

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-20V	150mΩ@-4.5V	-2.3A
	180mΩ@-2.5V	

Feature

- Advanced trench technology
- Excellent $R_{DS(on)}$
- Low gate charge

Application

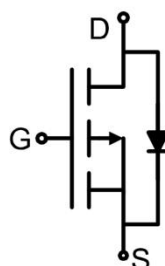
- Battery protection
- Load Switch
- Uninterruptible power supply

Package

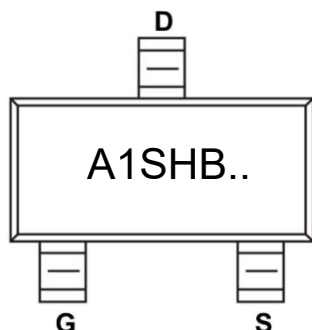


SOT-23

Circuit diagram



Marking



Absolute maximum ratings ($T_C=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current ¹⁾ ($V_{GS}=-4.5\text{V}$, $T_A=25^{\circ}\text{C}$)	I_D	-2.3	A
Continuous Drain Current ¹⁾ ($V_{GS}=-4.5\text{V}$, $T_A=70^{\circ}\text{C}$)	$I_D (70^{\circ}\text{C})$	-0.9	A
Pulsed Drain Current ²⁾	I_{DM}	-7.4	A
Power Dissipation ³⁾ ($T_A=25^{\circ}\text{C}$)	P_D	1.1	W
Thermal Resistance from Junction to Ambient ¹⁾	$R_{\theta JA}$	113.6	$^{\circ}\text{C/W}$
Operating Junction Temperature	T_J	$-55 \sim +150$	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

Electrical characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-20			V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V$			-1	μA
Gate-body leakage current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 12V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4	-0.7	-1.0	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-2A$		125	150	m Ω
		$V_{GS}=-2.5V, I_D=-1A$		145	180	
Dynamic characteristics ⁴⁾						
Input Capacitance	C_{iss}	$V_{DS}=-10V, V_{GS}=0V, f=1MHz$		145		pF
Output Capacitance	C_{oss}			33		
Reverse Transfer Capacitance	C_{rss}			23		
Total Gate Charge	Q_g	$V_{DS}=-10V, V_{GS}=-4.5V$ $I_D=-2A$		4.5		nC
Gate-Source Charge	Q_{gs}			0.85		
Gate-Drain Charge	Q_{gd}			1.4		
Turn-on delay time	$t_{d(on)}$	$V_{DS}=-10V, V_{GS}=-4.5V$ $R_L=5\Omega, R_G=3\Omega$		6		nS
Turn-on rise time	t_r			30		
Turn-off delay time	$t_{d(off)}$			45		
Turn-off fall time	t_f			46		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				-2.3	A
Diode Forward voltage	V_{SD}	$V_{GS}=0V, I_S=-2A$			-1.2	V

Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2) The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
- 3) The power dissipation is limited by 150°C junction temperature.
- 4) Guaranteed by design, not subject to production testing.

