

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-20V	60mΩ@-4.5V	-3A
	80mΩ@-2.5V	



合肥矽普半导体

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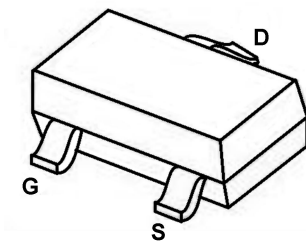
Feature

- High power and current handling capability
- Surface mount package

Application

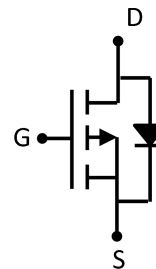
- Battery Switch
- DC/DC Converter

Package

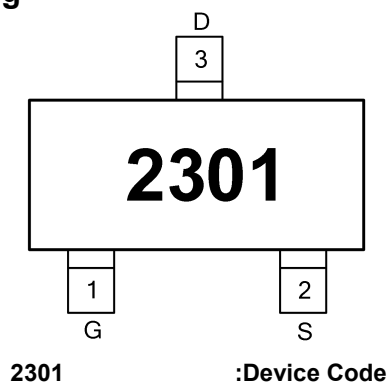


SOT-23

Circuit diagram



Marking



Order Information

Device	Package	Unit/Tape
SP2301T2	SOT-23	3000

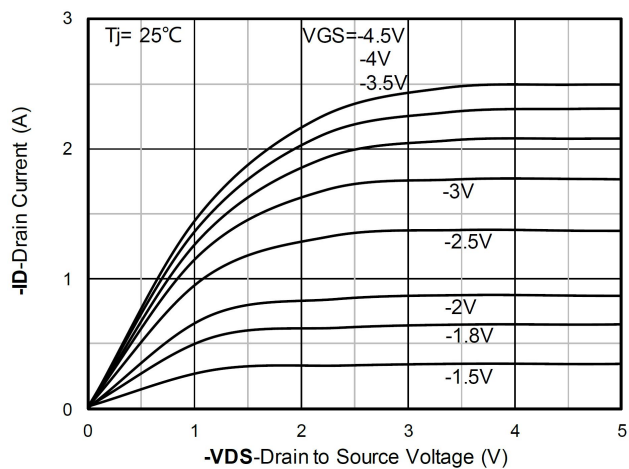
Absolute maximum ratings (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	-3	A
Pulse Drain Current Tested	I_{DM}	-12	A
Power Dissipation	P_D	1	W
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	125	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

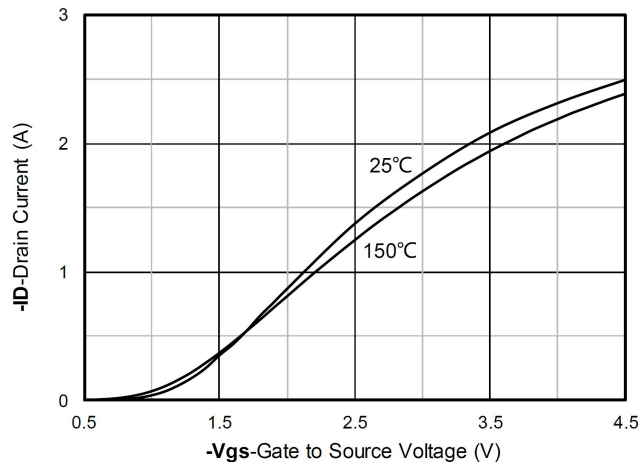
Electrical characteristics (Ta=25°C, unless otherwise noted)

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	-0.7	-1.0	V
Static Drain-Source On-Resistance	RDS(ON)	VGS=-4.5V , ID=-2A	-	60	75	mΩ
		VGS=-2.5V , ID=-2A	-	80	110	
Dynamic characteristics						
Input Capacitance	Ciss	VDS=-8V , VGS=0V , f=1MHz	-	545	-	pF
Output Capacitance	Coss		-	136	-	
Reverse Transfer Capacitance	Crss		-	78	-	
Total Gate Charge	Qg	VDS=-10V , VGS=-2.5V , ID=-3A	-	3.5	-	nC
Gate-Source Charge	Qgs		-	0.8	-	
Gate-Drain Charge	Qgd		-	1.5	-	
Switching Characteristics						
Turn-On Delay Time	td(on)	VDD=-4V VGS=-4.5V , RG=6.2Ω , ID=-1A	-	6.6	-	nS
Turn-On Rise Time	tr		-	18	-	
Turn-Off Delay Time	td(off)		-	24	-	
Turn-Off Fall Time	tr		-	16	-	
Source-Drain Diode characteristics						
Diode Forward Voltage	VSD	VGS=0V , IS=-1A , TJ=25℃	-	-	-1.2	V

