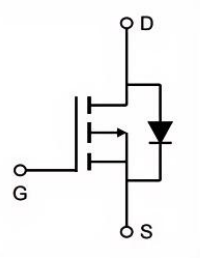
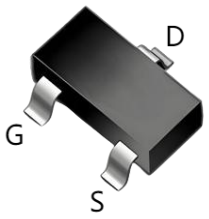
P-Channel Enhancement Mode MOSFET

Parameter	Value	Unit
V_{DS}	-30	V
$R_{DS(on)}$	48	mΩ
I_D	-4.0	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 (Ta=25℃,unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current	Ta=25℃	I_D	-4	A
	Ta=100℃		-3	
Pulsed Drain Current (1)		I_{DM}	-16	A
Total Power Dissipation	Ta=25℃	P_D	1.2	W
Thermal Resistance, Junction to Ambient (2)		$R_{\theta JA}$	108	℃W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	℃

Electrical Characteristics(Ta=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	-30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-30V, 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	-0.6	-0.95	-1.3	V
Static Drain-Source ON-Resistance(3)	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-4A	-	48	62	mΩ
		V_{GS} = -4.5V, I_D=-3A	-	56	73	mΩ
		V_{GS}=-2.5V, I_D=-3A	-	75	98	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-15V, f= 1MHz	-	553	-	pF
Output Capacitance	C_{oss}		-	57	-	pF
Reverse Transfer Capacitance	C_{rss}		-	35	-	pF
Total Gate Charge	Q_g	V_{GS}=0 to -4.5V V_{DS}= -15V, I_D=-3A	-	6.5	-	nC
Gate Source Charge	Q_{gs}		-	1.4	-	nC
Gate Drain("Miller") Charge	Q_{gd}		-	1.7	-	nC
Switching Characteristics						
Turn-On DelayTime	$t_{d(on)}$	V_{GS}=-4.5V, V_{DD}=-15V I_D=-3A, R_{GEN}=3Ω	-	10	-	ns
Turn-On Rise Time	t_r		-	86	-	ns
Turn-Off DelayTime	$t_{d(off)}$		-	150	-	ns
Turn-Off Fall Time	t_f		-	357	-	ns
Drain.Source Diode Characteristics and Max 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
Body Diode Reverse Recovery Time	t_{rr}	I_F=-3A, di/dt=80A/us	-	36	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	5	-	nC

Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. $R_{\theta JA}$ is measured with the device mounted on a 1inch^2 pad of 2oz copper FR4 PCB
3. Pulse Test: Pulse Width≤300us, Duty Cycle≤0.5%.

