

**Product Summary**

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
20V	250mΩ@4.5V	0.75A
	350mΩ@2.5V	



**合肥矽普半导体**

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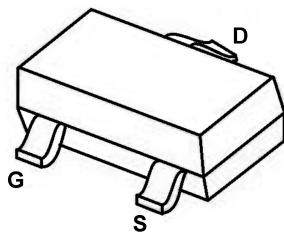
**Feature**

- High power and current handing capability
- Surface mount package
- ESD protected 2KV

**Application**

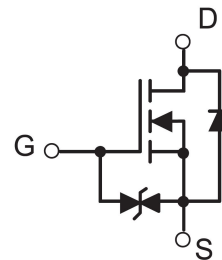
- Battery Switch
- DC/DC Converter

**Package**

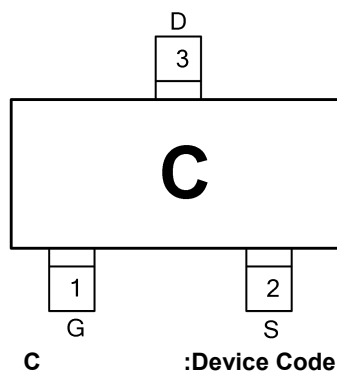


SOT-523

**Circuit diagram**



**Marking**



**Order Information**

Device	Package	Unit/Tape
SP1012KT5	SOT-523	3000

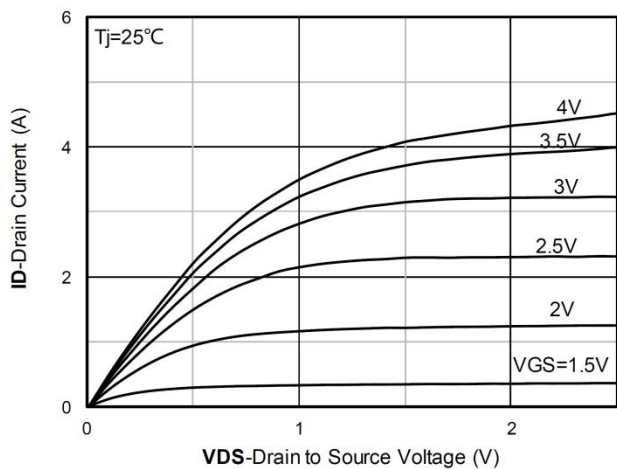
**Absolute maximum ratings (Ta=25°C, unless otherwise noted)**

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DSS</sub>	20	V
Gate-Source Voltage	V <sub>GSS</sub>	±12	V
Continuous Drain Current	I <sub>D</sub>	0.75	A
Pulse Drain Current Tested	I <sub>DM</sub>	3	A
Power Dissipation	P <sub>D</sub>	150	mW
Thermal Resistance Junction-to-Ambient	R <sub>θJA</sub>	833	°C/W
Storage Temperature Range	T <sub>STG</sub>	-55 to 150	°C
Operating Junction Temperature Range	T <sub>J</sub>	-55 to 150	°C

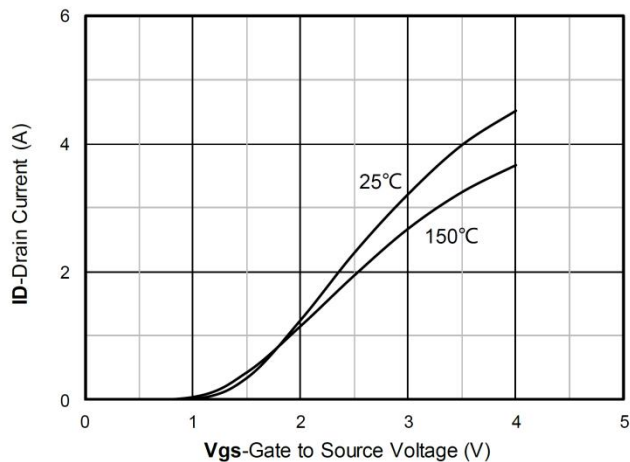
**Electrical characteristics (Ta=25°C, unless otherwise noted)**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V , I <sub>D</sub> =250μA	20	-	-	V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =16V , V <sub>GS</sub> =0V	-	-	1	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±12V , V <sub>DS</sub> =0V	-	-	±10	uA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.45	0.65	1.2	V
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =4.5V , I <sub>D</sub> =600mA	-	250	380	mΩ
		V <sub>GS</sub> =2.5V , I <sub>D</sub> =500mA	-	350	450	
<b>Dynamic characteristics</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =10V , V <sub>GS</sub> =0V , f=1MHz	-	35	-	pF
Output Capacitance	C <sub>oss</sub>		-	19	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	9	-	
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =10V , V <sub>GS</sub> =4.5V , I <sub>D</sub> =500mA	-	0.8	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	0.3	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	0.16	-	
<b>Switching Characteristics</b>						
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =10V V <sub>GS</sub> =4.5V , R <sub>G</sub> =10Ω , I <sub>D</sub> =500mA	-	4	-	nS
Turn-On Rise Time	t <sub>r</sub>		-	19	-	
Turn-Off Delay Time	t <sub>d(off)</sub>		-	10	-	
Turn-Off Fall Time	t <sub>f</sub>		-	21	-	
<b>Source-Drain Diode characteristics</b>						
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V , I <sub>S</sub> =1A , T <sub>J</sub> =25°C	-	-	1.2	V