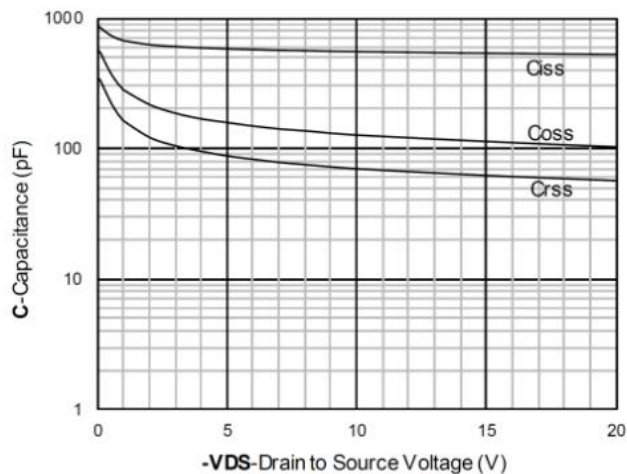
Typical Characteristics



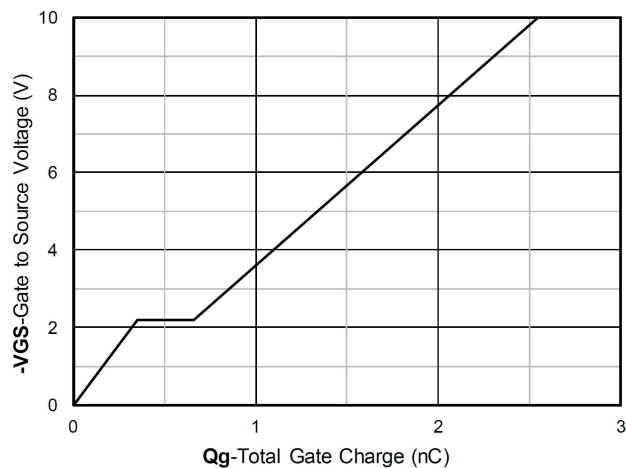
Output Characteristics



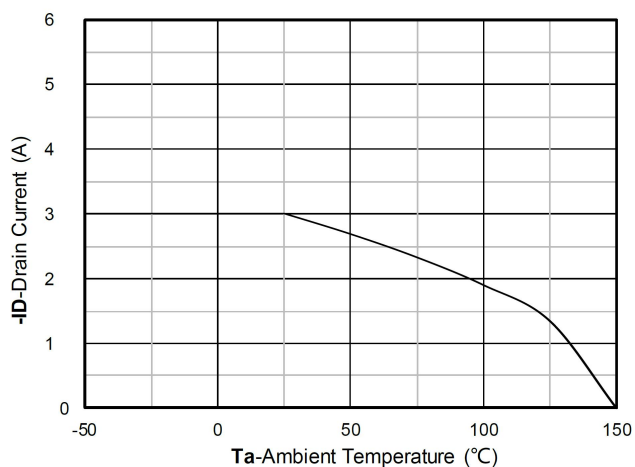
Transfer Characteristics



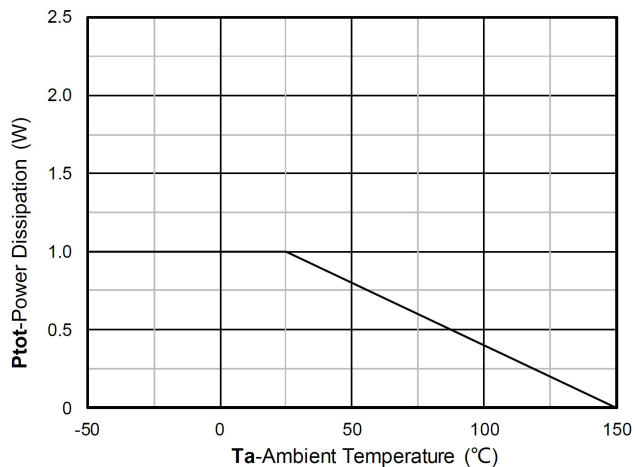
Capacitance Characteristics



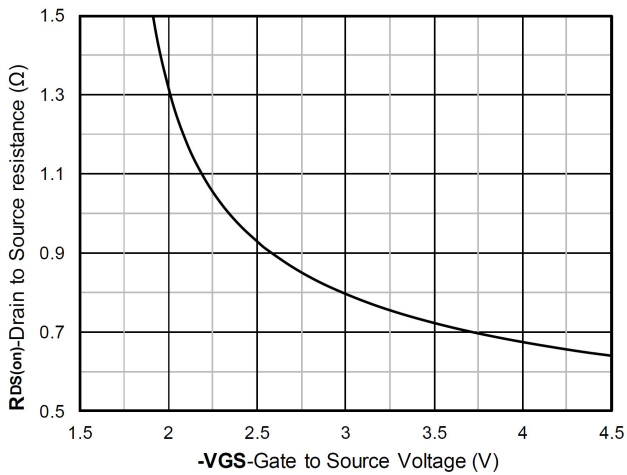