Typical Characteristics

Figure 1: Output Characteristics

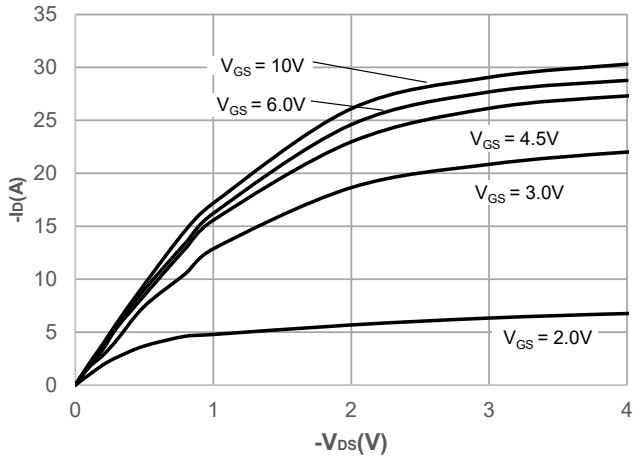


Figure 2: Typical Transfer Characteristics

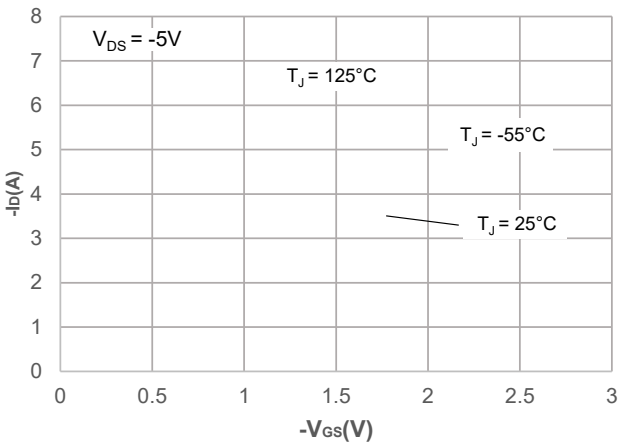


Figure 3: On-resistance vs. Drain Current

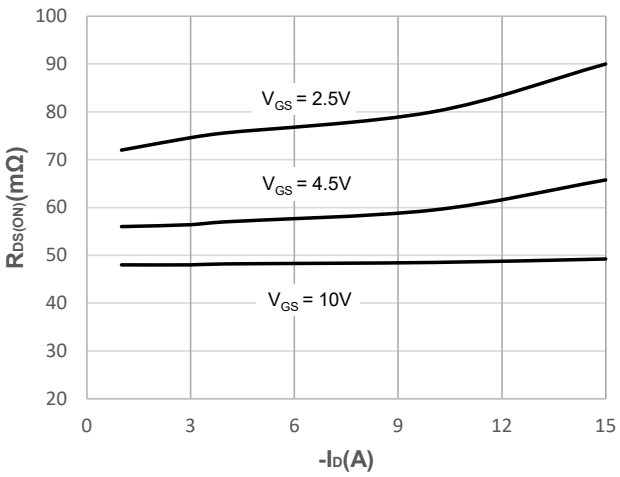


Figure 4: Body Diode Characteristics

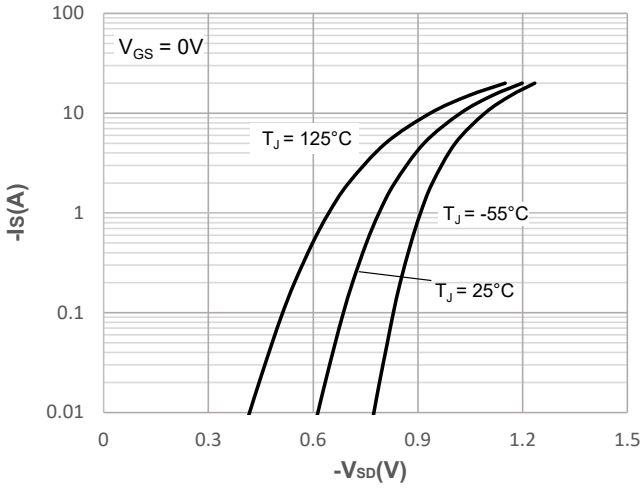


Figure 5: Gate Charge Characteristics

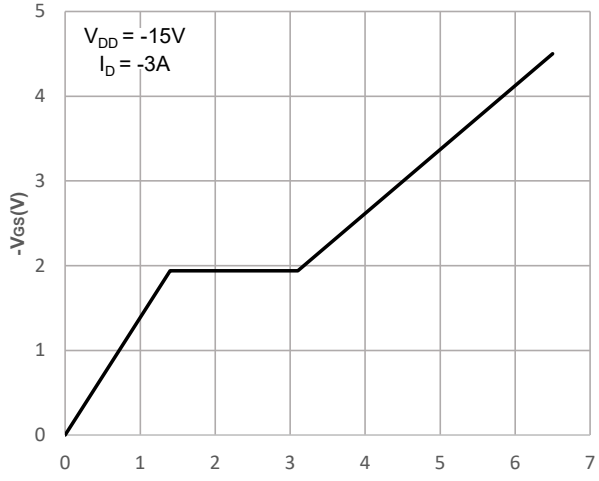


