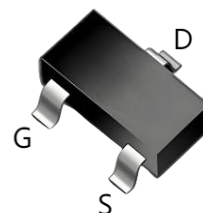
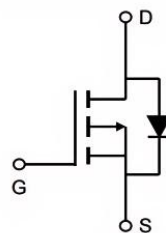


P-Channel Enhancement Mode MOSFET

Parameter	Value	Unit
V_{DS}	-20	V
$R_{DS(on)}$	75	mΩ
I_D	-3.0	A



SOT-23

Features

- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

Applications

- Battery protection
- Load switch
- Power management

Absolute 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}	± 12	V
Continuous Drain Current	$T_a=25^{\circ}\text{C}$	I_D	-3	A
Continuous Drain Current	$T_a=70^{\circ}\text{C}$	I_D	-2.2	
Pulsed Drain Current ²		I_{DM}	-12	A
Total Power Dissipation ³	$T_a=25^{\circ}\text{C}$	P_D	1.0	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	$R_{\theta JA}$	--	125	$^{\circ}\text{C/W}$
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	--	--	$^{\circ}\text{C/W}$

Electrical Characteristics(Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-250\mu A, V_{GS}=0V$	-20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V$	-	-	-1.0	μA
Gate-Body Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 12V$	-	-	± 100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.5	-0.7	-1.0	V
Static Drain-Source ON-Resistance note ²	$R_{DS(ON)}$	$V_{GS}=-4.5V, I_D=-3A$	-	75	97	m Ω
		$V_{GS}=-2.5V, I_D=-2A$	-	95	123	m Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=-10V,$ $f= 1MHz$	-	503	-	pF
Output Capacitance	C_{oss}		-	67	-	pF
Reverse Transfer Capacitance	C_{rss}		-	58	-	pF
Total Gate Charge	Q_g	$V_{GS}=-4.5V$ $V_{DS}= -10V, I_D=-2A$	-	4.1	-	nC
Gate Source Charge	Q_{gs}		-	0.8	-	nC
Gate Drain("Miller") Charge	Q_{gd}		-	1.1	-	nC
Switching Characteristics						
Turn-On DelayTime	$t_{d(on)}$	$V_{DD}= -10V, I_D= -3A,$ $R_G=1\Omega, V_{GEN}= -4.5V,$ $R_L=1.2\Omega$	-	11	-	ns
Turn-On Rise Time	t_r		-	52	-	ns
Turn-Off DelayTime	$t_{d(off)}$		-	16	-	ns
Turn-Off Fall Time	t_f		-	10	-	ns
Drain-Source Diode Characteristics and Max Ratings						
Maximum Continuous Drain to Source Diode Forward Current	I_S		-	-	-3	A
Maximum Pulsed Drain to Source Diode Forward Current	I_{SM}		-	-	-12	A
Drain to Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-3A$	-	-	-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 $\leq 2\%$

