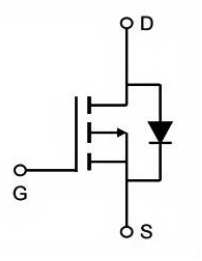
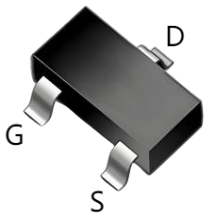
P-Channel Enhancement Mode MOSFET

Parameter	Value	Unit
V_{DS}	-20	V
$R_{DS(on)}$	28	mΩ
I_D	-5.0	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℃,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℃	I_D	-5.0	A
Continuous Drain Current	T_A=70℃	I_D	-3.0	
Pulsed Drain Current [2]		I_{DM}	-16	A
Total Power Dissipation [3]	T_A=25℃	P_D	1.31	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]	$R_{\theta JA}$	--	125	℃/W
Thermal Resistance Junction-Case [1]	$R_{\theta JC}$	--	--	℃/W

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=-250μA, 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}=±12V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=-250μA	-0.5	-0.7	-1.0	V
Static Drain-Source ON-Resistance note 2	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-4.1A	-	28	35	mΩ
		V_{GS}=-2.5V, I_D=-3A	-	38	53	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-10V, f= 1MHz	-	830	-	pF
Output Capacitance	C_{oss}		-	132	-	pF
Reverse Transfer Capacitance	C_{rss}		-	85	-	pF
Total Gate Charge	Q_g	V_{GS}=-4.5V V_{DS}=-10V, I_D=-2A	-	8.8	-	nC
Gate Source Charge	Q_{gs}		-	1.4	-	nC
Gate Drain("Miller") Charge	Q_{gd}		-	1.9	-	nC
Switching Characteristics						
Turn-On DelayTime	$t_{d(on)}$	V_{DD}=-10V, I_D=-3.3A R_G=1Ω, V_{GEN}=-4.5V	-	10	-	ns
Turn-On Rise Time	t_r		-	32	-	ns
Turn-Off DelayTime	$t_{d(off)}$		-	50	-	ns
Turn-Off Fall Time	t_f		-	51	-	ns
Drain.Source Diode Characteristics and Max Ratings						
Maximum Continuous Drain to Source Diode Forward Current	I_S		-	-	-5.0	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=-4.1A	-	-	-1.2	V

Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. Pulse Test: Pulse Width≤300us, Duty Cycle≤2%