Gate Charge



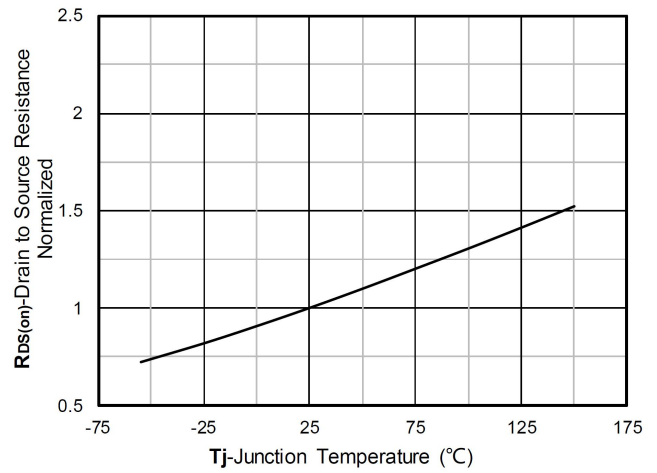
Current dissipation



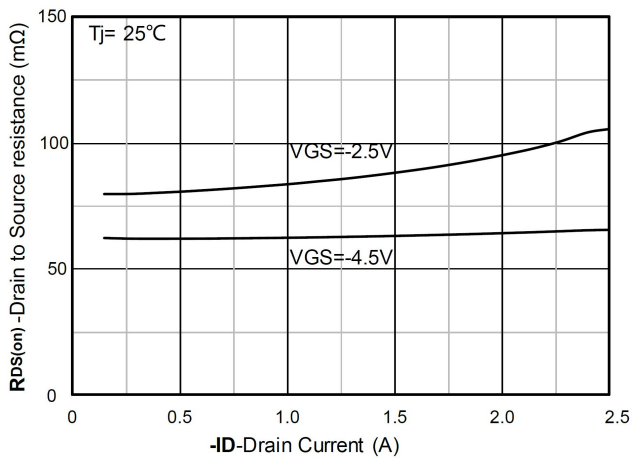
Power dissipation



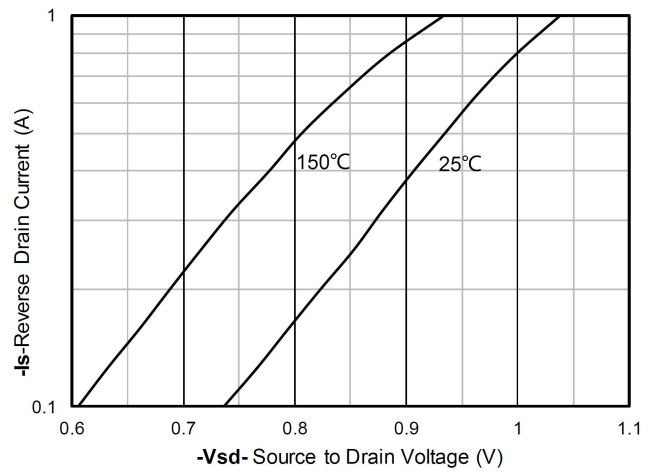
On-Resistance vs Gate to Source Voltage



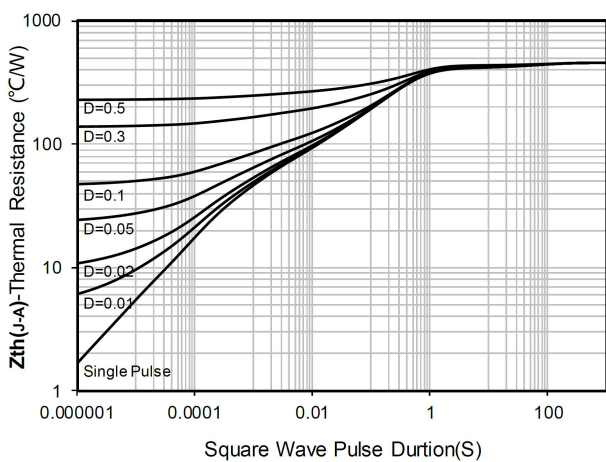
Normalized On-Resistance



