

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-20V	95mΩ@-4.5V	-2A
	120mΩ@-2.5V	



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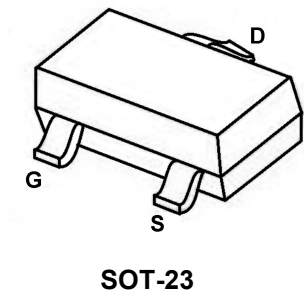
Feature

- High power and current handling capability
- Surface mount package

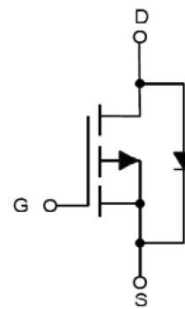
Application

- Battery Switch
- DC/DC Converter

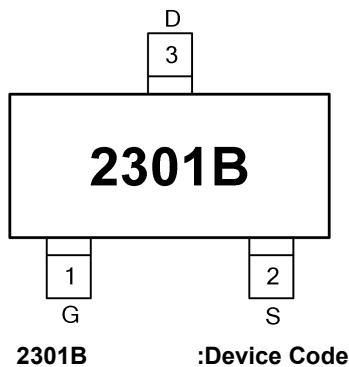
Package



Circuit diagram



Marking



Order Information

Device	Package	Unit/Tape
SP2301BT2	SOT-23	3000

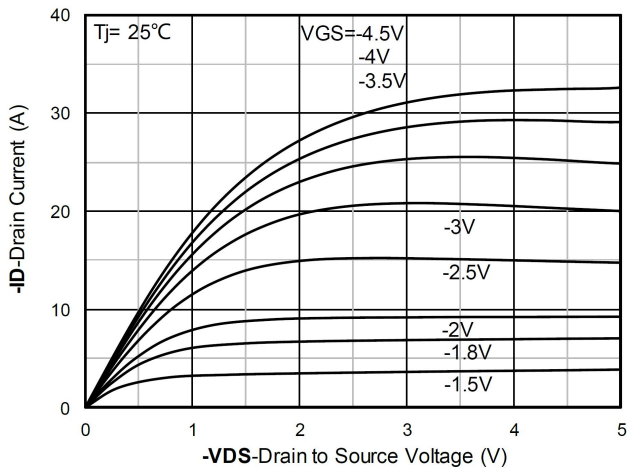
Absolute maximum ratings (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 10	V
Continuous Drain Current	I_D	-2	A
Pulse Drain Current Tested	I_{DM}	-8	A
Power Dissipation	P_D	400	mW
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	312.5	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

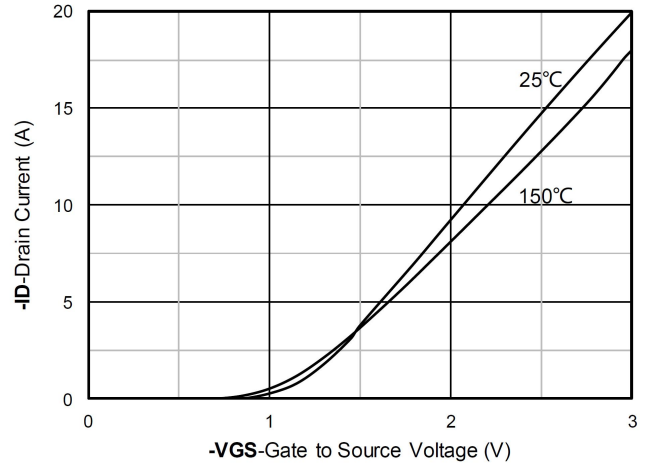
Electrical characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V , ID=-250μA	-20	-	-	V
Drain-Source Leakage Current	IDSS	VDS=-16V , VGS=0V	-	-	-1	uA
Gate-Source Leakage Current	IGSS	VGS=±12V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VDS=VGS , ID=-250μA	-0.4	-0.75	-0.9	V
Static Drain-Source On-Resistance	RDS(ON)	VGS=-4.5V, ID=-1.5A	-	95	120	mΩ
		VGS=-2.5V, ID=-1.0A	-	120	150	
Dynamic characteristics						
Input Capacitance	Ciss	VDS=-10V , VGS=0V , f=1MHz	-	485	-	pF
Output Capacitance	Coss		-	58	-	
Reverse Transfer Capacitance	Crss		-	49	-	
Total Gate Charge	Qg	VDS=-10V , VGS=-2.5V , ID=-2A	-	6.5	-	nC
Gate-Source Charge	Qgs		-	0.28	-	
Gate-Drain Charge	Qgd		-	0.6	-	
Switching Characteristics						
Turn-On Delay Time	td(on)	VDD=-10V VGS=-4.5V , RG=6Ω , ID=-2A	-	7	-	nS
Turn-On Rise Time	tr		-	6	-	
Turn-Off Delay Time	td(off)		-	42	-	
Turn-Off Fall Time	tf		-	6.5	-	
Source-Drain Diode characteristics						
Diode Forward Voltage	VSD	VGS=0V , IS=-1A , TJ=25℃	-	-	-1.2	V

