

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

- $V_{DS} = 20\text{ V}$      $I_D = 2.8\text{ A}$
- $R_{DS(on)} < 48\text{ m}\Omega @ V_{GS} = 4.5\text{ V}$
- $R_{DS(on)} < 54\text{ m}\Omega @ V_{GS} = 2.5\text{ V}$

#### FEATURE

- TrenchFET Power MOSFET

#### APPLICATION

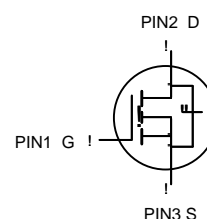
- Load Switch for Portable Devices
- DC/DC Converter

PIN2 D

PIN3 S

PIN1 G

SOT23



N-Channel MOSFET

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

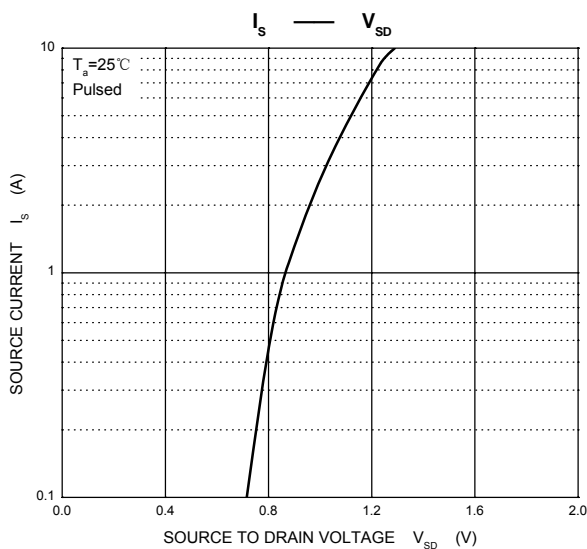
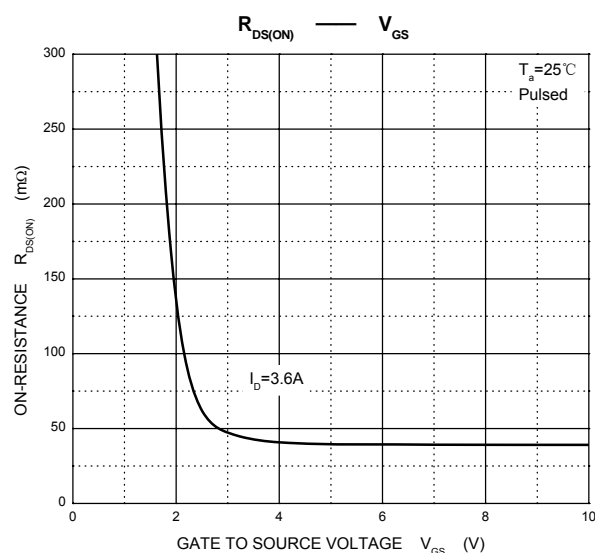
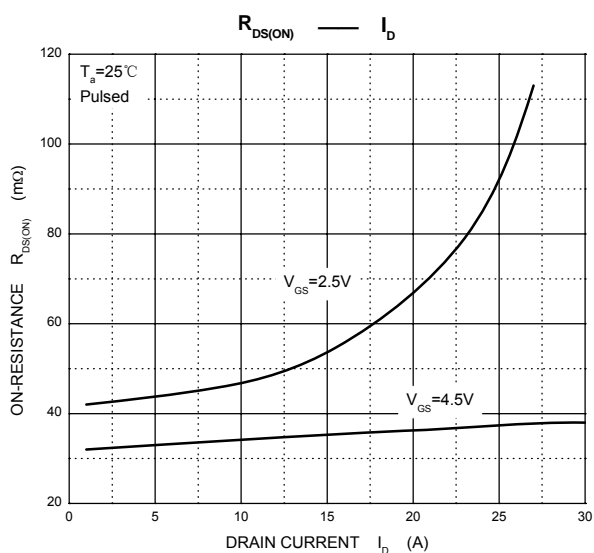
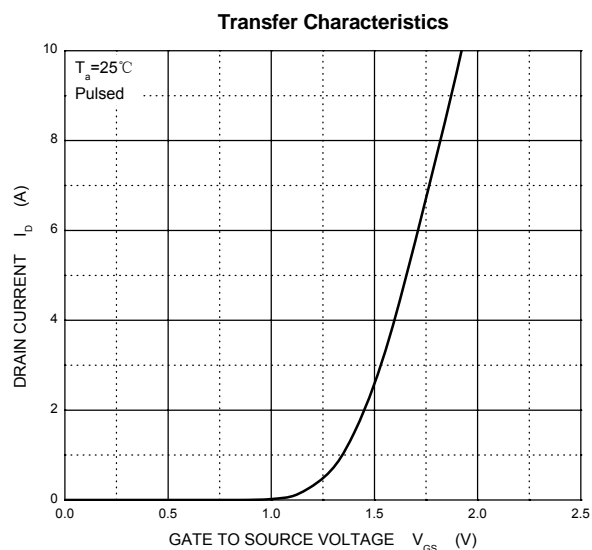
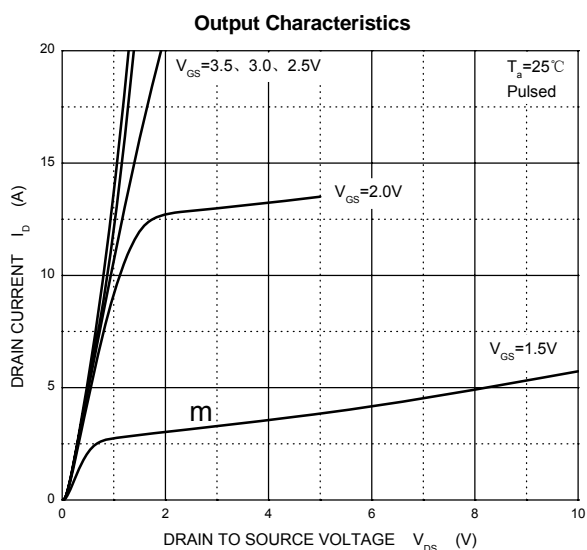
Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	
Continuous Drain Current	$I_D$	2.8	A
Continuous Source-Drain Current(Diode Conduction)	$I_S$	0.6	
Power Dissipation	$P_D$	0.4	W
Thermal Resistance from Junction to Ambient ( $t \leq 5\text{s}$ )	$R_{\theta JA}$	312.5	$^\circ\text{C/W}$
Operating Junction	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55 ~ +150	

