

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
20V	38mΩ@4.5V	3.5A
	60mΩ@2.5V	

Feature

- High power and current handing capability
- Surface mount package

Application

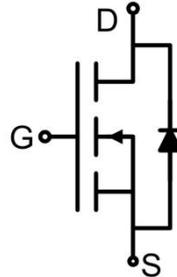
- Battery switch
- DC/DC converter

Package

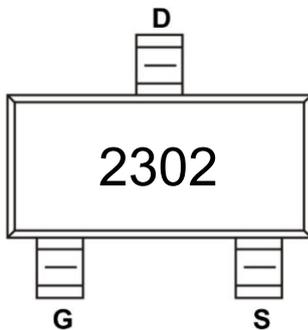


SOT-23

Circuit diagram



Marking



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	I_D	3.5	A
Continuous Drain Current ($T_A=100^\circ\text{C}$)	$I_D(100^\circ\text{C})$	2.3	A
Pulsed Drain Current Tested	I_{DM}	14	A
Power Dissipation	P_D	0.8	W
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	156	$^\circ\text{C/W}$
Operating Junction Temperature	T_J	-55 ~ +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^\circ\text{C}$

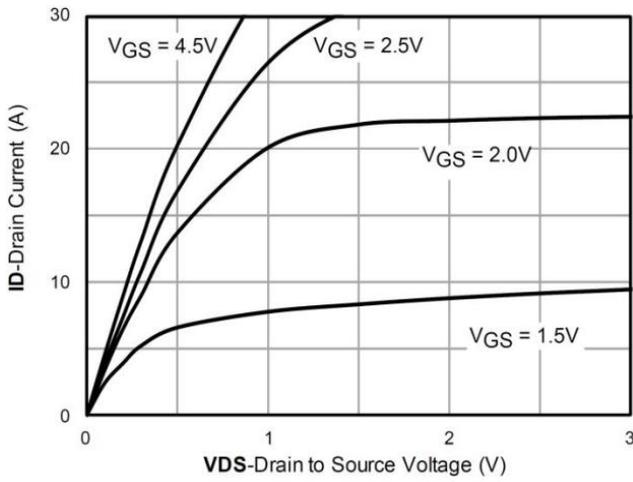
Electrical characteristics ($T_A=25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu\text{A}$	20			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 16V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 12V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	0.5	0.7	1	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 3.5A$		28	38	m Ω
		$V_{GS} = 2.5V, I_D = 3A$		33	60	
Dynamic characteristics¹⁾						
Input Capacitance	C_{iss}	$V_{DS} = 10V, V_{GS} = 0V, f = 1\text{MHz}$		300		pF
Output Capacitance	C_{oss}			120		
Reverse Transfer Capacitance	C_{rss}			80		
Total Gate Charge	Q_g	$V_{DS} = 10V, V_{GS} = 4.5V, I_D = 3.5A$		4		nC
Gate-Source Charge	Q_{gs}			0.65		
Gate-Drain Charge	Q_{gd}			1.5		
Turn-on delay time	$t_{d(on)}$	$V_{DS} = 10V, V_{GS} = 4.5V, I_D = 3.5A, R_G = 6\Omega$		7		nS
Turn-on rise time	t_r			55		
Turn-off delay time	$t_{d(off)}$			16		
Turn-off fall time	t_f			10		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				3.5	A
Diode Forward voltage	V_{SD}	$V_{GS} = 0V, I_S = 1A, T_J = 25^\circ\text{C}$			1.2	V

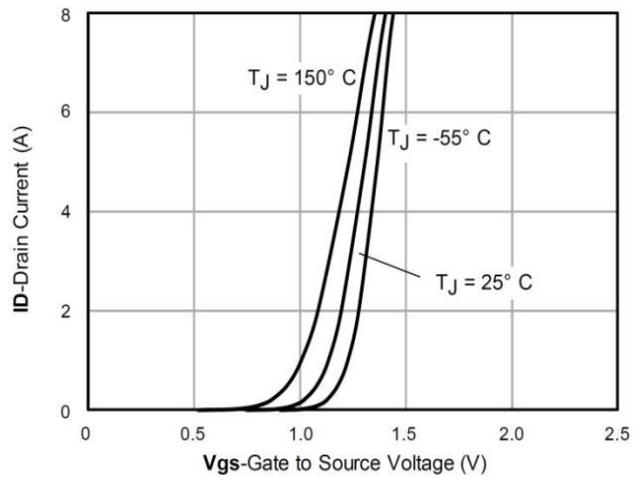
Notes:

1) Guaranteed by design, not subject to production testing.

