

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-20V	75mΩ@-4.5V	-3A
	110mΩ@-2.5V	

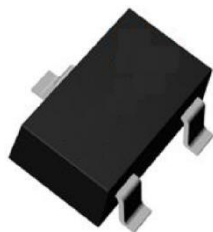
Feature

- High power and current handling capability
- Surface mount package

Application

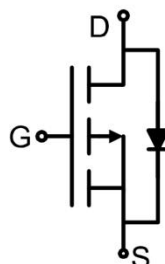
- Battery protection
- DC/DC Converter

Package

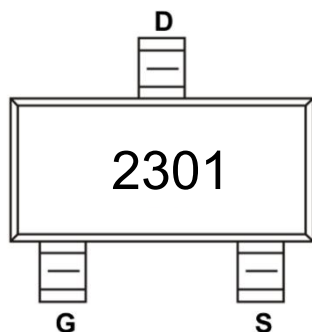


SOT-23

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	A
Pulsed Drain Current	I_{DM}	-12	A
Power Dissipation	P_D	1	W
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	125	$^{\circ}\text{C}/\text{W}$
Operating Junction Temperature	T_J	$-55 \sim +150$	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

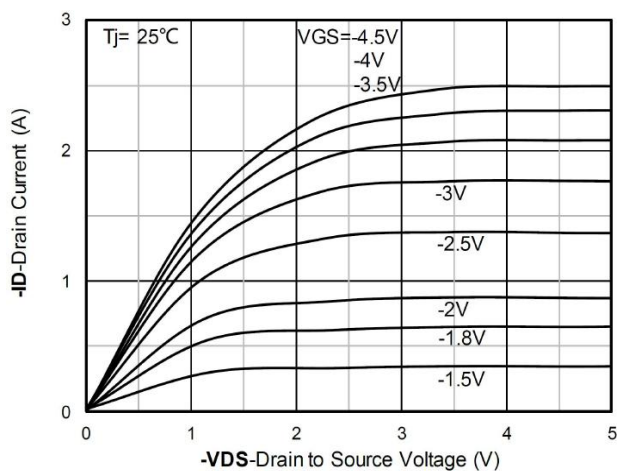
Electrical characteristics ($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-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	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4	-0.7	-1	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-2A$		60	75	m Ω
		$V_{GS}=-2.5V, I_D=-2A$		80	110	
Dynamic characteristics ¹⁾						
Input Capacitance	C_{iss}	$V_{DS}=-8V, V_{GS}=0V, f=1MHz$		545		pF
Output Capacitance	C_{oss}			136		
Reverse Transfer Capacitance	C_{rss}			78		
Total Gate Charge	Q_g	$V_{DS}=-10V, V_{GS}=-2.5V$ $I_D=-3A$		3.5		nC
Gate-Source Charge	Q_{gs}			0.8		
Gate-Drain Charge	Q_{gd}			1.5		
Turn-on delay time	$t_{d(on)}$	$V_{DS}=-4V, V_{GS}=-4.5V$ $I_D=-1A, R_G=6.2\Omega$		6.6		nS
Turn-on rise time	t_r			18		
Turn-off delay time	$t_{d(off)}$			24		
Turn-off fall time	t_f			16		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				-3	A
Diode Forward voltage	V_{SD}	$V_{GS}=0V, I_S=-1A, T_J=25^{\circ}C$			-1.2	V

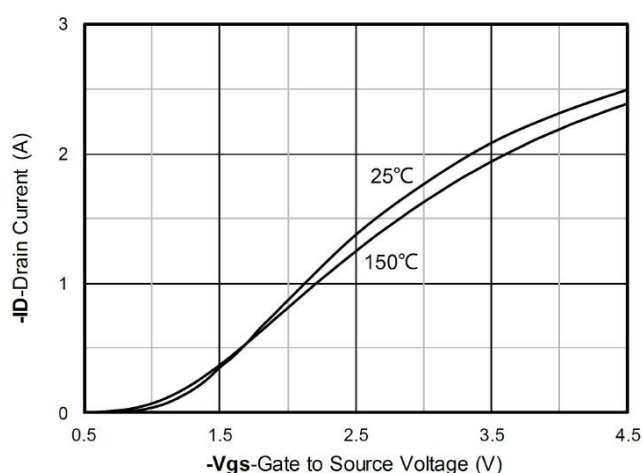
Notes:

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

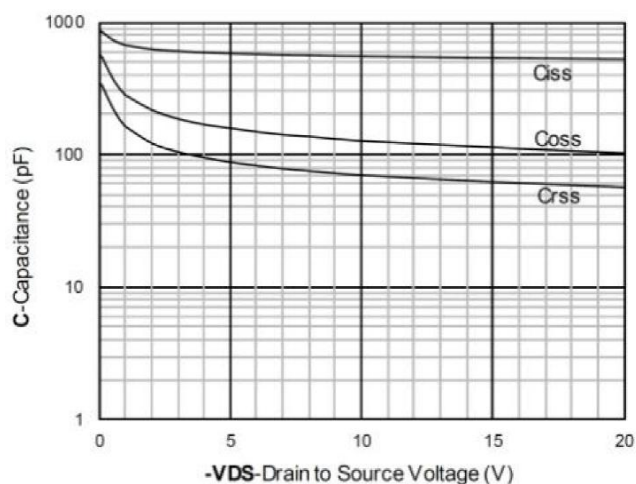
Typical Characteristics



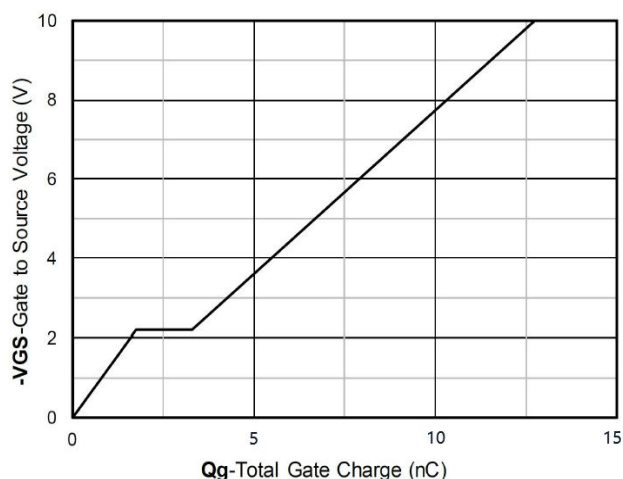
Output Characteristics



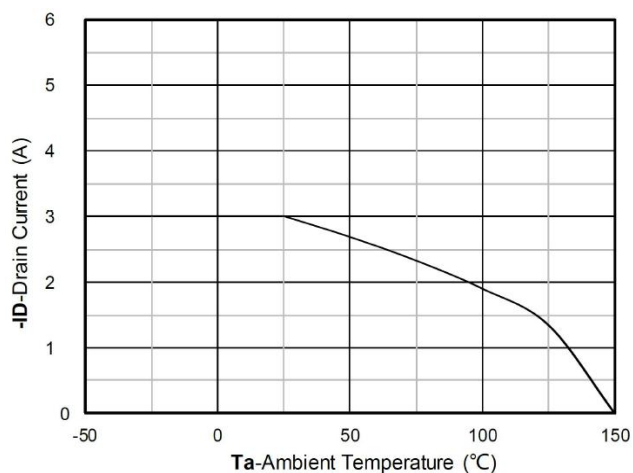
Transfer Characteristics



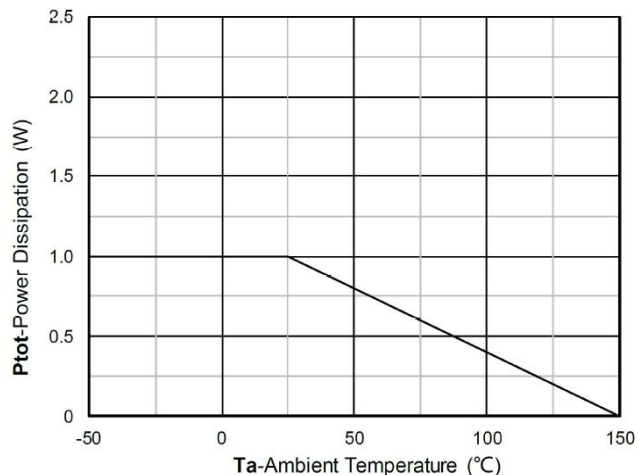
Capacitance Characteristics