Typical Characteristics

Figure1: Output Characteristics

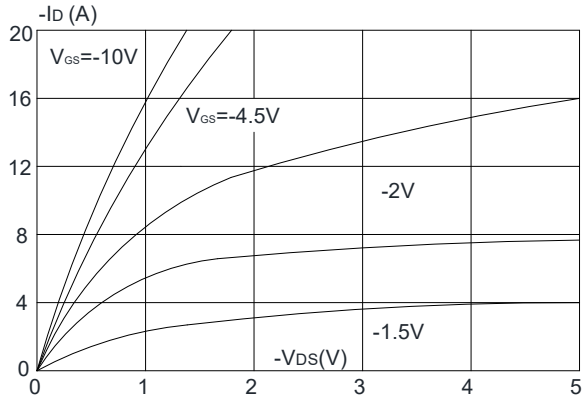


Figure 2: Typical Transfer Characteristics

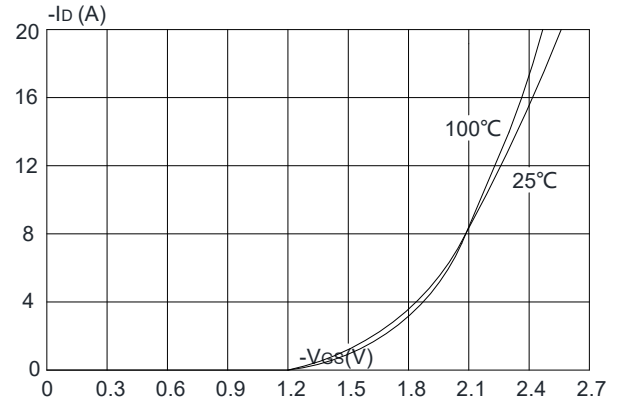


Figure 3: On-resistance vs. Drain Current

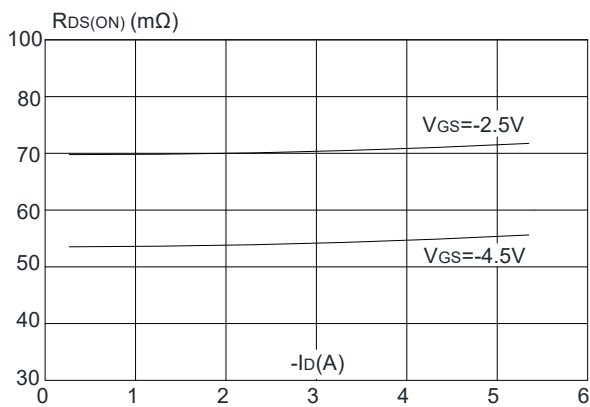


Figure 4: Body Diode Characteristics

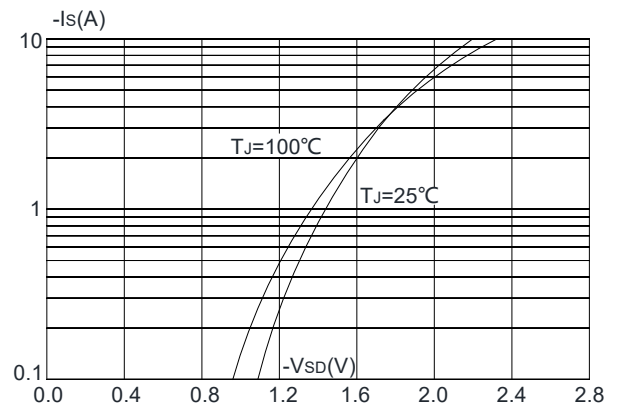


Figure 5: Gate Charge Characteristics

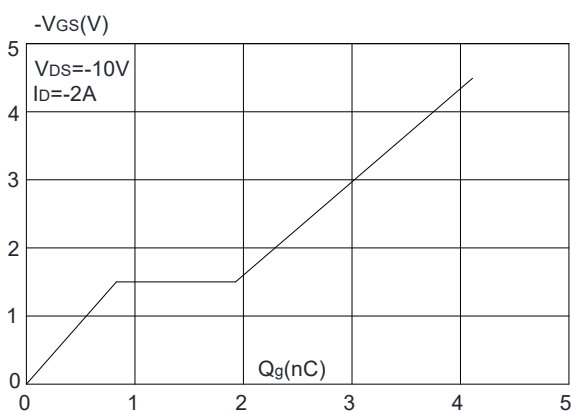


Figure 6: Capacitance Characteristics

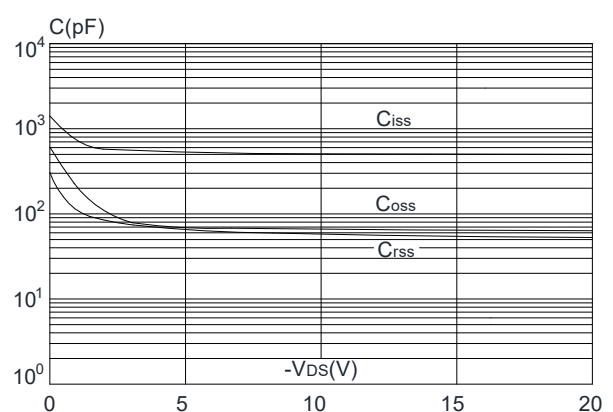


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