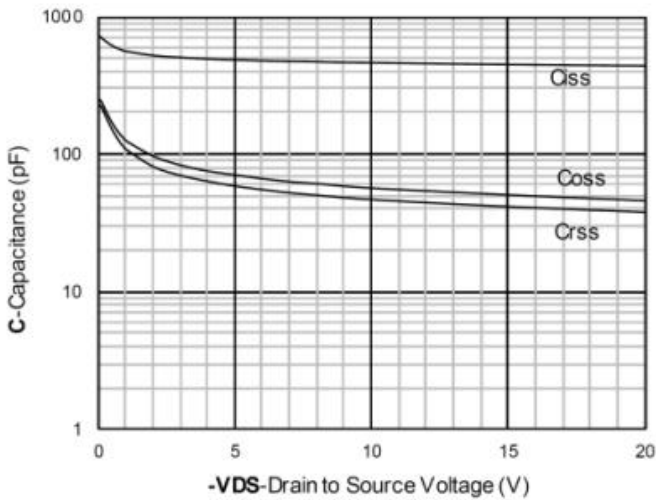
Typical Characteristics



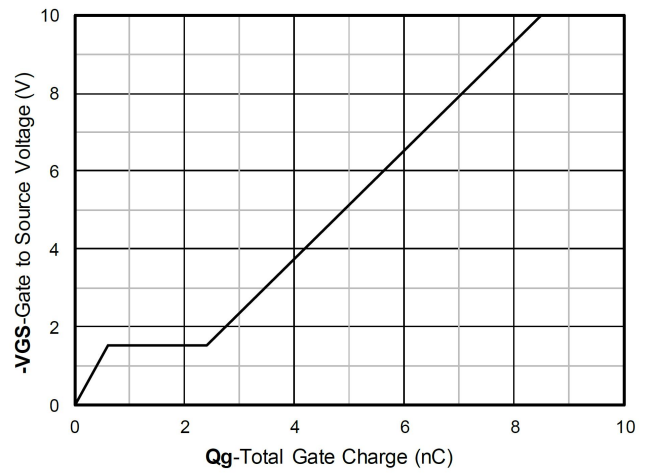
Output Characteristics



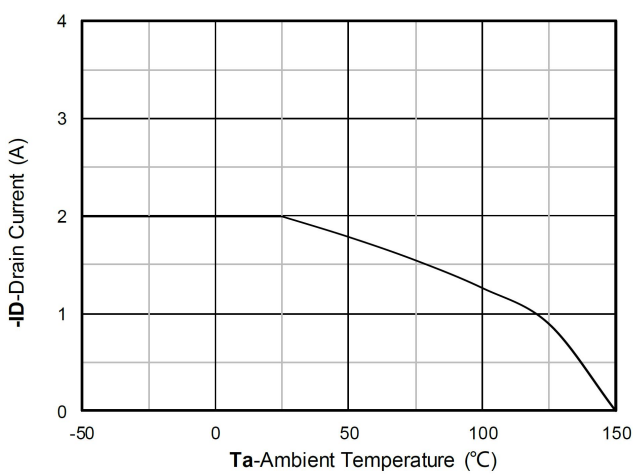
Transfer Characteristics