Gate Charge

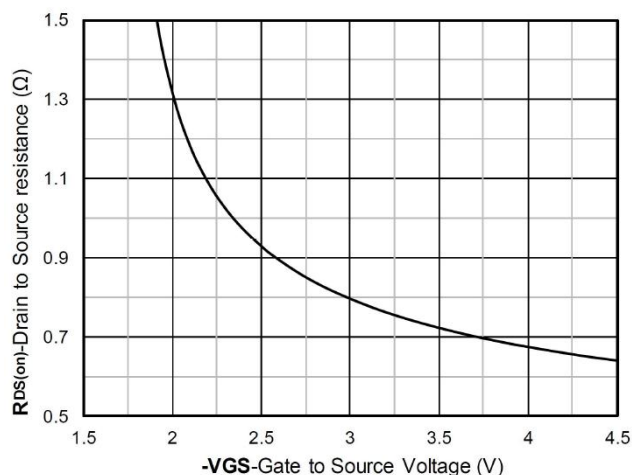


Current dissipation

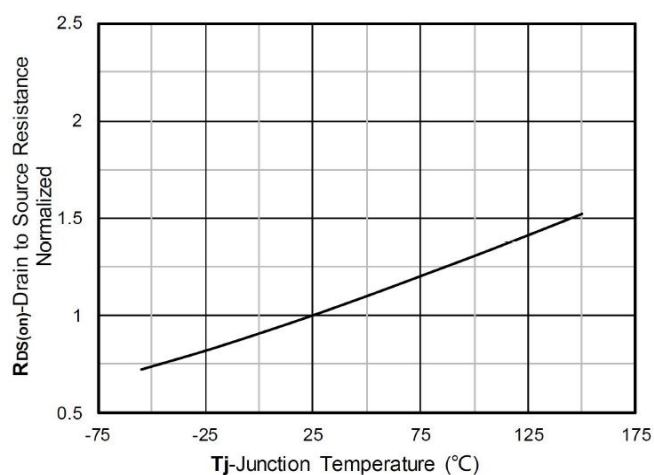


Power dissipation

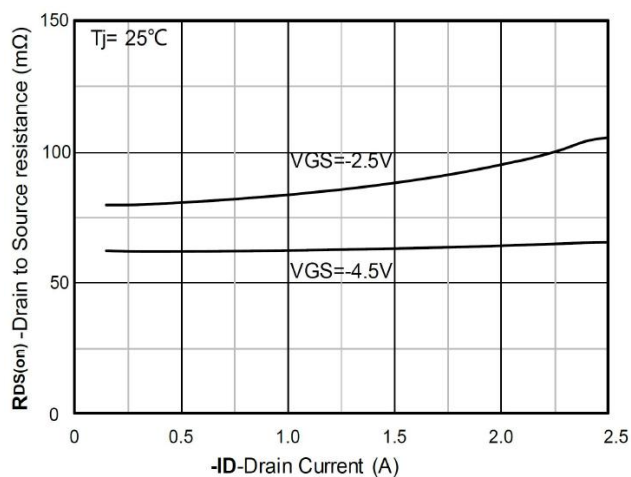
Typical Characteristics



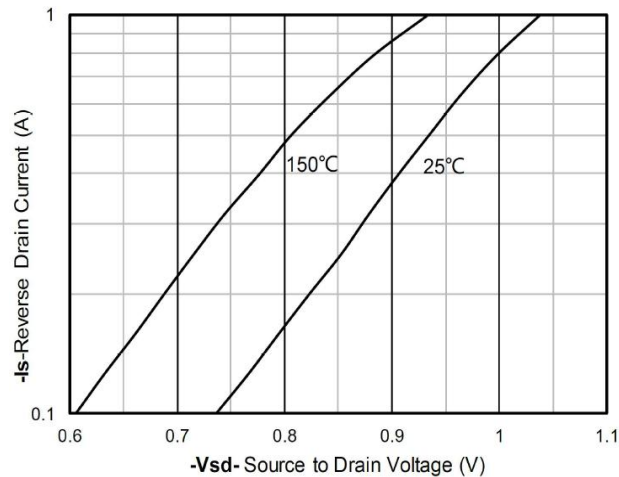
On-Resistance vs Gate to Source Voltage



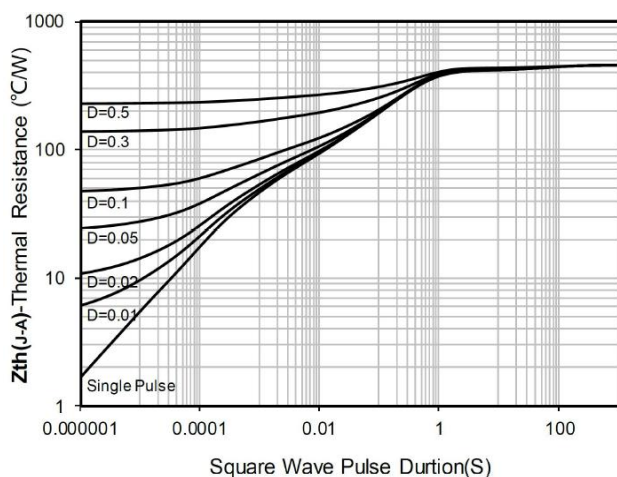
