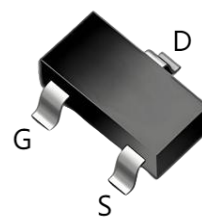
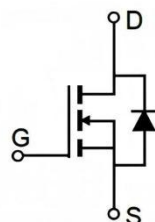


N-Channel Enhancement Mode MOSFET

Parameter	Value	Unit
V_{DS}	30	V
$R_{DS(on)}$	25	mΩ
I_D	5.8	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 ($T_a=25^\circ\text{C}$, unless otherwise noted)

Parameter		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 12	V
Continuous Drain Current	$T_a=25^\circ\text{C}$	I_D	5.8	A
Continuous Drain Current	$T_a=70^\circ\text{C}$	I_D	4.0	A
Pulsed Drain Current ²		I_{DM}	20.4	A
Total Power Dissipation ³	$T_a=25^\circ\text{C}$	P_D	1.3	W
Storage Temperature Range		T_{STG}	-55 to 150	$^\circ\text{C}$
Operating Junction Temperature Range		T_J	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction-ambient ¹	$R_{\theta JA}$	---	96	$^\circ\text{C/W}$
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	---	---	$^\circ\text{C/W}$

Electrical Characteristics(Ta=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	30	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, 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	0.5	-	1.3	V
Static Drain-Source on-Resistance note2	R _{DS(on)}	V _{GS} =10V, I _D =4A	-	25	31	mΩ
		V _{GS} =4.5V, I _D =3A	-	28	38	
		V _{GS} =2.5V, I _D =3A	-	36	54	
Dynamic Characteristics						
Input Capacitance	C _{iSS}	V _{DS} =15V, V _{GS} =0V, f=1.0MHz	-	507	-	pF
Output Capacitance	C _{oSS}		-	52	-	pF
Reverse Transfer Capacitance	C _{rSS}		-	43	-	pF
Total Gate Charge	Q _g	V _{DS} =15V, I _D =5A, V _{GS} =4.5V	-	9.1	-	nC
Gate-Source Charge	Q _{gs}		-	2.1	-	nC
Gate-Drain(“Miller”) Charge	Q _{gd}		-	2.8	-	nC
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DS} =15V,R _{GEN} =3Ω, R _L =2.8Ω, V _{GS} =10V	-	3	-	ns
Turn-on Rise Time	t _r		-	2.8	-	ns
Turn-off Delay Time	t _{d(off)}		-	25	-	ns
Turn-off Fall Time	t _f		-	4	-	ns
Drain.Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain to Source Diode Forward Current	I _S		-	-	5	A
Maximum Pulsed Drain to Source Diode Forward Current	I _{SM}		-	-	20	A
Drain to Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =5A	-	-	1.2	V

