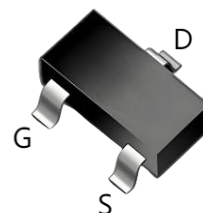
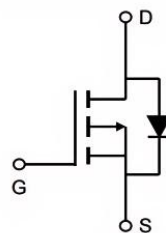


P-Channel Enhancement Mode MOSFET

Parameter	Value	Unit
V_{DS}	-30	V
$R_{DS(on)}$	48	m Ω
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($T_a=25^{\circ}\text{C}$, unless otherwise noted)

Parameter		Symbol	Value	Unit
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	-4	A
	$T_a=100^{\circ}\text{C}$		-3	
Pulsed Drain Current ⁽¹⁾		I_{DM}	-16	A
Total Power Dissipation	$T_a=25^{\circ}\text{C}$	P_D	1.2	W
Thermal Resistance, Junction to Ambient ⁽²⁾		$R_{\theta JA}$	108	$^{\circ}\text{C/W}$
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^{\circ}\text{C}$

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 =-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 1inch² pad of 2oz copper FR4 PCB
3. Pulse Test: Pulse Width $\leq 300us$, Duty Cycle $\leq 0.5\%$.

Typical Characteristics

Figure 1: Output Characteristics

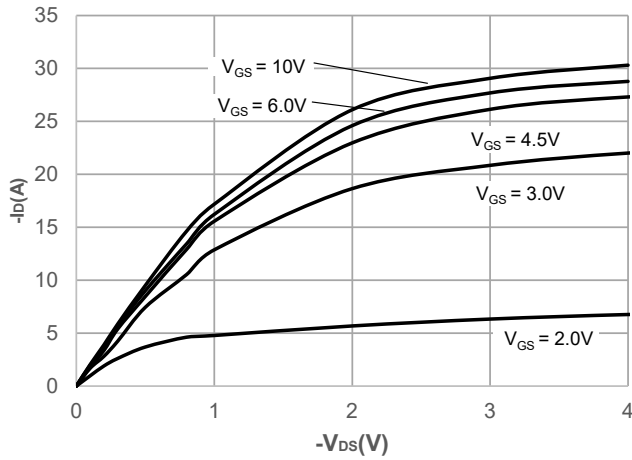


Figure 2: Typical Transfer Characteristics

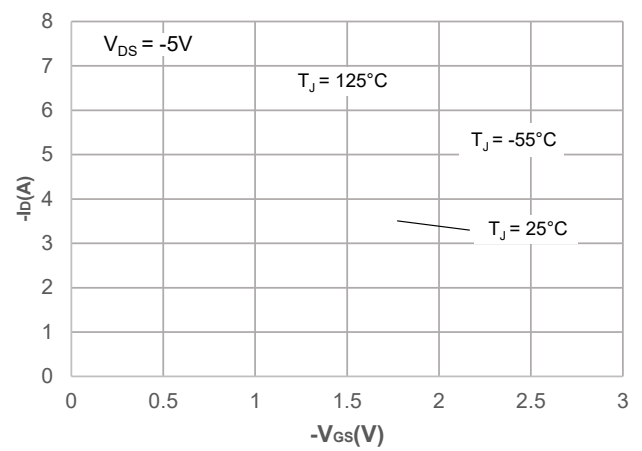


Figure 3: On-resistance vs. Drain Current

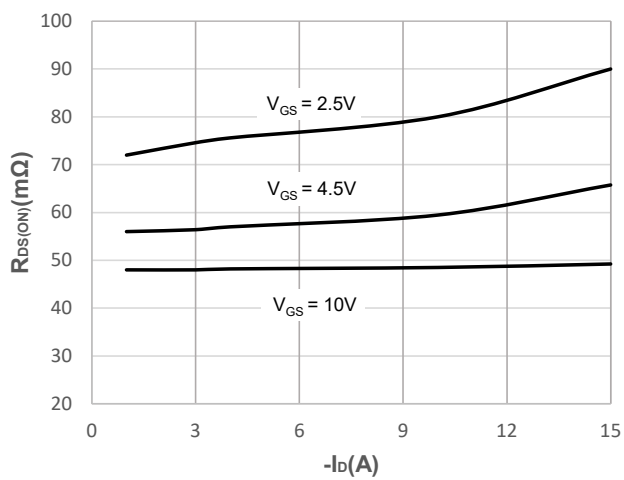


Figure 4: Body Diode Characteristics

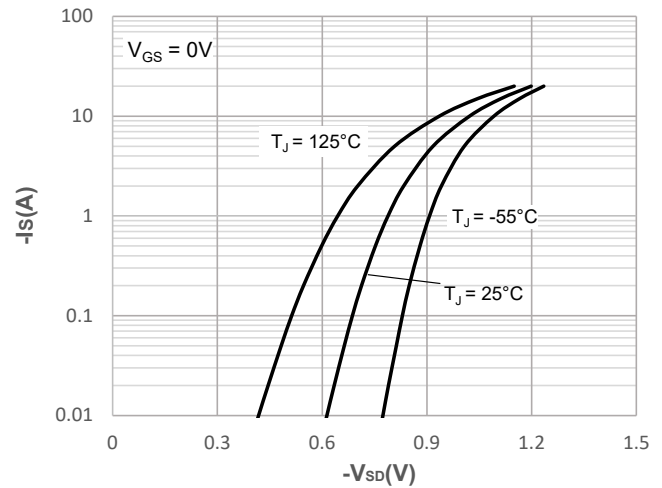


Figure 5: Gate Charge Characteristics

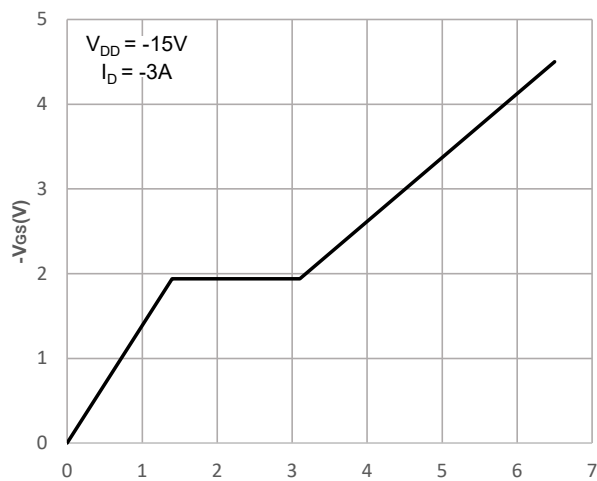


Figure 6: Capacitance Characteristics

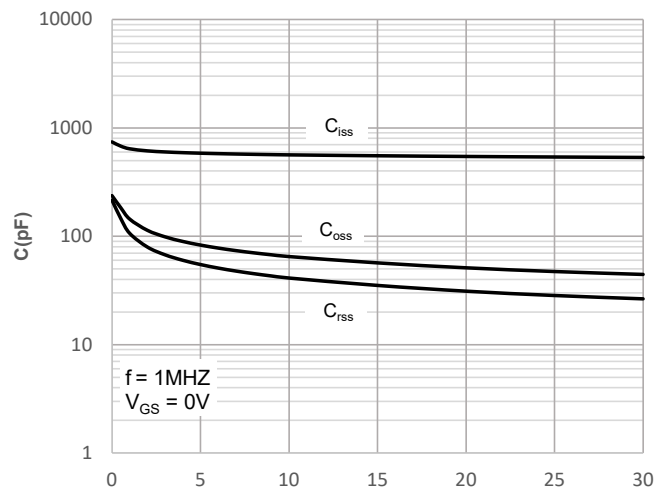


Figure 7: Normalized Breakdown voltage vs. Junction Temperature

