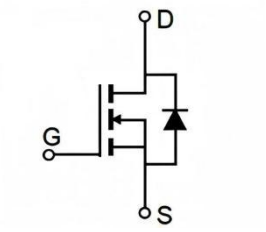
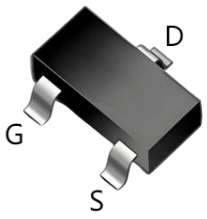
N-Channel Enhancement Mode MOSFET

Parameter	Value	Unit
V_{DS}	20	V
$R_{DS(on)}$	21	mΩ
I_D	5.2	A





SOT-23

Features

- Advanced Trench Process Technology
- Low Threshold Voltage
- Fast Switching Speed

Applications

- Load Switch for Portable Devices
- Voltage controlled small signal switch

Absolute Maximum Ratings (T_A=25℃,unless otherwise noted)

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current	T_A=25℃	I_D	5.2	A
Continuous Drain Current	T_A=70℃	I_D	3.0	A
Pulsed Drain Current [2]		I_{DM}	16.4	A
Total Power Dissipation [3]	T_A=25℃	P_D	1.0	W
Storage Temperature Range		T_{STG}	-55 to 150	℃
Operating Junction Temperature Range		T_J	-55 to 150	℃

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction-ambient [1]	$R_{\theta JA}$	---	170	℃/W
Thermal Resistance Junction-Case [1]	$R_{\theta JC}$	---	---	℃/W

Electrical Characteristics(T_J=25℃ ,unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, V_{GS}=0V	-	-	1.0	μA
Gate to Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}= ±12V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.4	0.7	1.0	V
Static Drain-Source on-Resistance note[2]	$R_{DS(on)}$	V_{GS}=4.5V, I_D=4A	-	21	27	mΩ
		V_{GS}=2.5V, I_D=3A	-	29	44	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=10V, V_{GS}=0V, f=1.0MHz	-	358	-	pF
Output Capacitance	C_{oss}		-	69.3	-	pF
Reverse Transfer Capacitance	C_{rss}		-	58.5	-	pF
Total Gate Charge	Q_g	V_{DS}=10V, I_D=2A, V_{GS}=4.5V	-	5.6	-	nC
Gate-Source Charge	Q_{gs}		-	0.8	-	nC
Gate-Drain(“Miller”) Charge	Q_{gd}		-	1	-	nC
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DS}=10V, I_D=4A, R_{GEN}=3Ω, V_{GS}=4.5V	-	5	-	ns
Turn-on Rise Time	t_r		-	30	-	ns
Turn-off Delay Time	$t_{d(off)}$		-	48	-	ns
Turn-off Fall Time	t_f		-	36	-	ns
Drain.Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain to Source Diode Forward Current	I_S		-	-	4	A
Maximum Pulsed Drain to Source Diode Forward Current	I_{SM}		-	-	16	A
Drain to Source Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=4A	-	-	1.2	V

Notes:

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

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Characteristics

Figure1: Output Characteristics

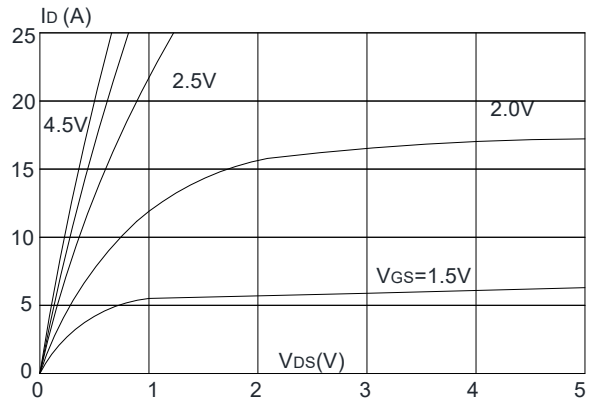


Figure 2: Typical Transfer Characteristics

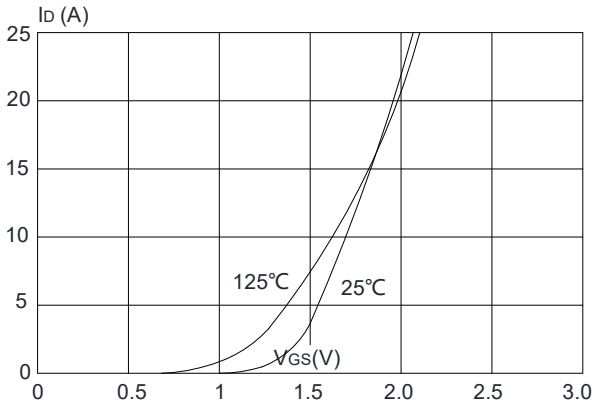


Figure 3: On-resistance vs. Drain Current

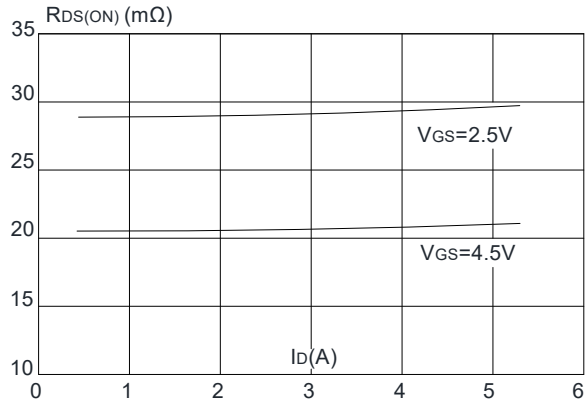


Figure 4: Body Diode Characteristics

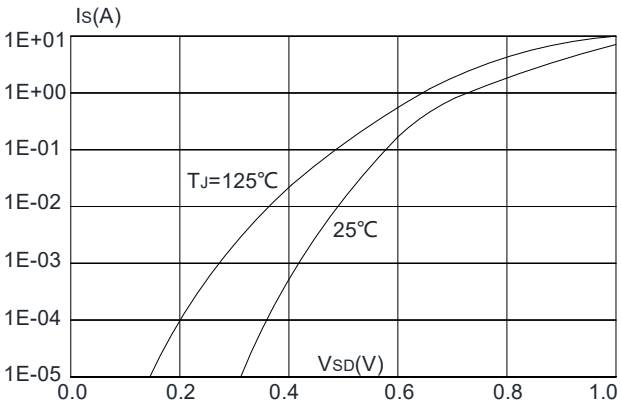


Figure 5: Gate Charge Characteristics

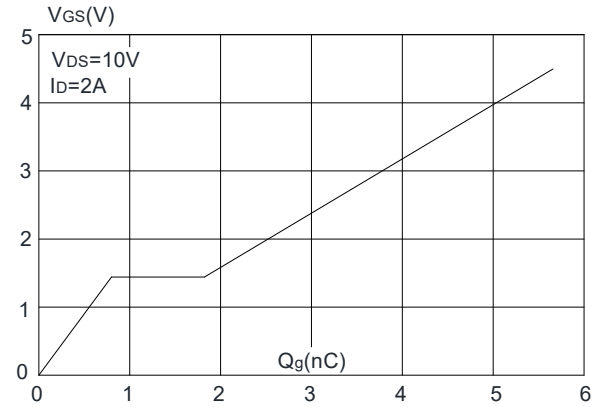


Figure 6: Capacitance Characteristics

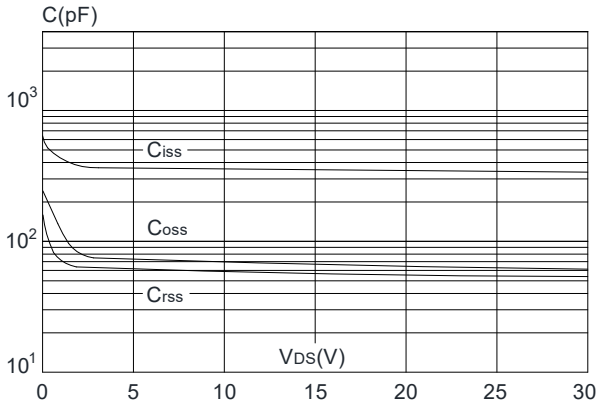


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