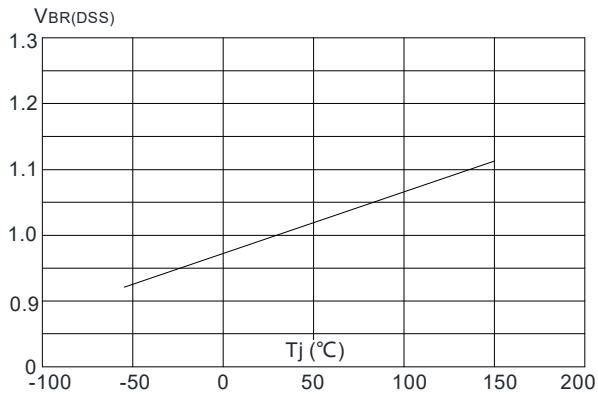


Figure 8: Normalized on Resistance vs. Junction Temperature

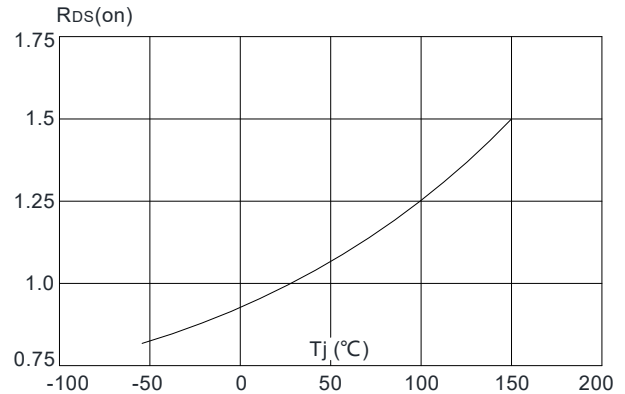


Figure 9: Maximum Safe Operating Area

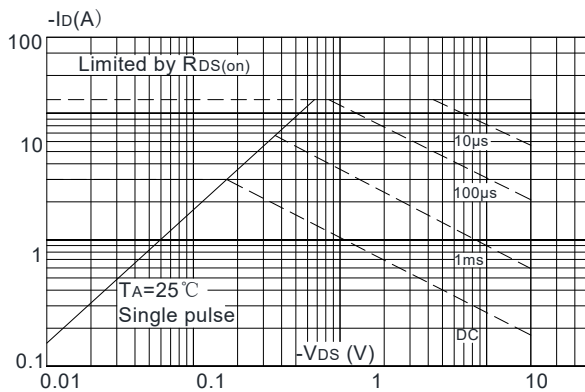


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

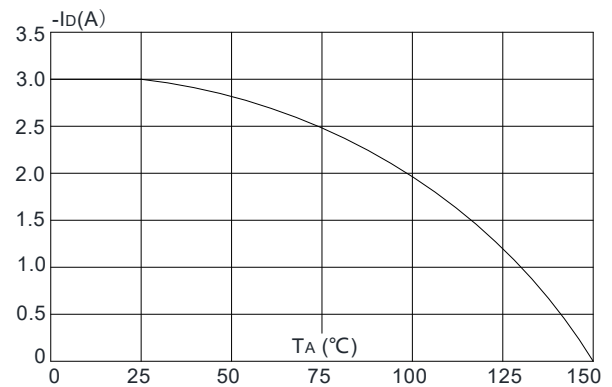
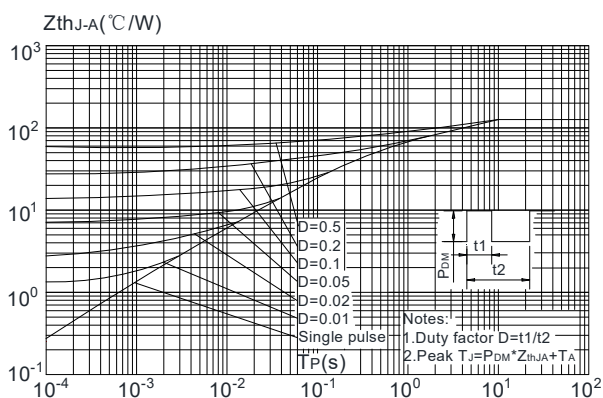
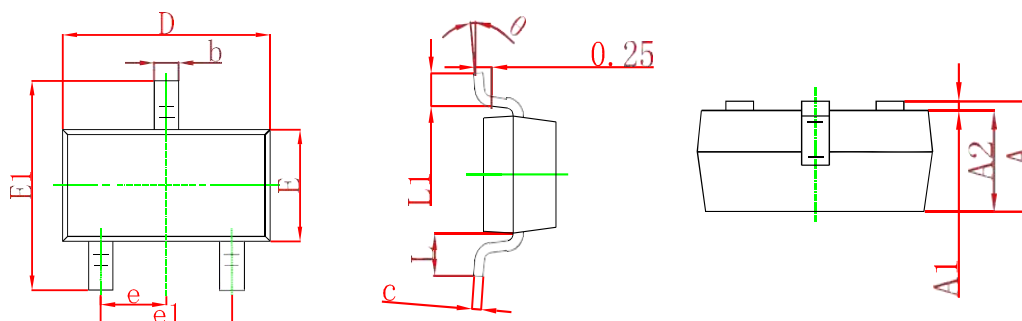


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



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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