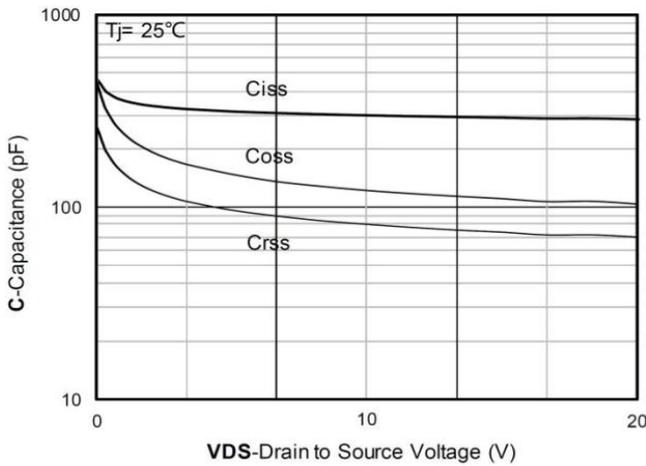
Typical Characteristics



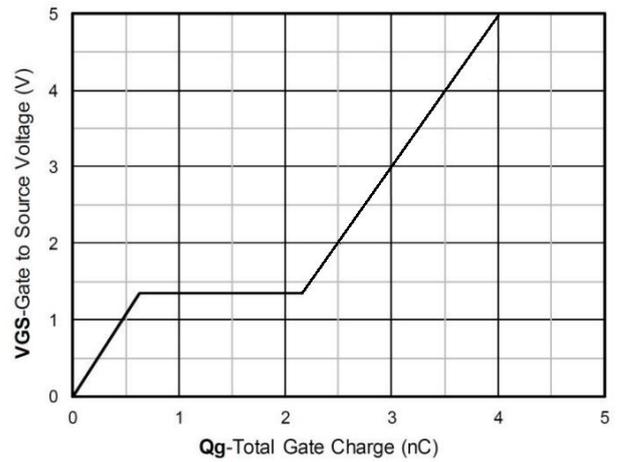
Output Characteristics



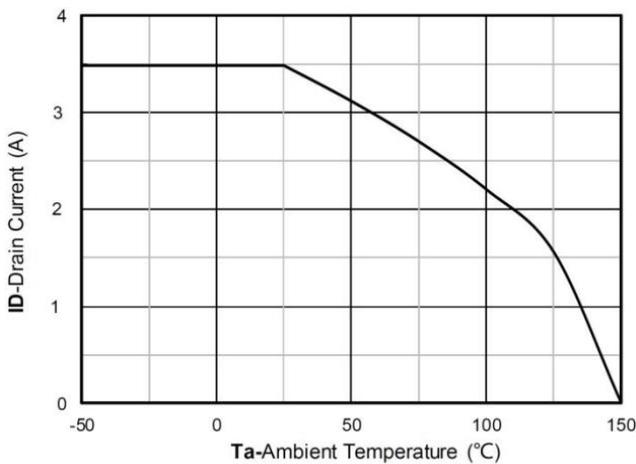
Transfer Characteristics



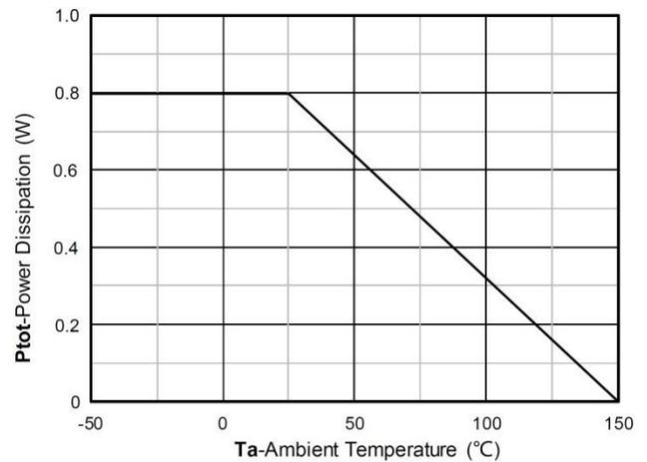
Capacitance Characteristics



Gate Charge

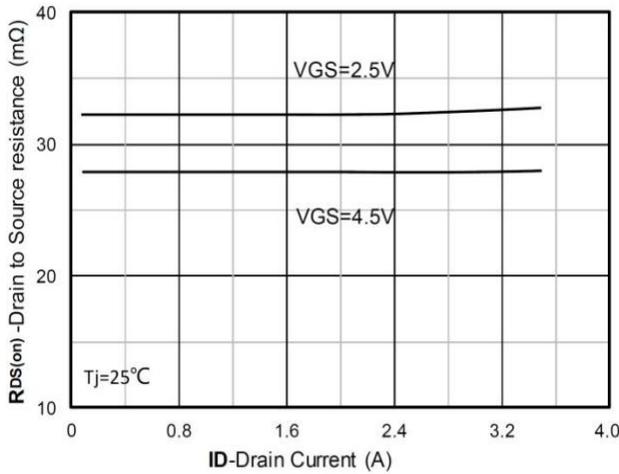