Typical Characteristics

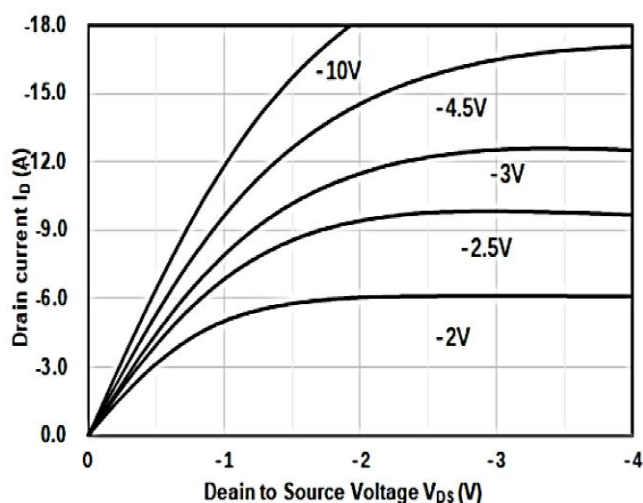


Figure1: Output Characteristics

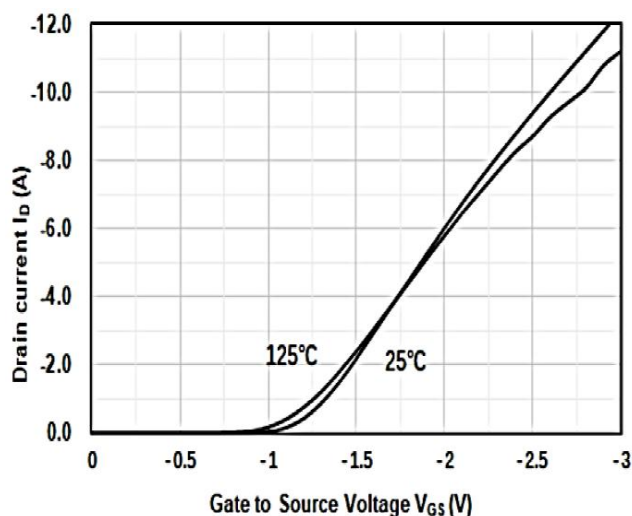


Figure 2: Typical Transfer Characteristics

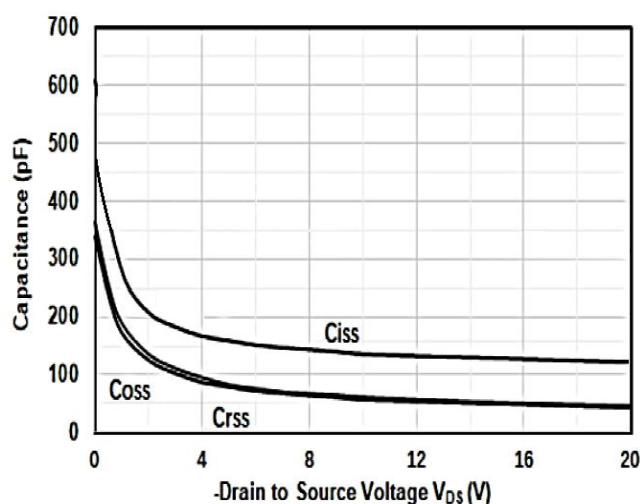


Figure 3: Capacitance Characteristics

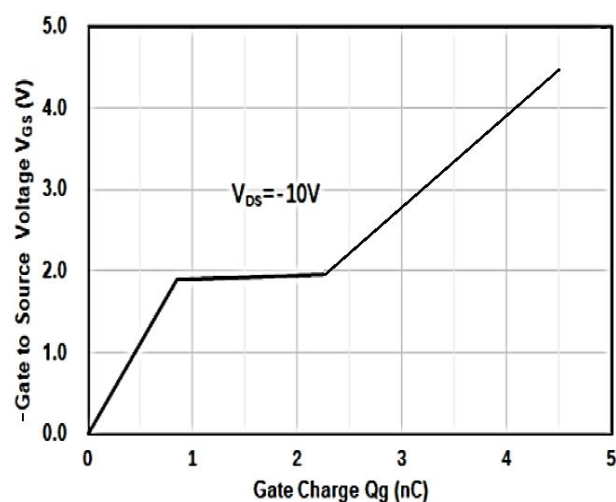