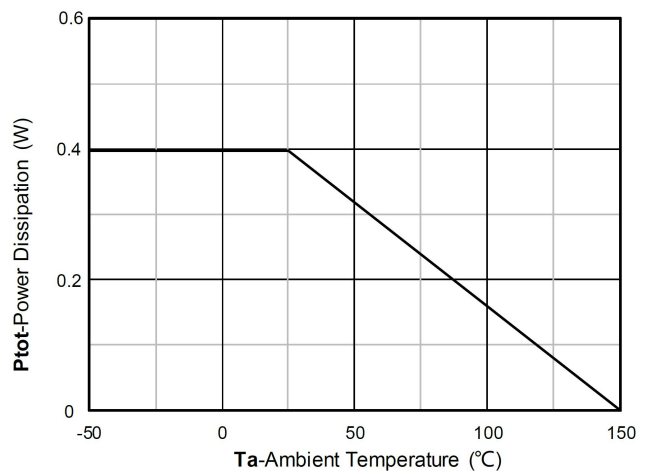
Capacitance Characteristics



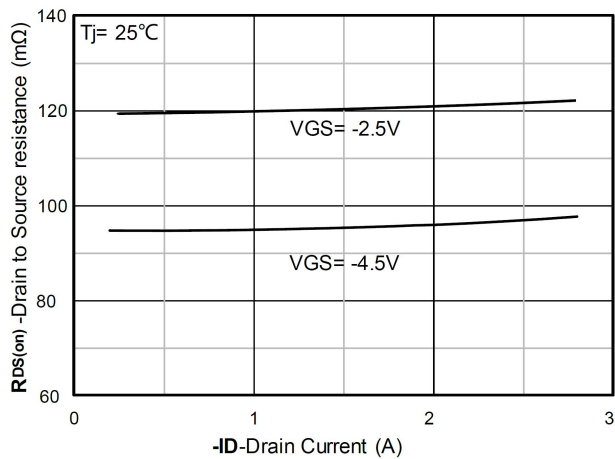
Gate Charge



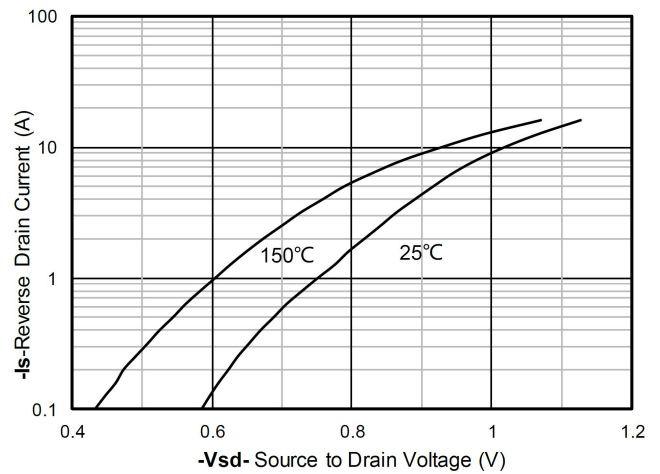
Current dissipation