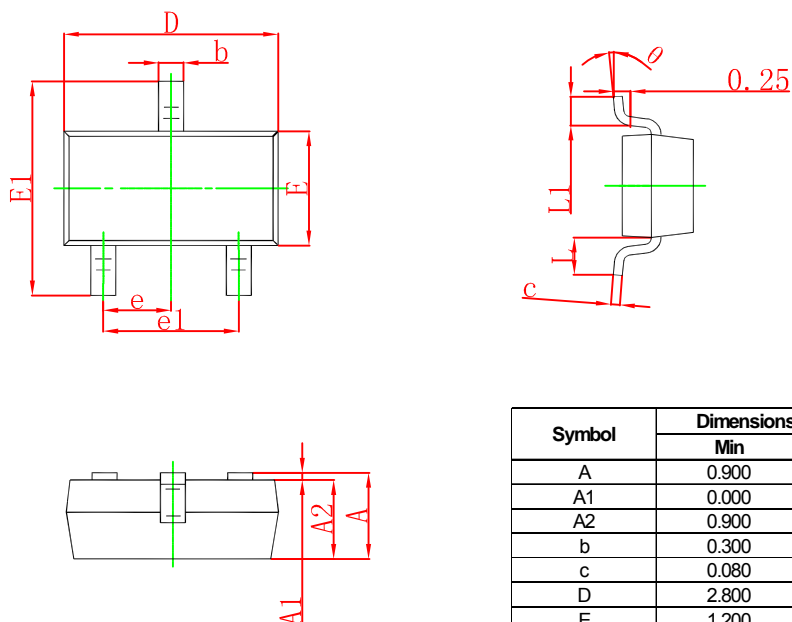
**T<sub>a</sub>=25 °C unless otherwise specified**

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
<b>Static</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 10μA	20			V
Gate-threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 50μA	0.65	0.95	1.2	
Gate-body leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±8V			±100	nA
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = 20V, V <sub>GS</sub> = 0V			1	μA
Drain-source on-resistance <sup>a</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 2.8A		35	48	mΩ
		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 2.0A		45	54	
Forward transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 5V, I <sub>D</sub> = 2.8A		8		S
Diode forward voltage	V <sub>SD</sub>	I <sub>S</sub> = 0.94A, V <sub>GS</sub> = 0V		0.76	1.2	V
<b>Dynamic</b>						
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 2.8A		4.0	10	nC
Gate-source charge	Q <sub>gs</sub>			0.65		
Gate-drain charge	Q <sub>gd</sub>			1.5		
Input capacitance <sup>b</sup>	C <sub>iss</sub>	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 0V, f = 1MHz		300		pF
Output capacitance <sup>b</sup>	C <sub>oss</sub>			120		
Reverse transfer capacitance <sup>b</sup>	C <sub>rss</sub>			80		
<b>Switching<sup>b</sup></b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> = 10V, R <sub>L</sub> = 5.5Ω, I <sub>D</sub> ≈ 2.8A, V <sub>GEN</sub> = 4.5V, R <sub>g</sub> = 6Ω		7	15	ns
Rise time	t <sub>r</sub>			55	80	
Turn-off delay time	t <sub>d(off)</sub>			16	60	
Fall time	t <sub>f</sub>			10	25	

**Notes :**

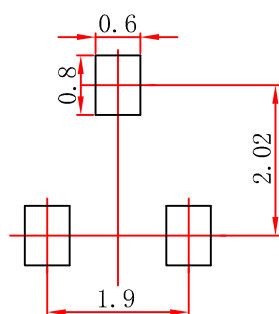
- Pulse Test : Pulse width ≤ 300μs, duty cycle ≤ 2%.
- These parameters have no way to verify.





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