Typical Characteristics

Figure1: Output Characteristics

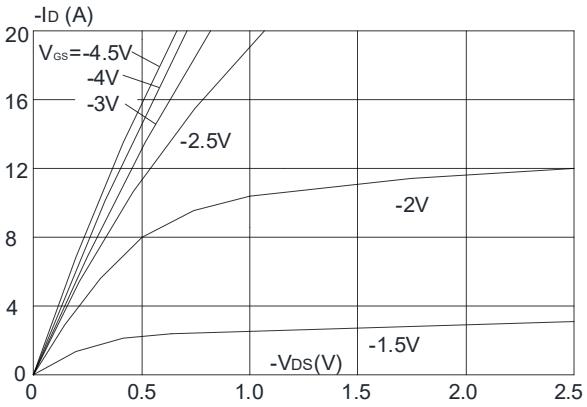


Figure 2: Typical Transfer Characteristics

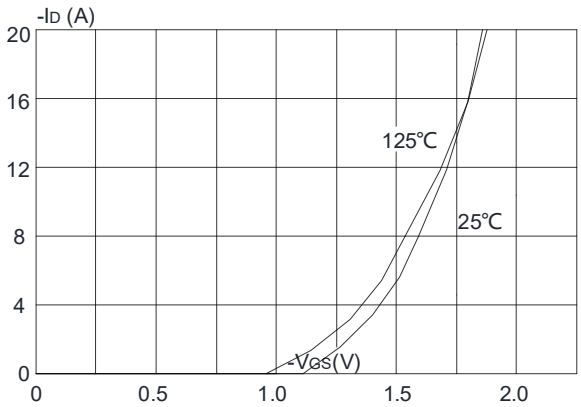


Figure 3: On-resistance vs. Drain Current

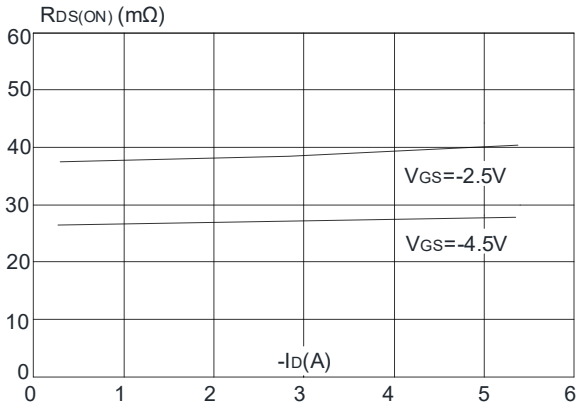


Figure 4: Body Diode Characteristics

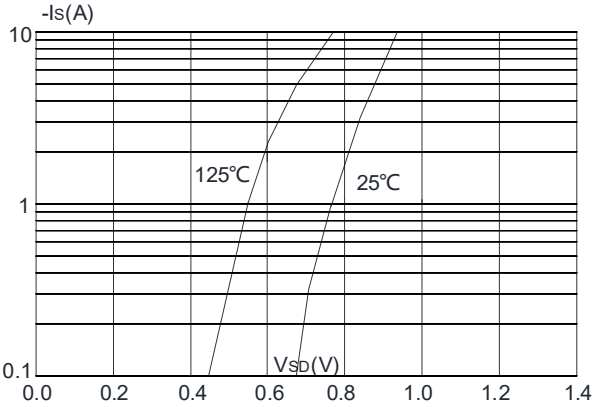


Figure 5: Gate Charge Characteristics

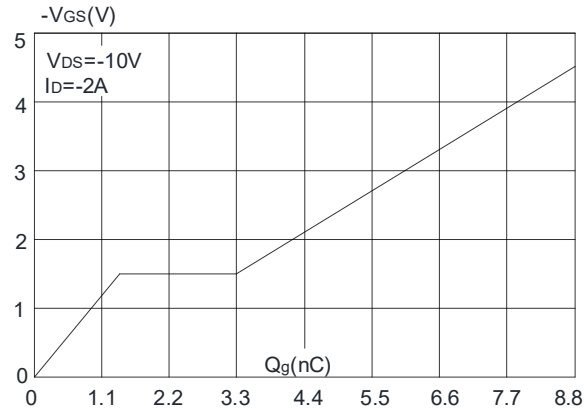


Figure 6: Capacitance Characteristics

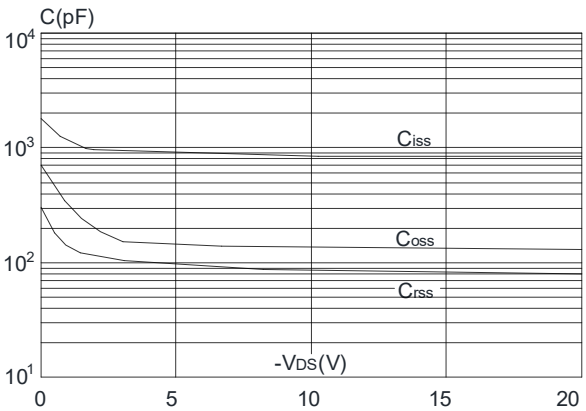


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

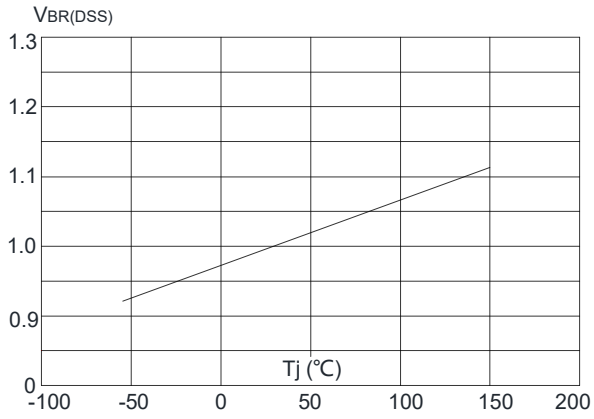