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

Typical Characteristics

Figure1: Output Characteristics

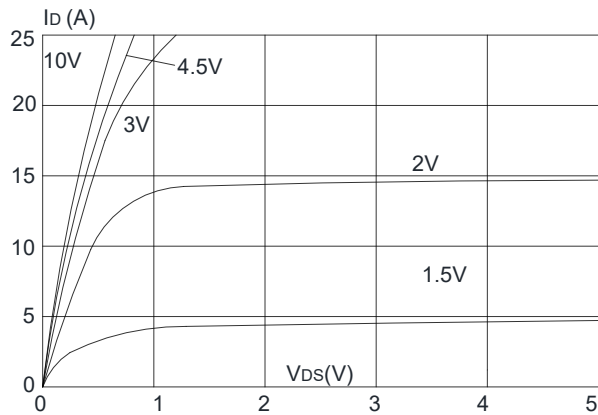


Figure 2: Typical Transfer Characteristics

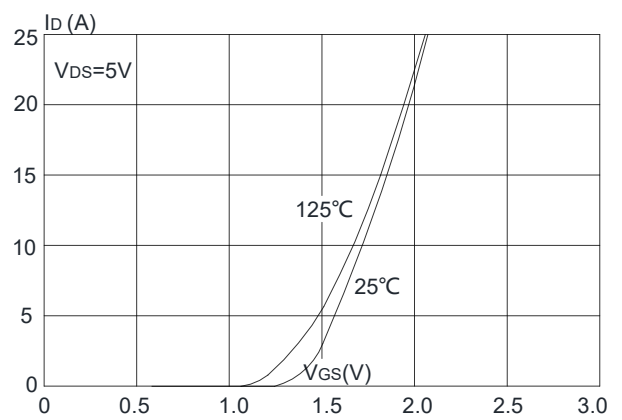


Figure 3: On-resistance vs. Drain Current

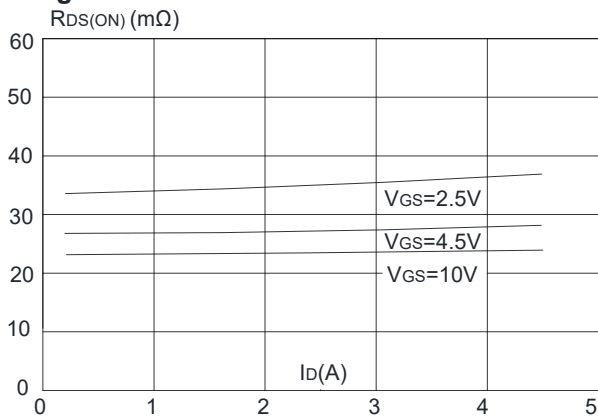


Figure 4: Body Diode Characteristics

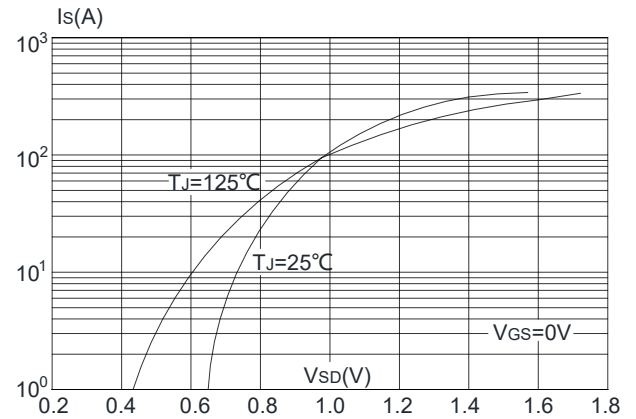


Figure 5: Gate Charge Characteristics

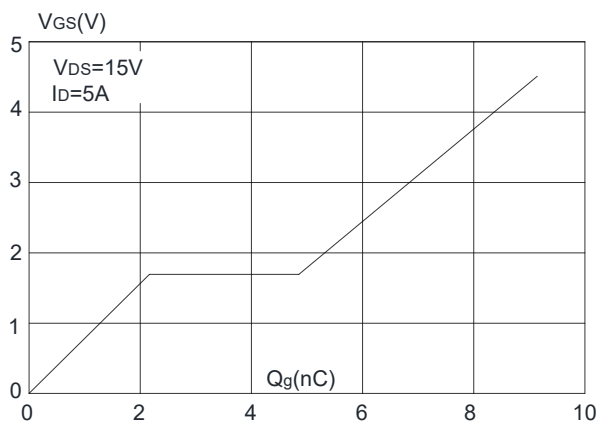


Figure 6: Capacitance Characteristics

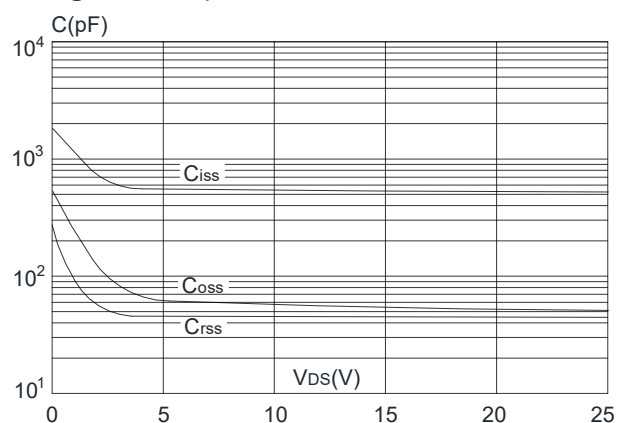


