

100V N-Channel Mosfet

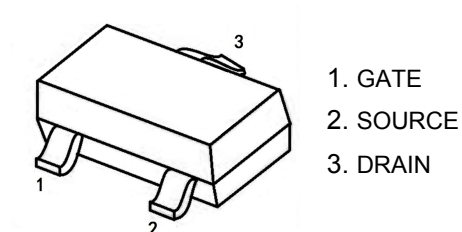
FEATURES

- $R_{DS(ON)} \leq 140m\Omega$ (110 m Ω Typ.)
@ $V_{GS}=10V$
- $R_{DS(ON)} \leq 300m\Omega$ (160m Ω Typ.)
@ $V_{GS}=4.5V$

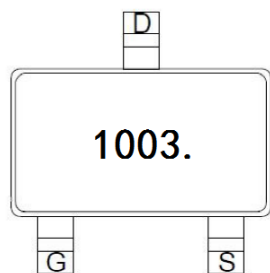
APPLICATIONS

- Battery Protection
- Load Switch
- Power Management

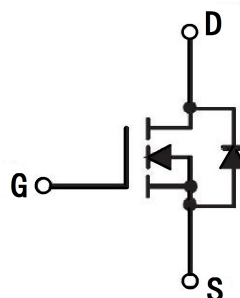
SOT-23



MARKING



N-CHANNEL MOSFET



Absolute Maximum Ratings ($T_a=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		100	V
V_{GSS}	Gate-Source Voltage		± 20	V
I_D	Continuous Drain Current	$T_a = 25^\circ\text{C}$	3	A
		$T_a = 100^\circ\text{C}$	2.4	
I_{DM}	Pulsed Drain Current ^{note1}		12	A
P_D	Power Dissipation	$T_a = 25^\circ\text{C}$	1.2	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		104	$^\circ\text{C/W}$
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	$^\circ\text{C}$

Electrical Characteristics (Ta=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D = 250μA	100	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =100V, V _{GS} = 0V,	-	-	1	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	1.0	1.8	3.0	V
R _{DS(on)}	Static Drain-Source on-Resistance note2	V _{GS} =10V, I _D =3A	-	110	140	mΩ
		V _{GS} =4.5V, I _D =2A	-	160	300	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} = 0V, f = 1.0MHz	-	206	-	pF
C _{oss}	Output Capacitance		-	29	-	pF
C _{rss}	Reverse Transfer Capacitance		-	1.4	-	pF
Q _g	Total Gate Charge	V _{DS} =50V, I _D =3A, V _{GS} =10V	-	4.3	-	nC
Q _{gs}	Gate-Source Charge		-	1.5	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	1.1	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} =50V, I _D =3A, R _{GEN} = 2Ω, V _{GS} =10V,	-	14.7	-	ns
t _r	Turn-on Rise Time		-	3.5	-	ns
t _{d(off)}	Turn-off Delay Time		-	20.9	-	ns
t _f	Turn-off Fall Time		-	2.7	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _s	Maximum Continuous Drain to Source Diode Forward Current		-	-	3	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	12	A
t _{rr}	Reverse recovery time	I _s =3A, di/dt=100 A/μs	-	32	-	ns
Q _{rr}	Reverse recovery charge		-	39	-	nC

