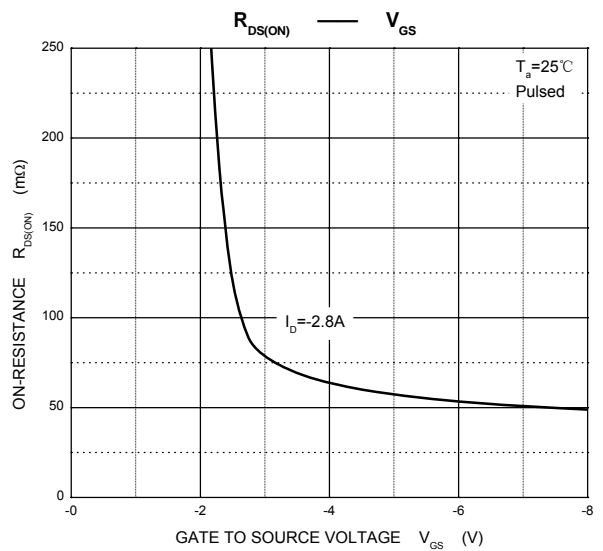
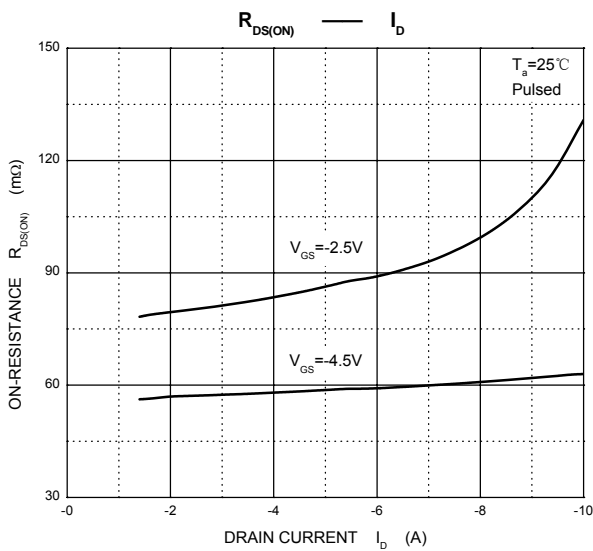
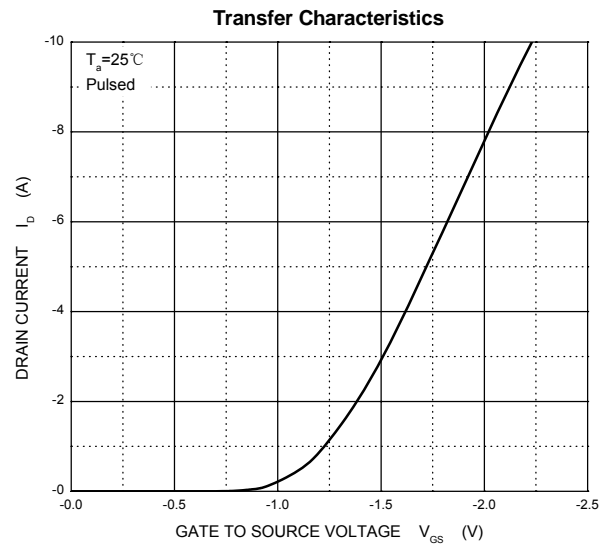
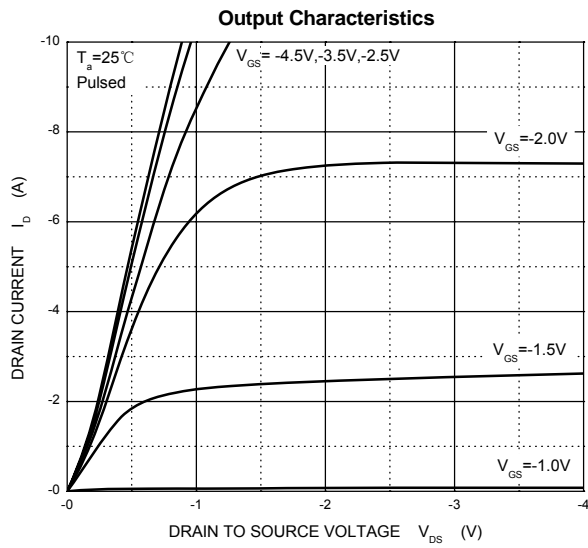
 $T_a=25\text{ }^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Static						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
Gate-source threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.4	-0.7	-0.95	
Gate-source leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 8V$			± 100	nA
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -20V, V_{GS} = 0V$			-1	μA
Drain-source on-state resistance ^a	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -1.5A$		0.050	0.078	Ω
		$V_{GS} = -2.5V, I_D = -1.0A$		0.085	0.107	
Forward transconductance ^a	g_{fs}	$V_{DS} = -5V, I_D = -2.8A$		6.5		S
Dynamic^b						
Input capacitance	C_{iss}	$V_{DS} = -10V, V_{GS} = 0V, f = 1MHz$		633		pF
Output capacitance	C_{oss}			145		
Reverse transfer capacitance	C_{rss}			110		
Total gate charge	Q_g	$V_{DS} = -10V, V_{GS} = -4.5V, I_D = -3A$		5.5	10	nC
				3.3	6	
Gate-source charge	Q_{gs}	$V_{DS} = -10V, V_{GS} = -2.5V, I_D = -3A$		0.7		
Gate-drain charge	Q_{gd}			1.3		
Gate resistance	R_g	$f = 1MHz$		6.0		Ω
Turn-on delay time	$t_{d(on)}$	$V_{DD} = -10V,$ $R_L = 10\Omega, I_D = -1A,$ $V_{GEN} = -4.5V, R_g = 1\Omega$		11	20	ns
Rise time	t_r			35	60	
Turn-off delay time	$t_{d(off)}$			30	50	
Fall time	t_f			10	20	
Drain-source body diode characteristics						
Continuous source-drain diode current	I_S	$T_C = 25^\circ C$			-1.3	A
Pulse diode forward current ^a	I_{SM}				-10	
Body diode voltage	V_{SD}	$I_S = -0.7A$		-0.8	-1.2	V