Figure 6: Capacitance Characteristics

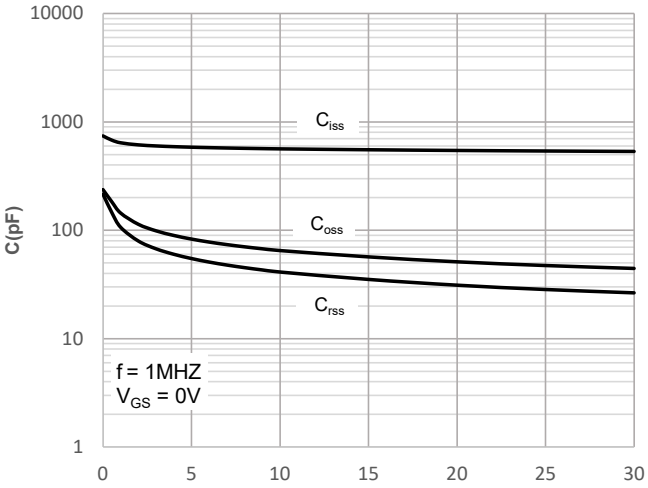


Figure 7: Normalized Breakdown voltage vs. Junction Temperature

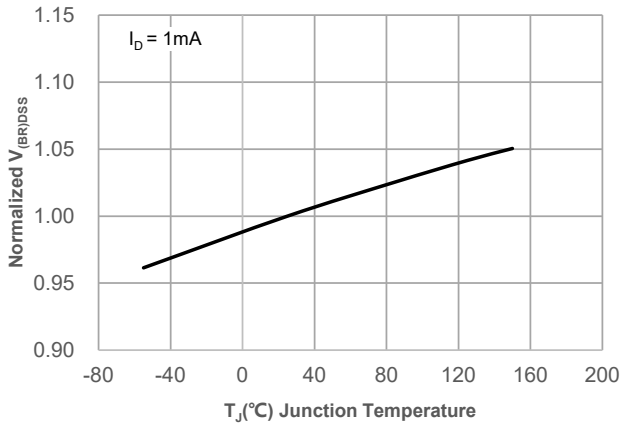


Figure 8: Normalized on Resistance vs. Junction Temperature

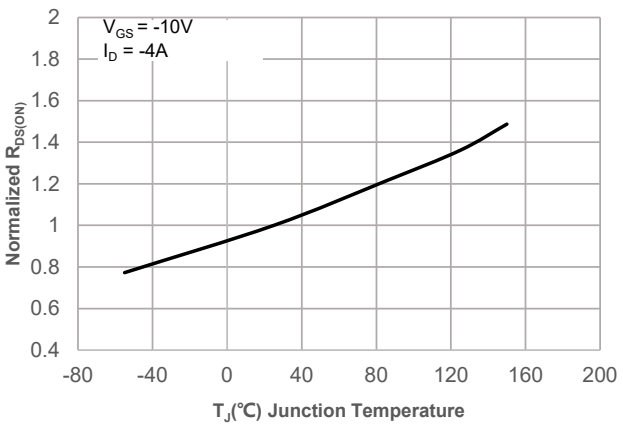


Figure 9: Maximum Safe Operating Area

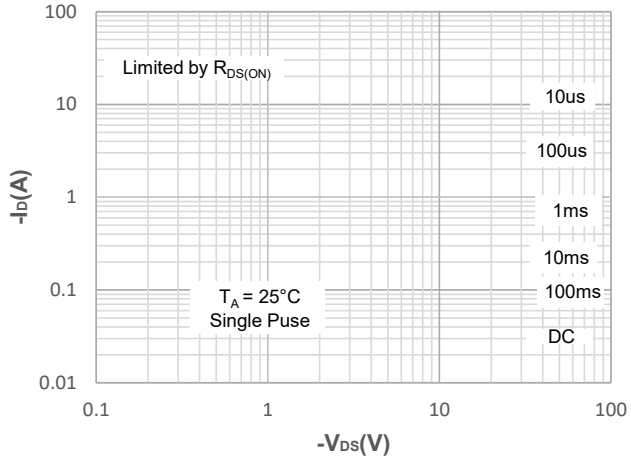