Figure 8: Normalized on Resistance vs. Junction Temperature

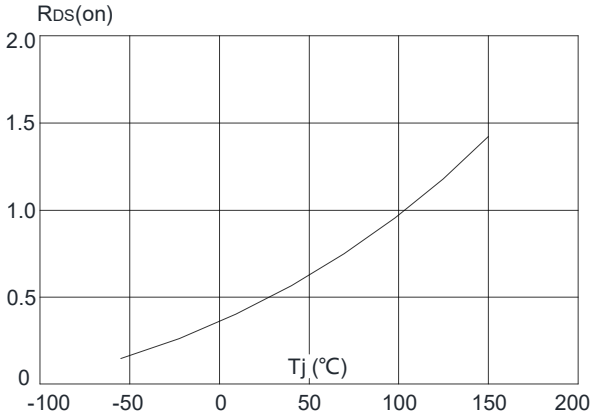


Figure 9: Maximum Safe Operating Area

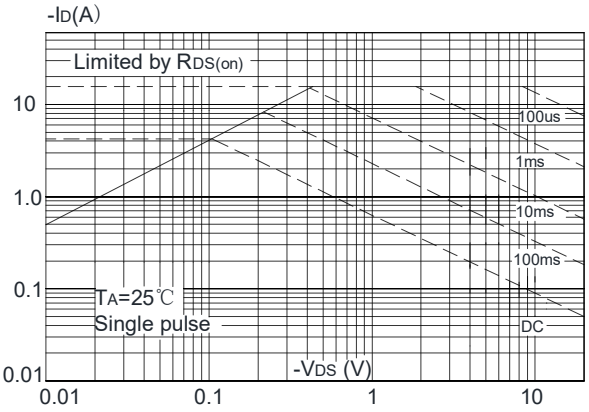


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

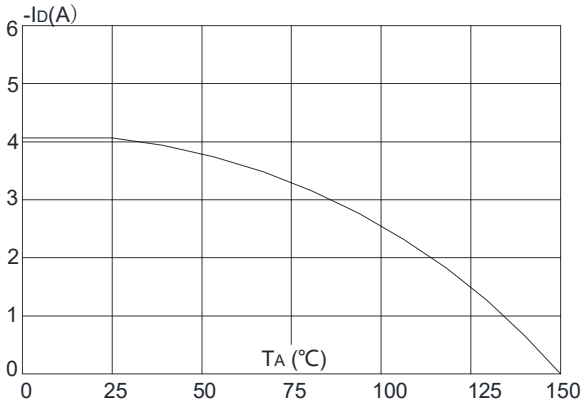
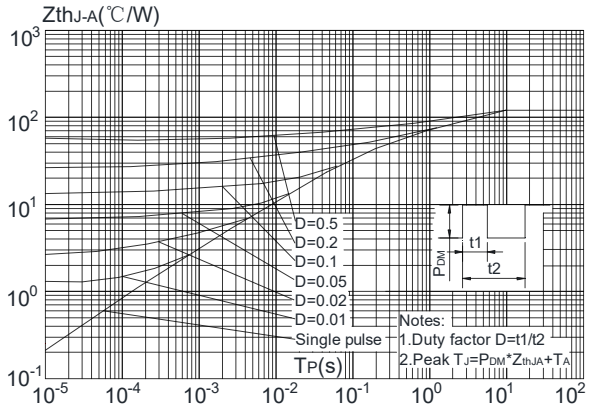
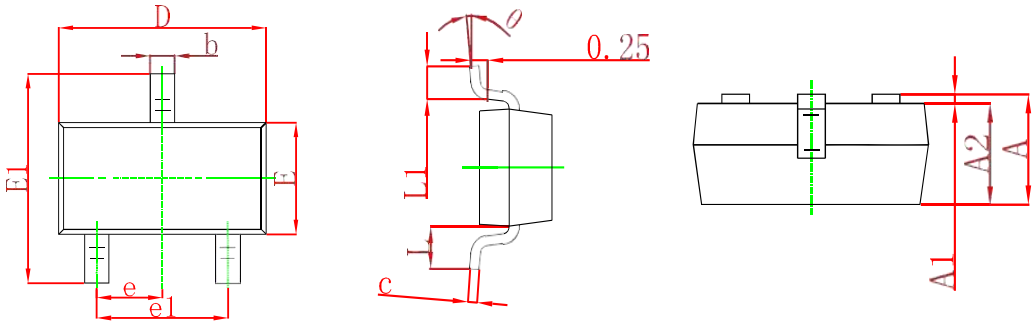


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



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	0.950TYP		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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