Current dissipation

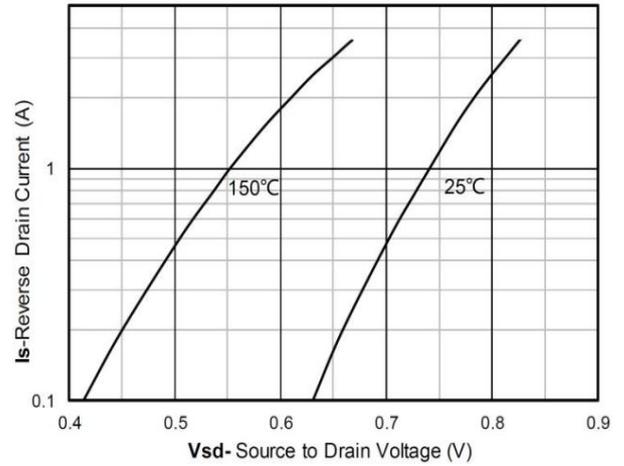


Power dissipation

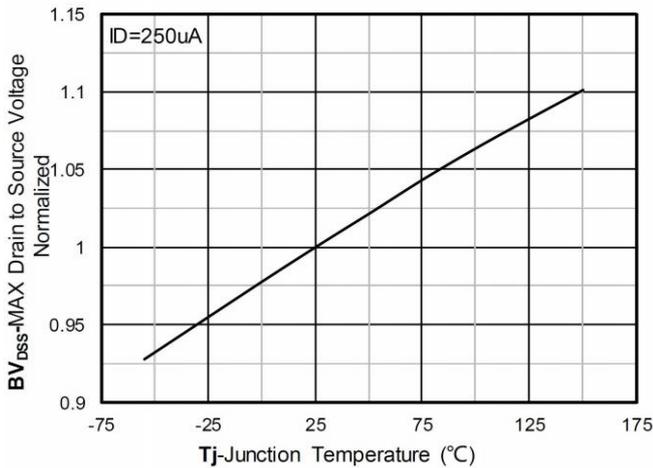
Typical Characteristics



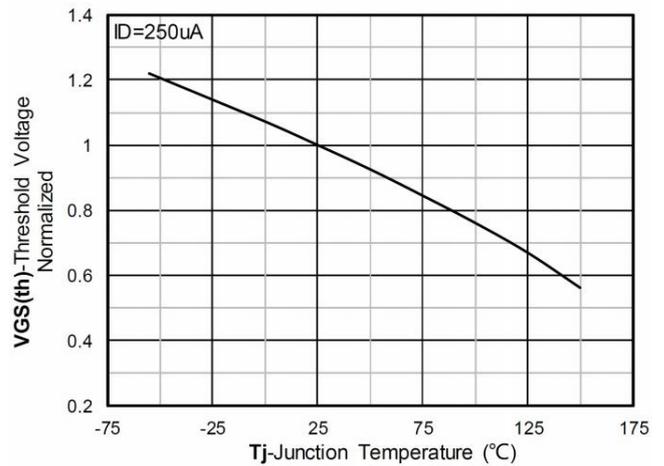
$R_{DS(on)}$ VS Drain Current



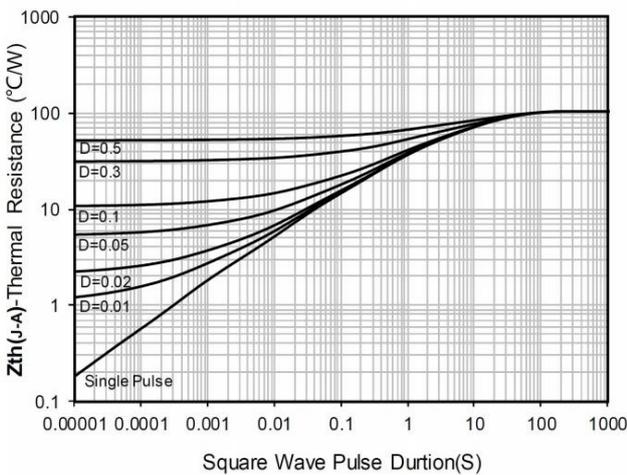
Forward characteristics of reverse diode