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

TYPICAL PERFORMANCE CHARACTERISTICS

Figure1: Output Characteristics

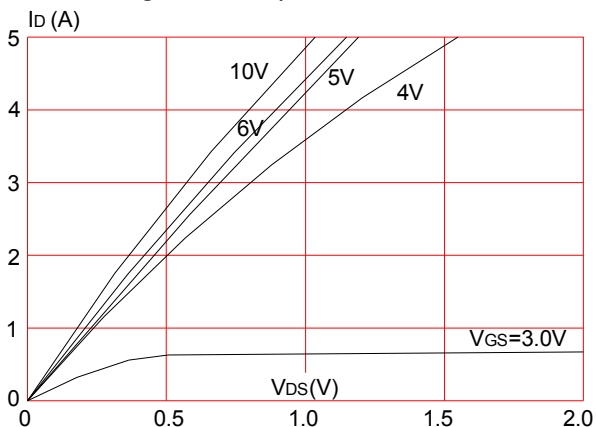


Figure 2: Typical Transfer Characteristics

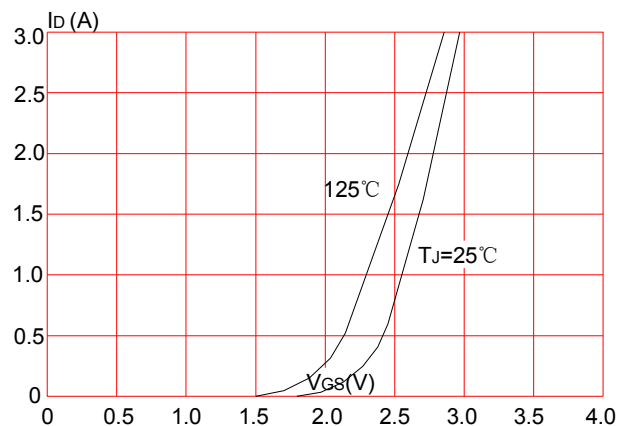


Figure 3: On-resistance vs. Drain Current

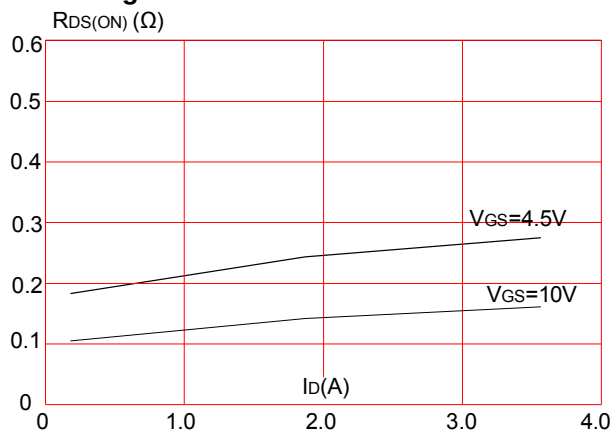


Figure 4: Body Diode Characteristics

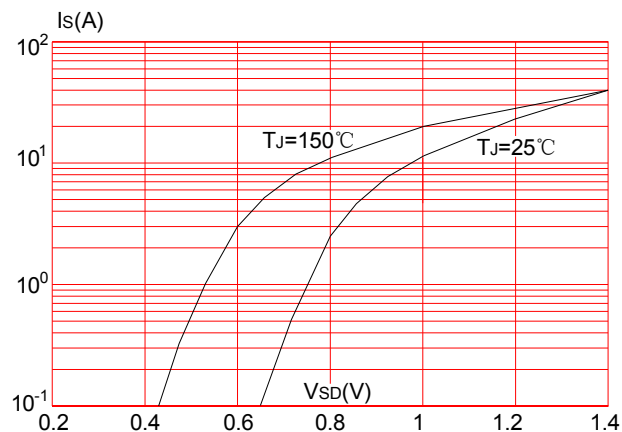


Figure 5: Gate Charge Characteristics

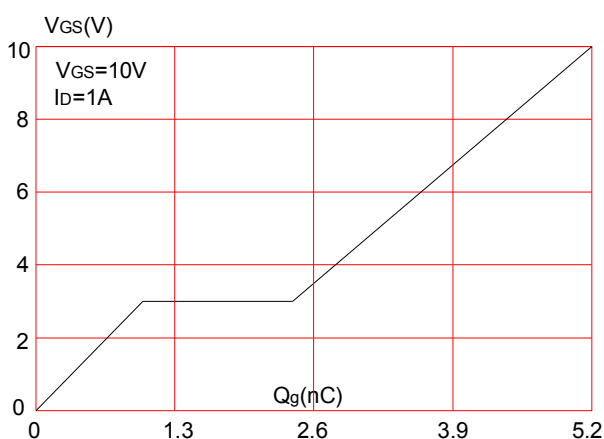
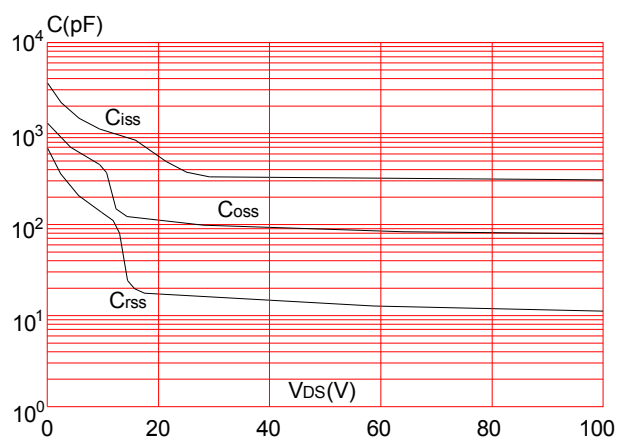


Figure 6: Capacitance Characteristics



TYPICAL PERFORMANCE CHARACTERISTICS (cont.)