Normalized On-Resistance



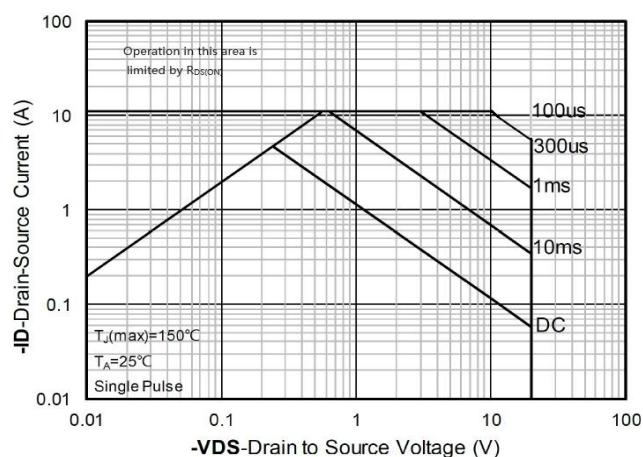
$R_{DS(on)}$ VS Drain Current



Forward characteristics of reverse diode

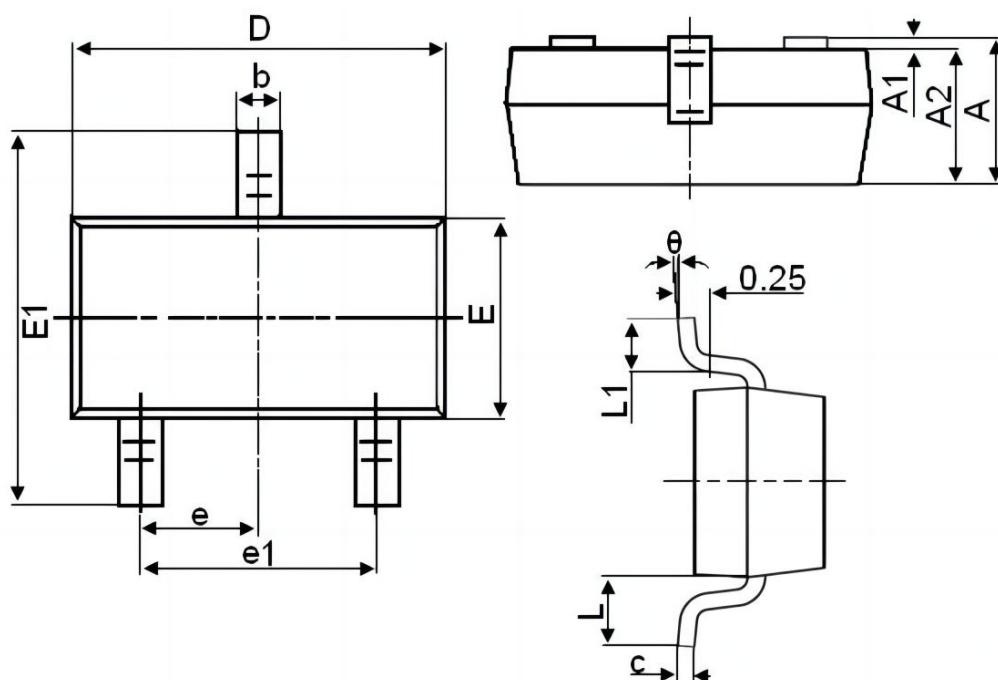


Maximum Transient Thermal Impedance



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 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°