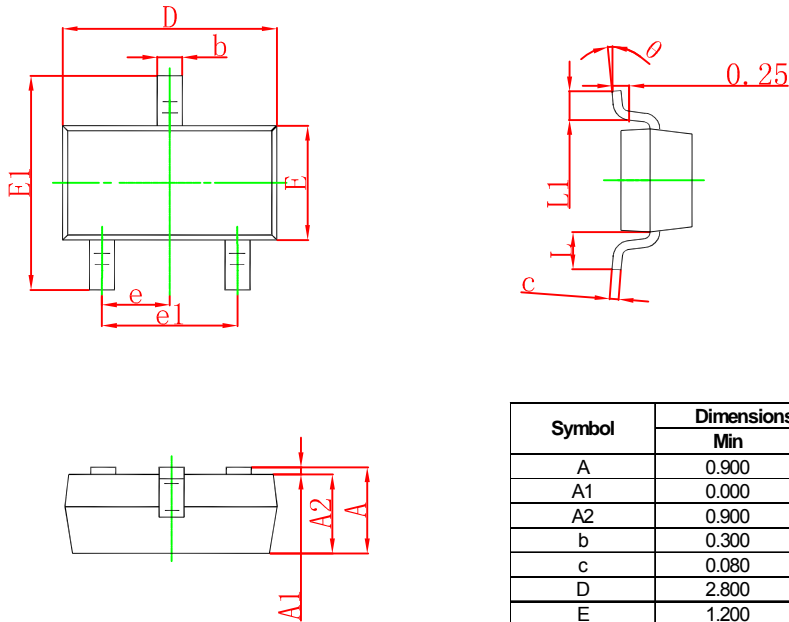
Notes :a. Pulse Test : Pulse Width < 300 μs , Duty Cycle $\leq 2\%$.

b. Guaranteed by design, not subject to production testing.

Typical Characteristics

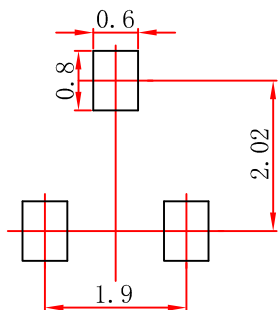


SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
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.