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

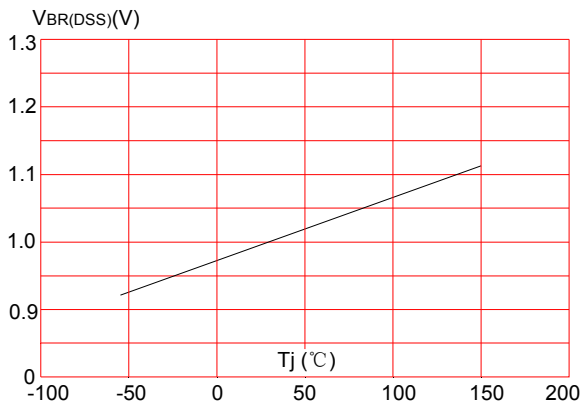


Figure 8: Normalized on Resistance vs. Junction Temperature

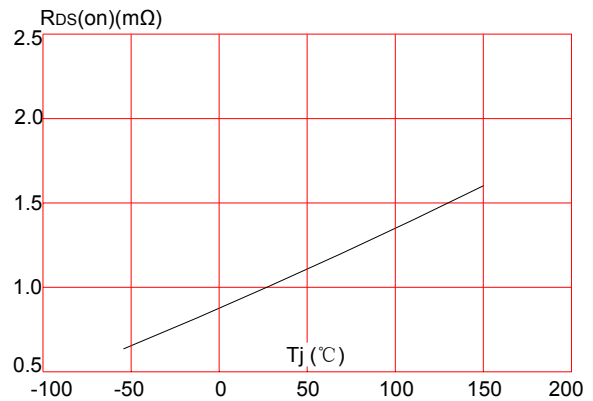


Figure 9: Maximum Safe Operating Area

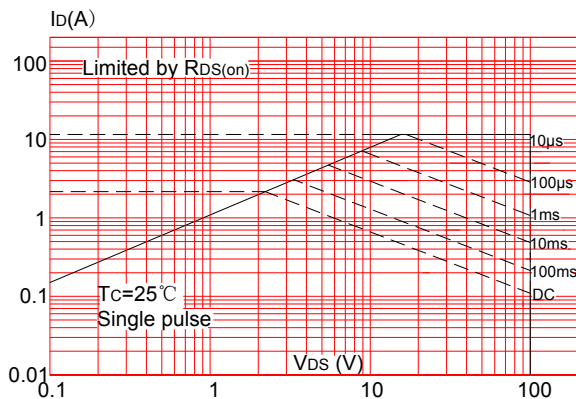


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

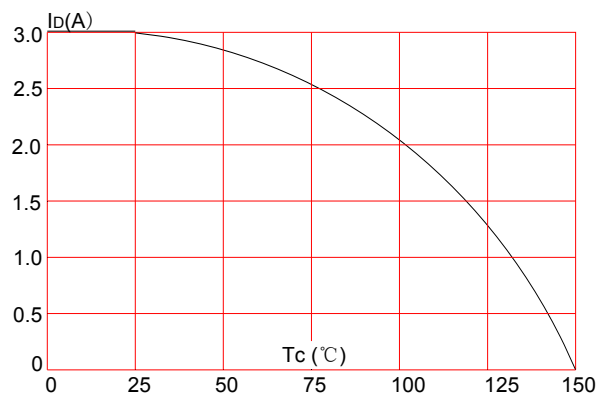
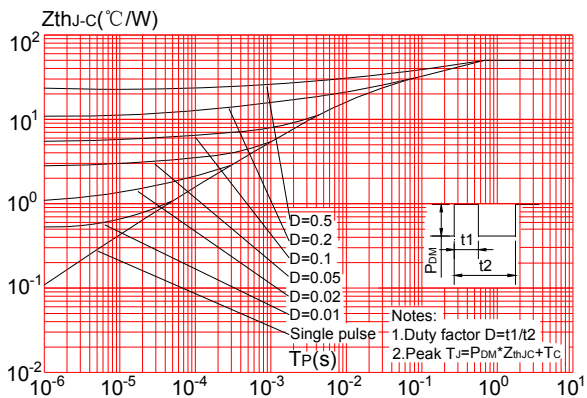
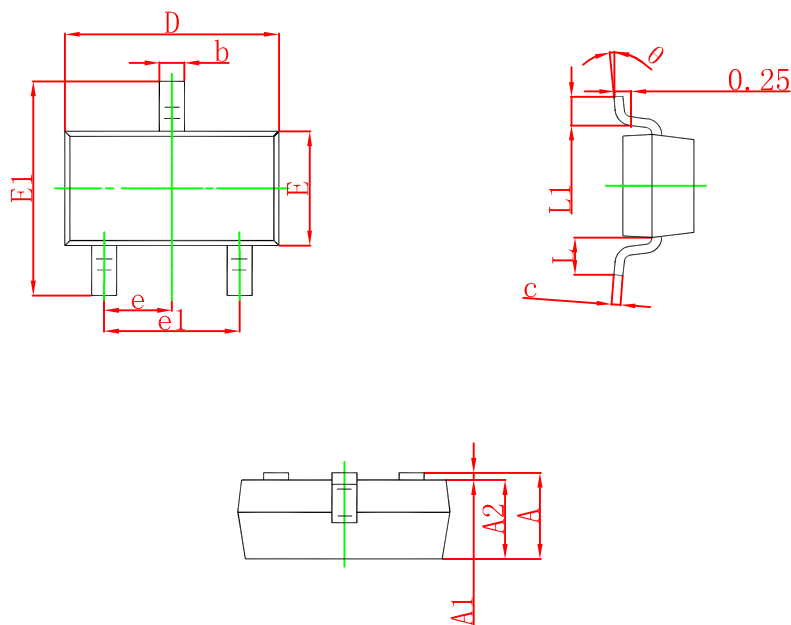


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



SOT-23 PACKAGE OUTLINE DRAWING



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°