Figure 4: Gate Charge

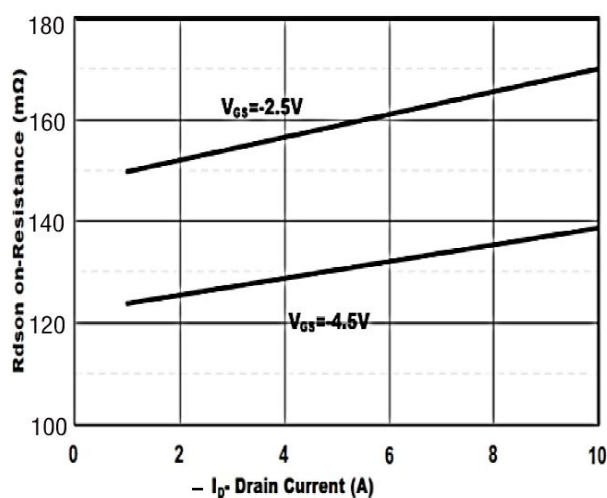


Figure 5: Drain-Source on Resistance

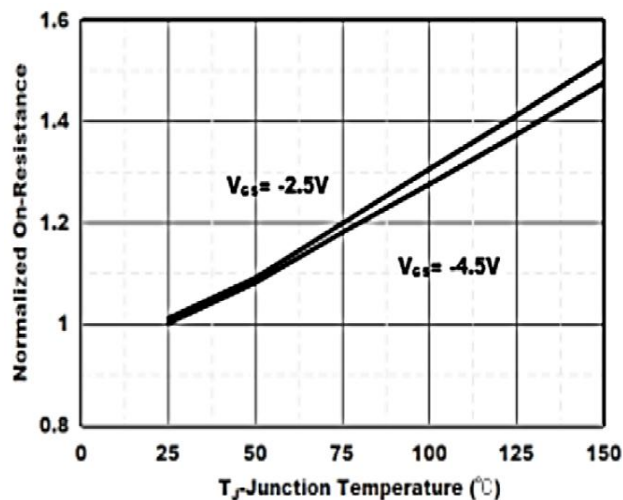


Figure 6: Drain-Source on Resistance

Typical Characteristics

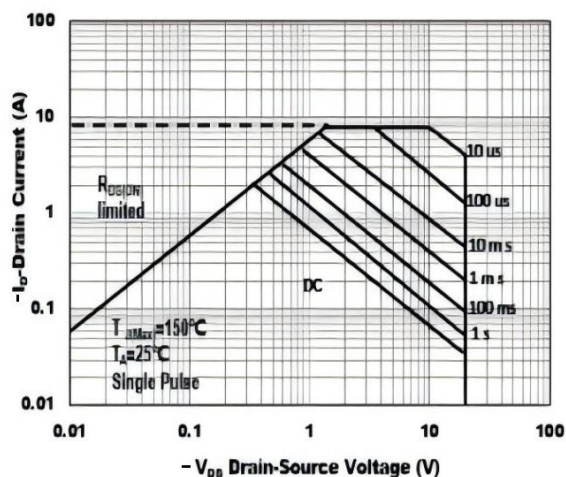


Figure 7: Safe Operation Area

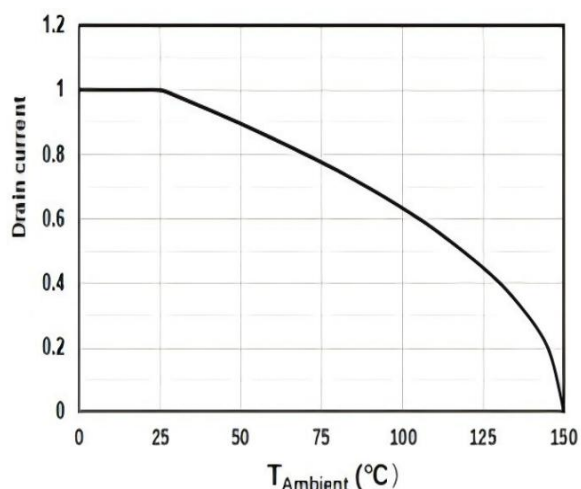