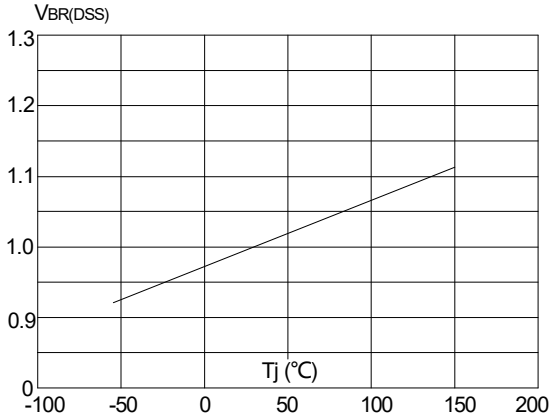


Figure 8: Normalized on Resistance vs. Junction Temperature

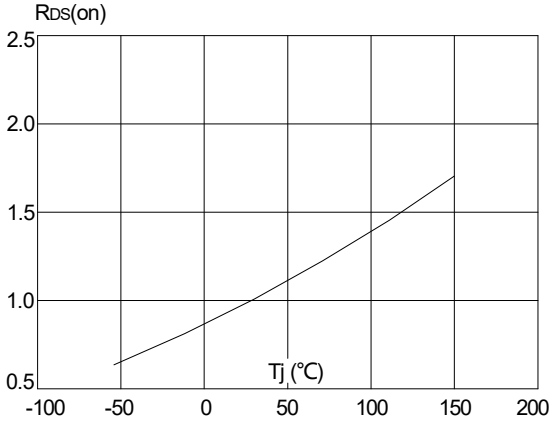


Figure 9: Maximum Safe Operating Area

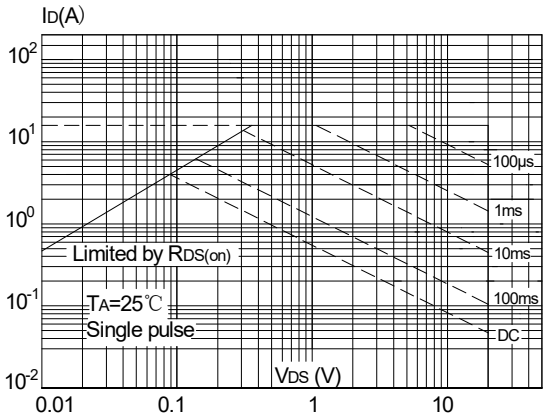


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

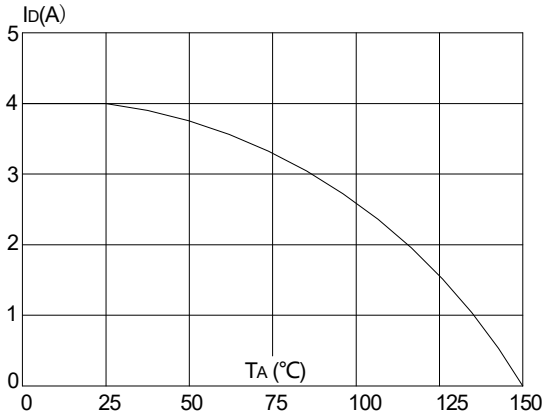
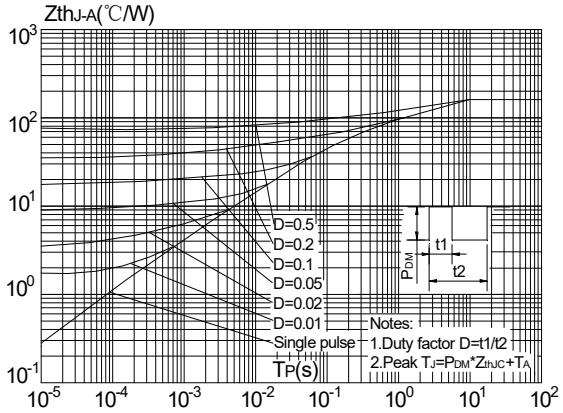
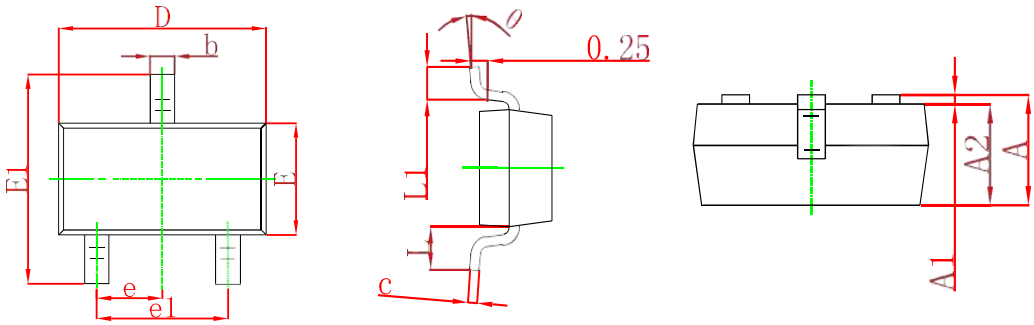


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



Package Outline Dimensions (Units: mm)

SOT-23



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°

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