Figure 10: Maximum Continuous Drian Current vs. Ambient Temperature

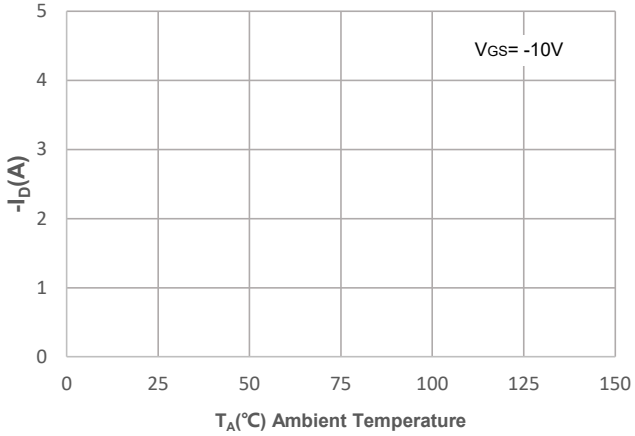


Figure 11: Normalized Maximum Transient Thermal Impedance

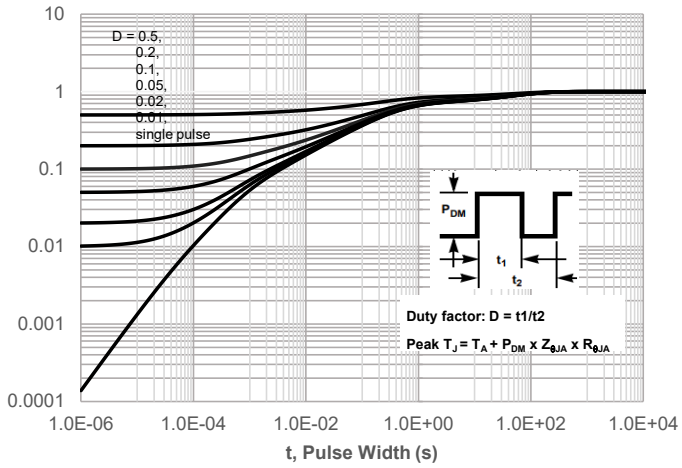
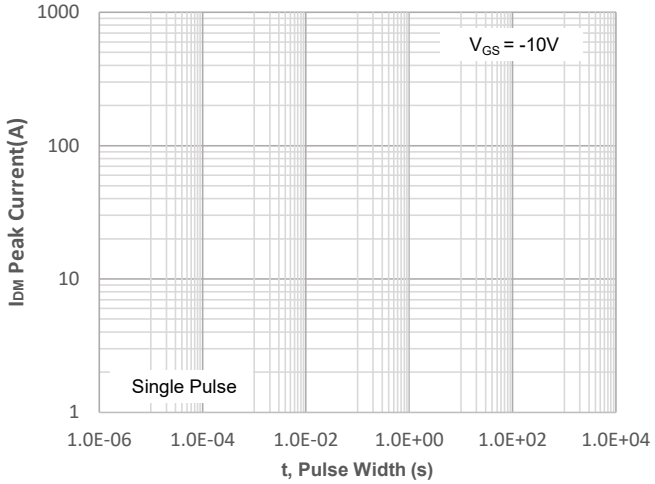
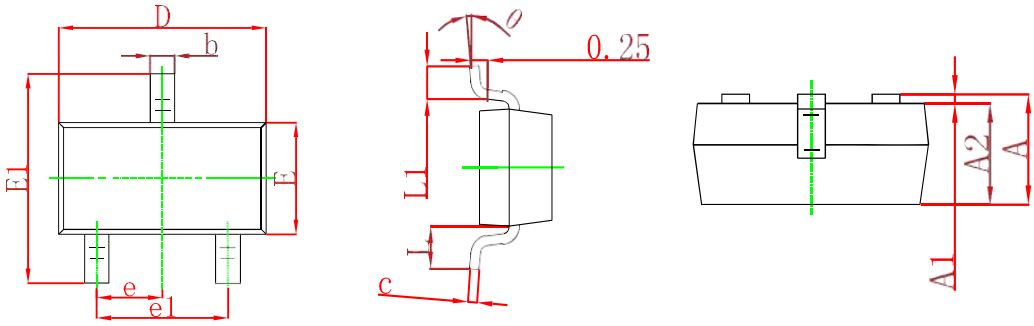


Figure 12: Peak Current Capacity



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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