Figure 8: Drain Current vs Ambient temperature

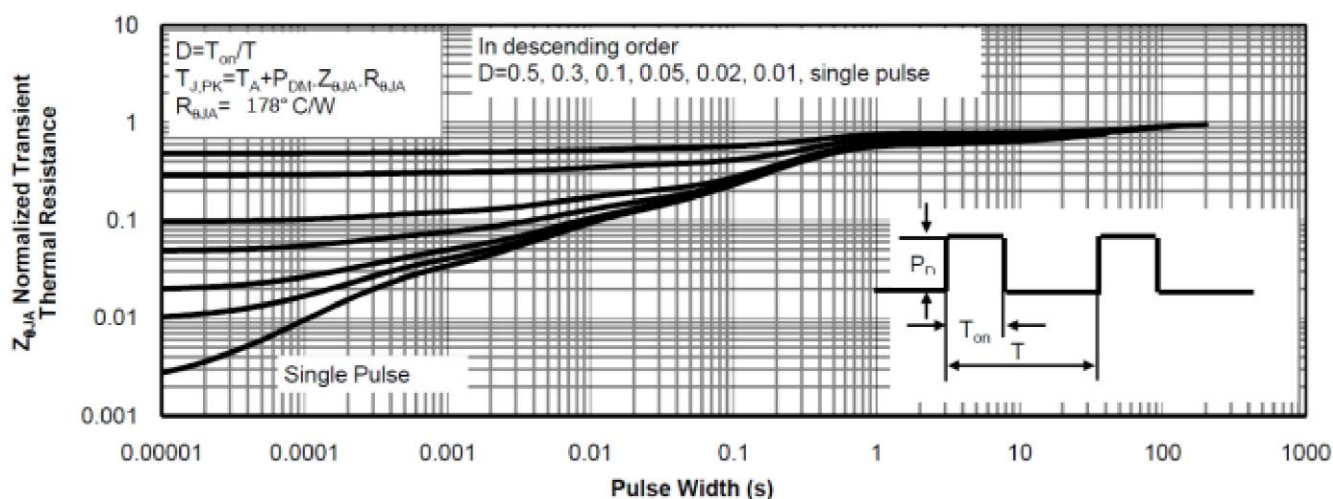
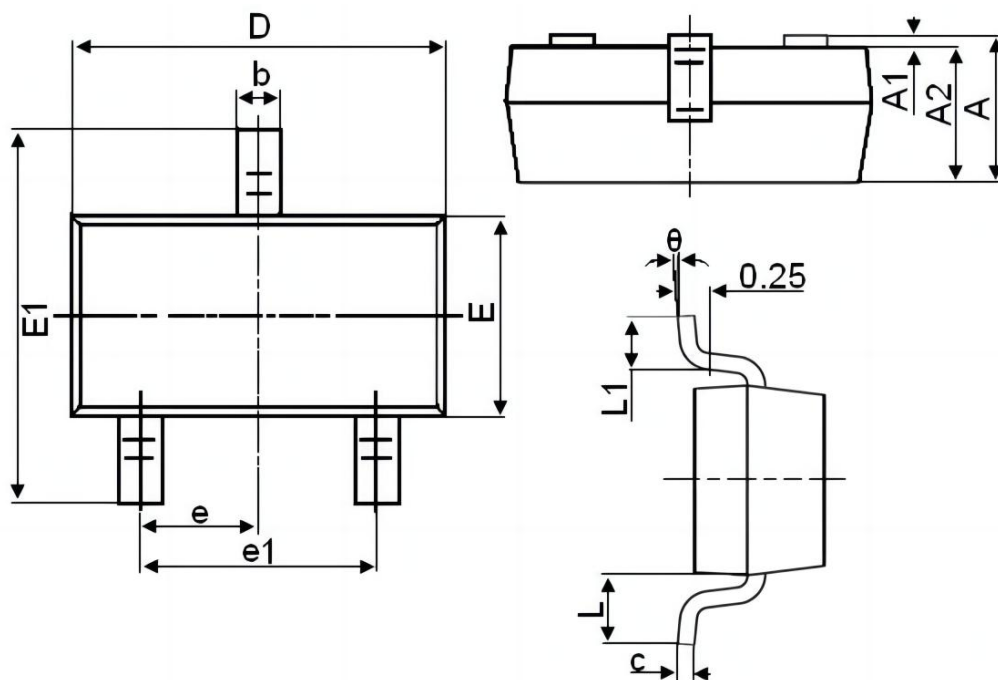


Figure 9: Normalized Maximum Transient Thermal Impedance

SOT-23 Package Information



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	0.200	0.500	0.008	0.020
θ	0°	8°	0°	8°