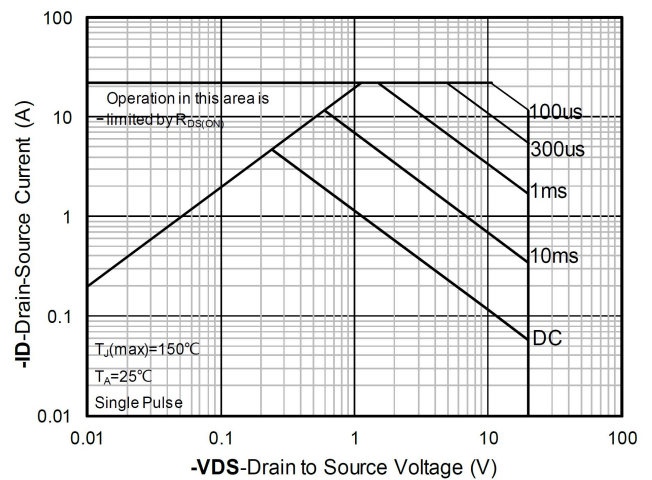
$R_{DS(on)}$ VS Drain Current



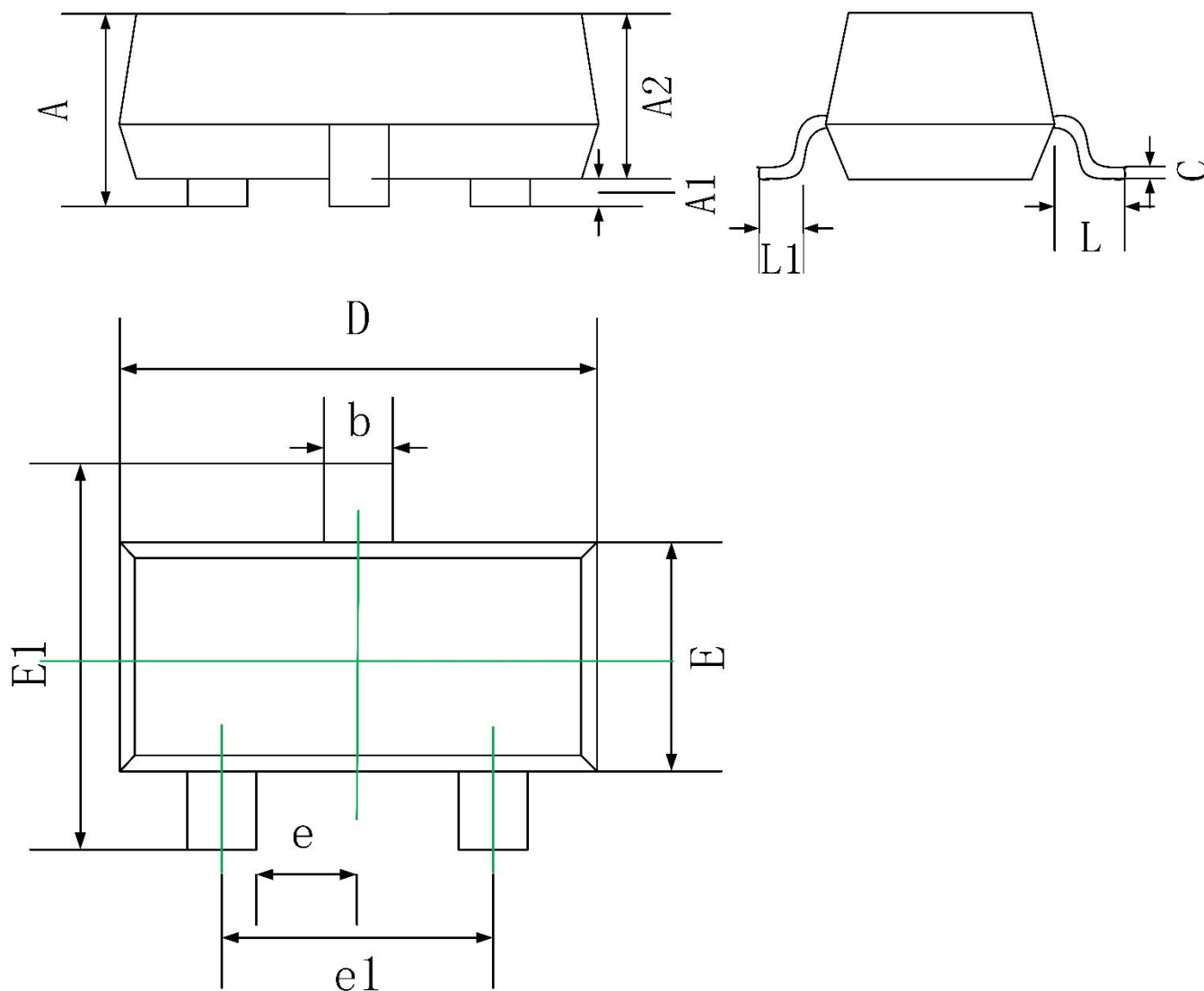
Forward characteristics of reverse diode



Maximum Transient Thermal Impedance



Safe Operation Area

SOT-23 Package Information


Symbol	Dimensions In Millimeters	
	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