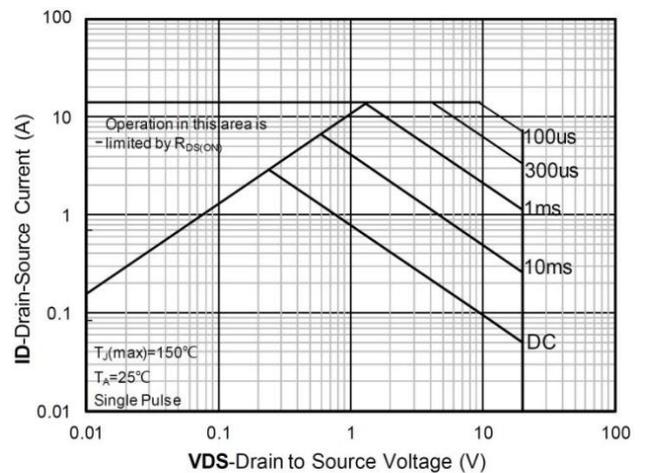
Normalized breakdown voltage



Normalized Threshold voltage

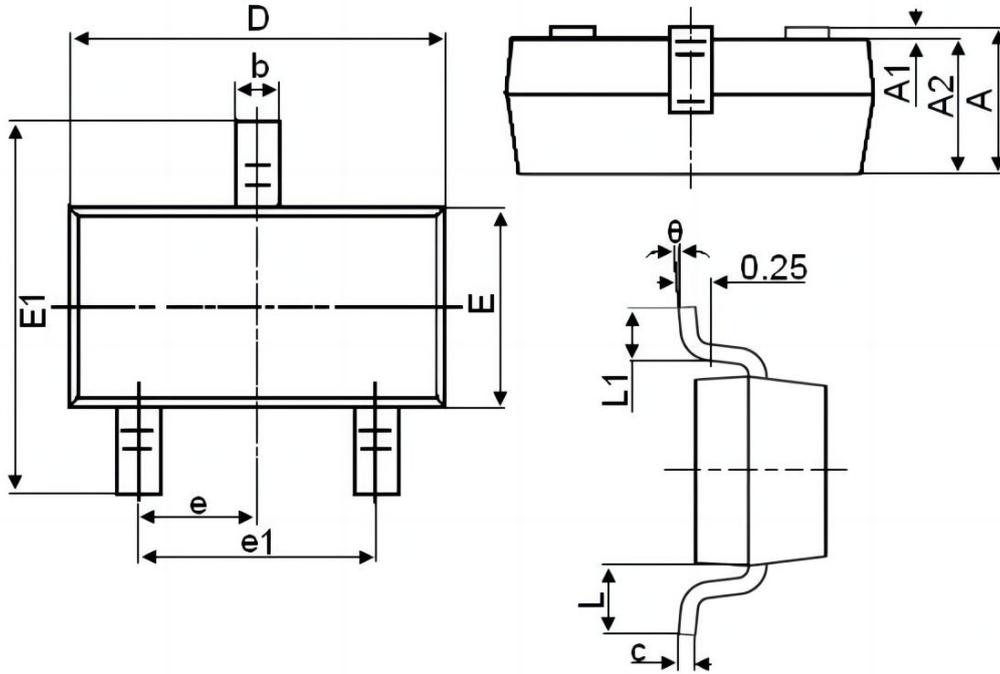


Maximum Transient Thermal Impedance



Safe Operation Area

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 REF.		0.037 REF.	
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
theta	0°	8°	0°	8°