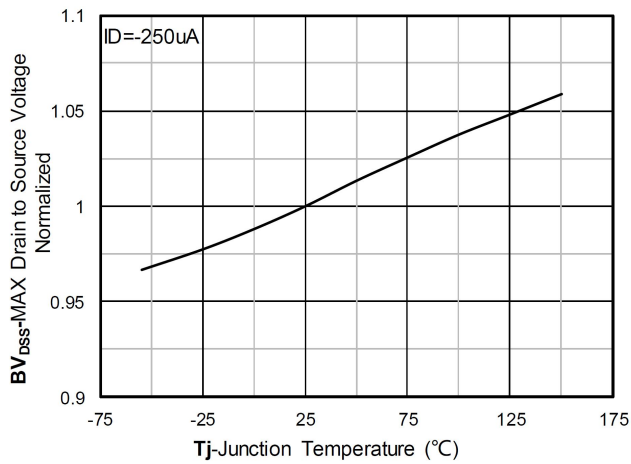
Power dissipation



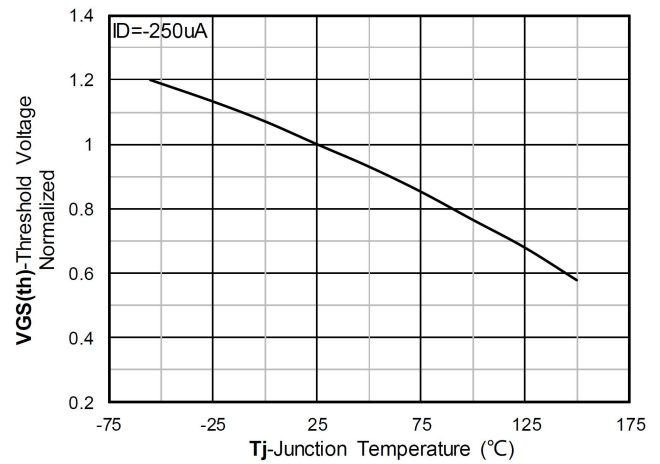
$R_{DS(on)}$ VS Drain Current



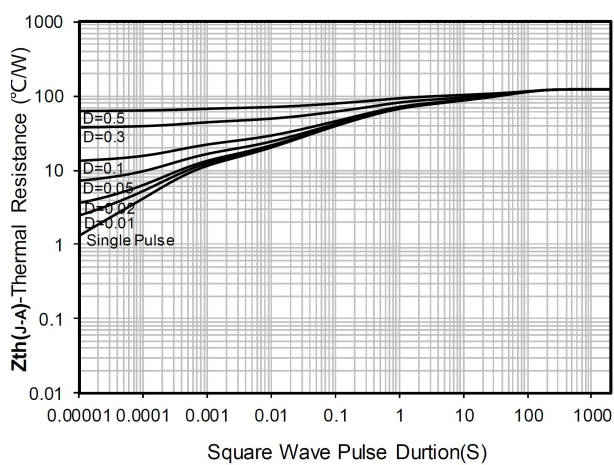
Forward characteristics of reverse diode