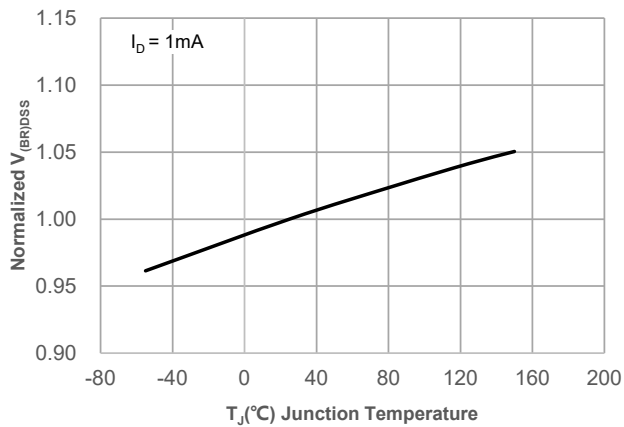


Figure 8: Normalized on Resistance vs. Junction Temperature

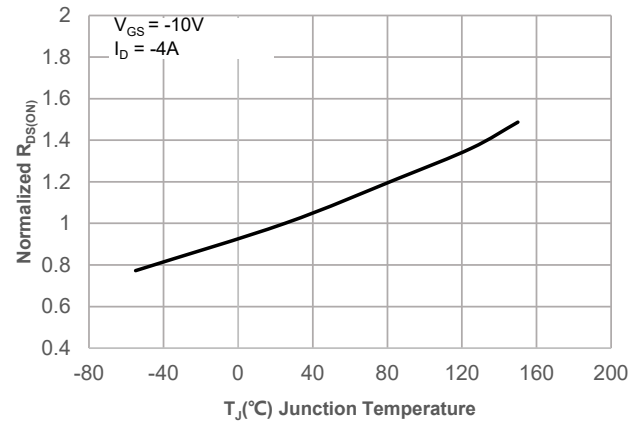


Figure 9: Maximum Safe Operating Area

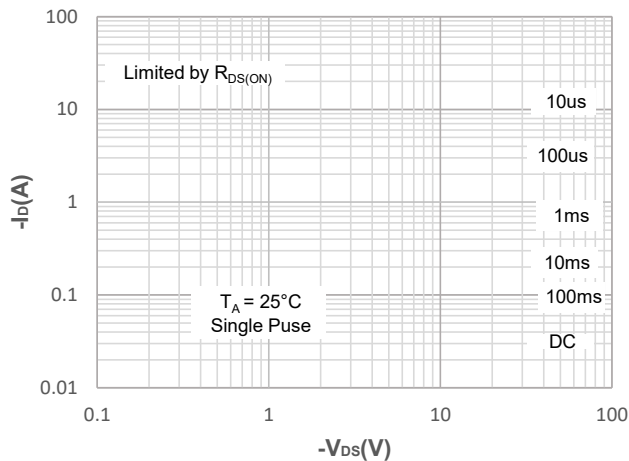


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

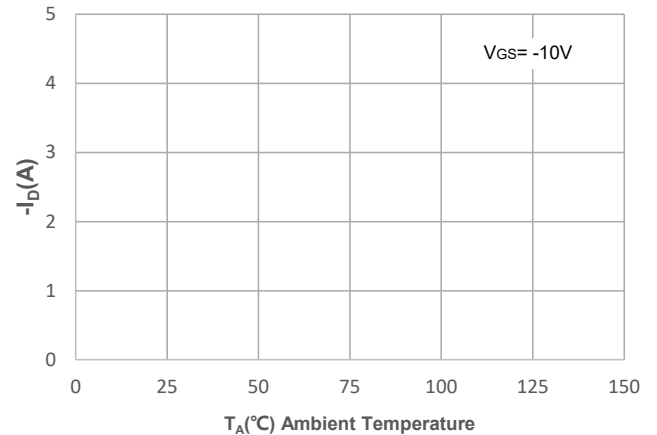


Figure 11: Normalized Maximum Transient Thermal Impedance

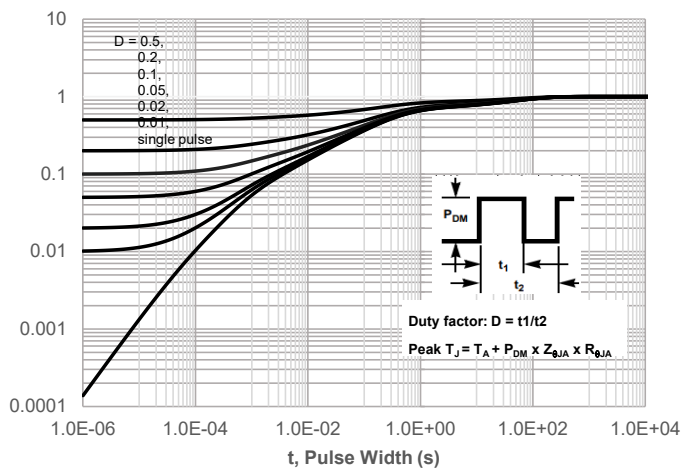
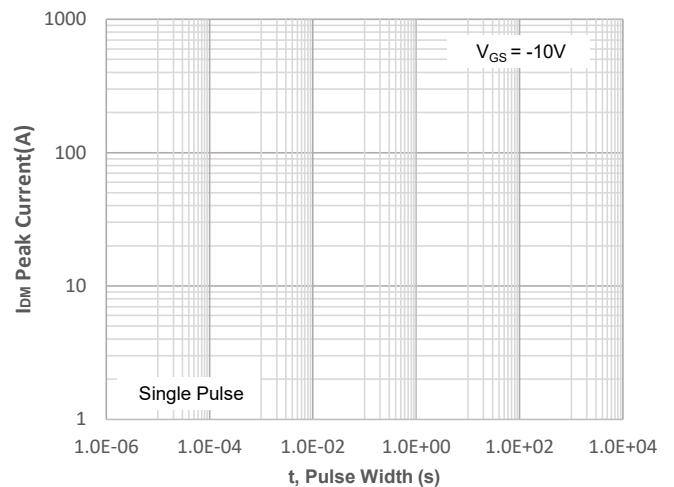
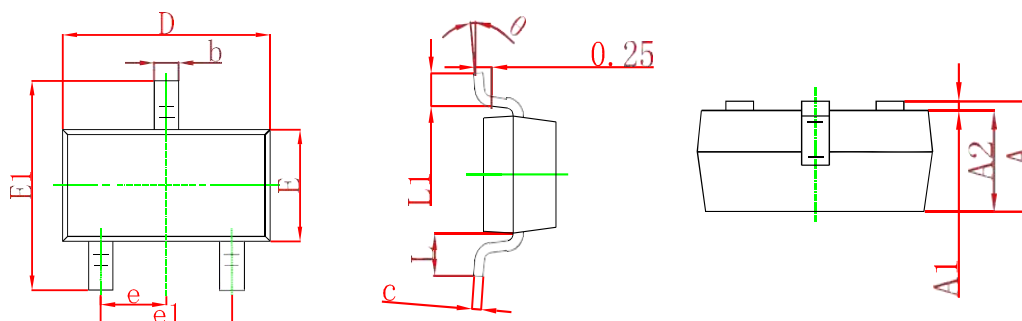


Figure 12: Peak Current Capacity



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	0.950 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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