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

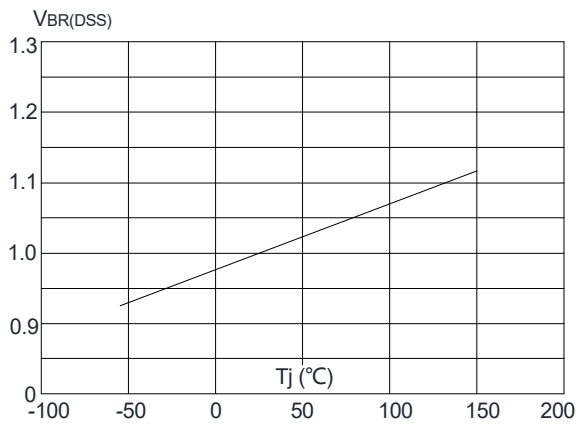


Figure 8: Normalized on Resistance vs. Junction Temperature

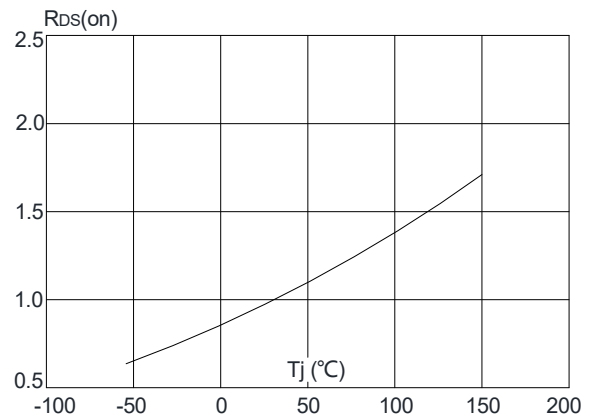


Figure 9: Maximum Safe Operating Area

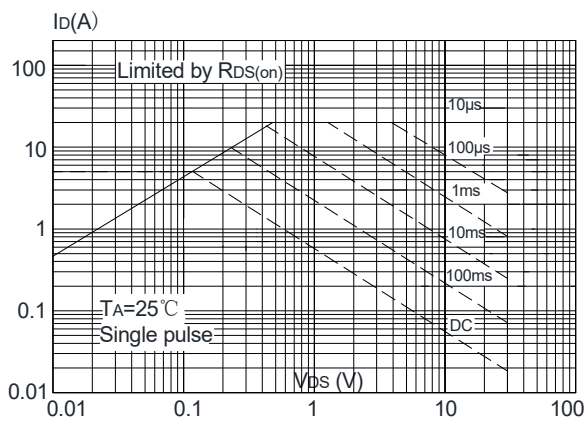


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

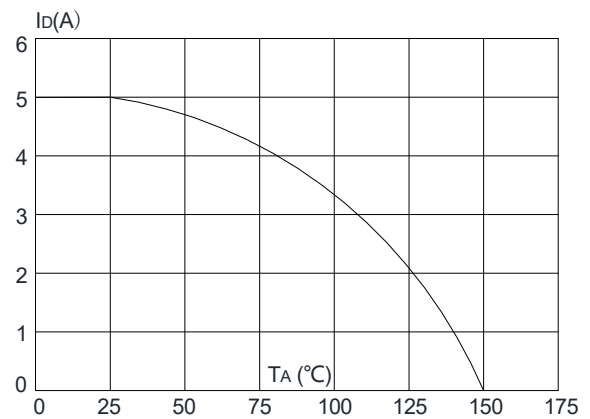
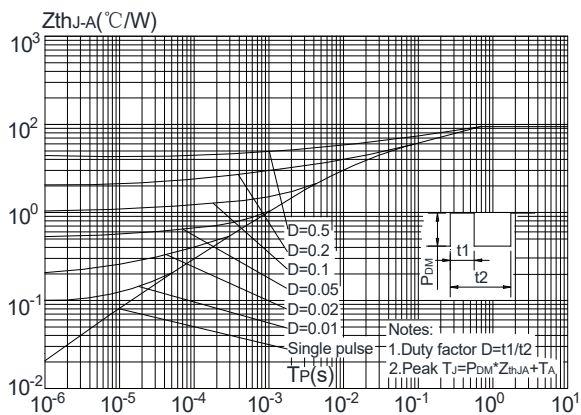
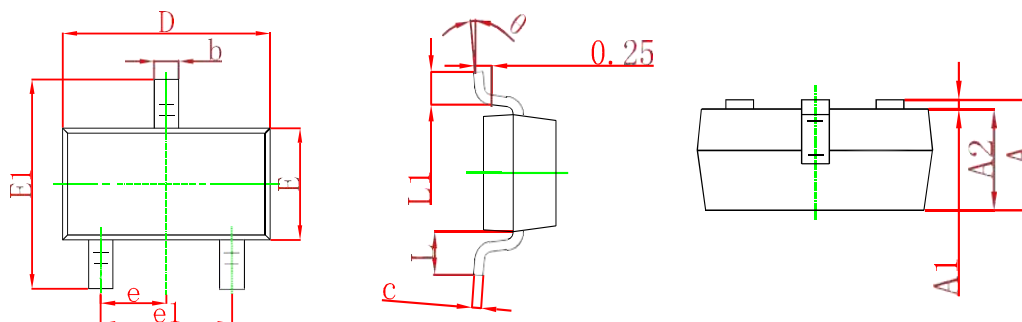


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



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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