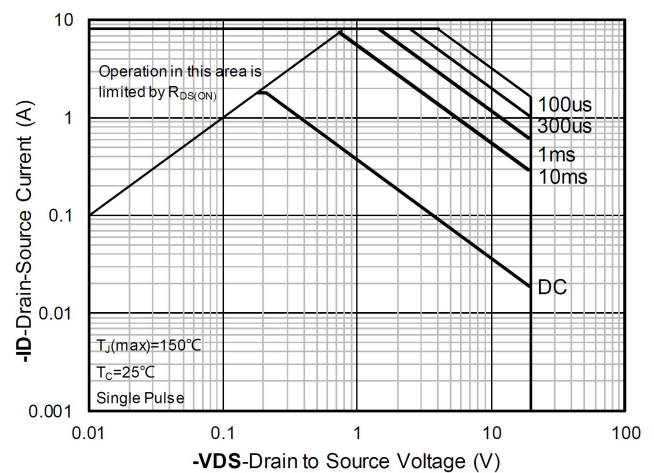
Normalized breakdown voltage



Normalized Threshold voltage

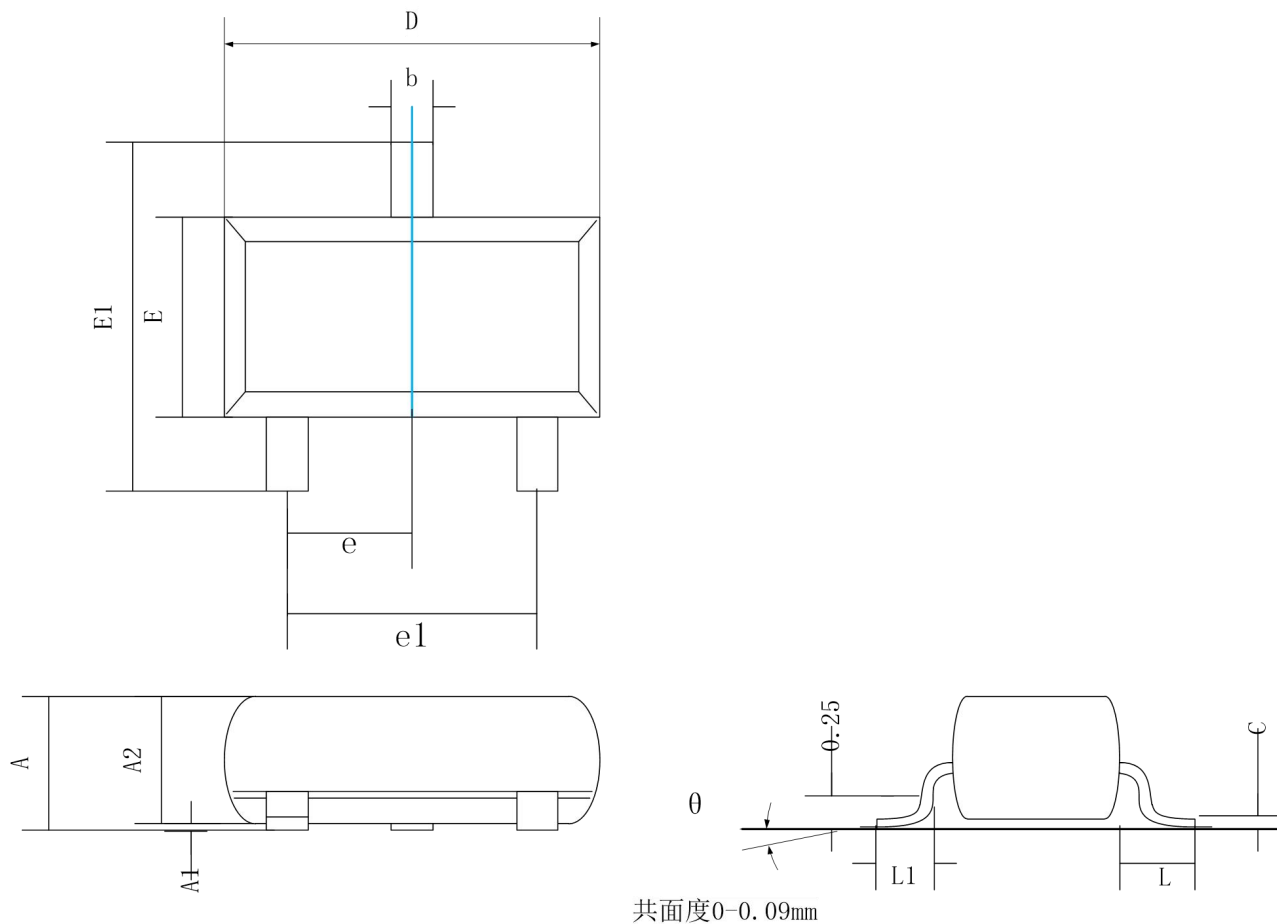


Maximum Transient Thermal Impedance



Safe Operation Area

SOT-23 Package Information



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	0.90	1.15
A1	0.00	0.10
A2	0.90	1.05
b	0.30	0.50
c	0.08	0.15
D	2.80	3.00
E	1.20	1.40
E1	2.25	2.55
e	0.95 REF.	
e1	1.80	2.00
L	0.55 REF.	
L1	0.30	0.50
θ	0°	8°

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