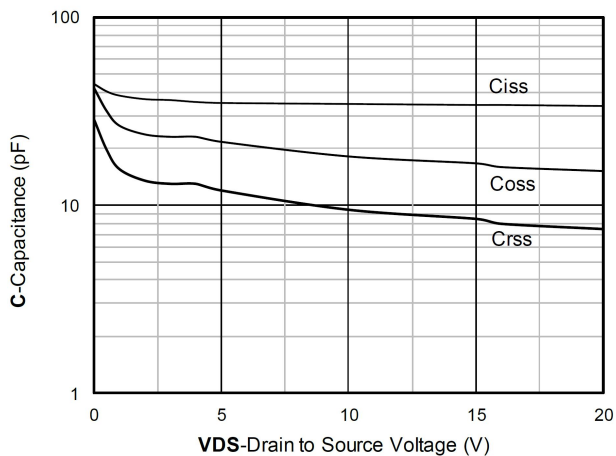
## Typical Characteristics



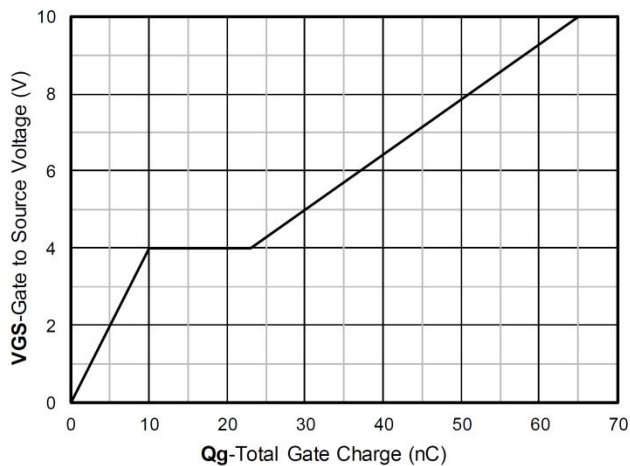
Output Characteristics



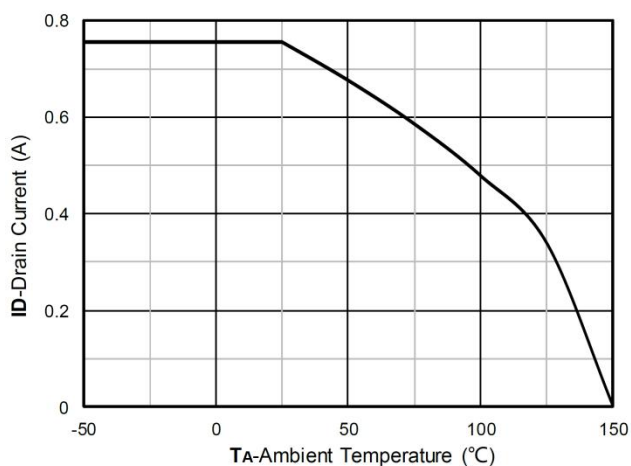
Transfer Characteristics



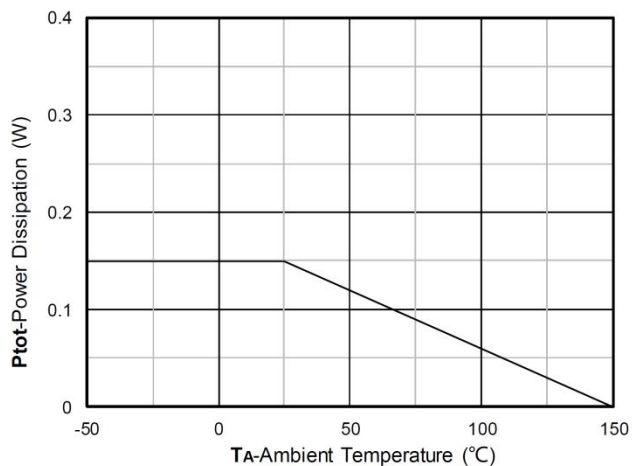
Capacitance Characteristics



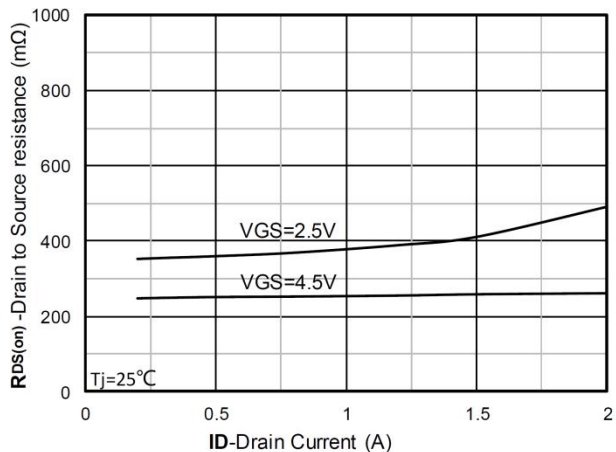
Gate Charge



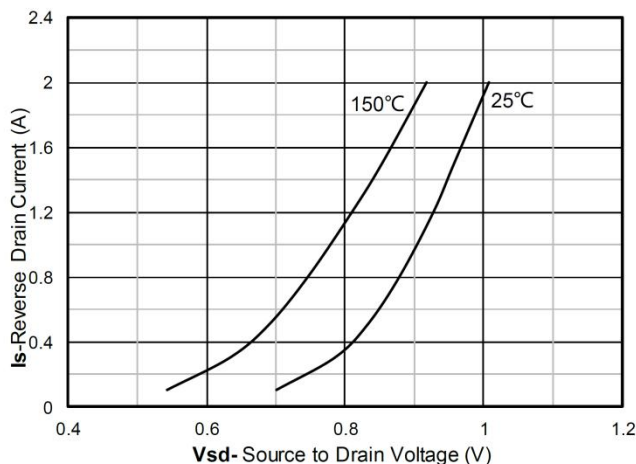
Current dissipation



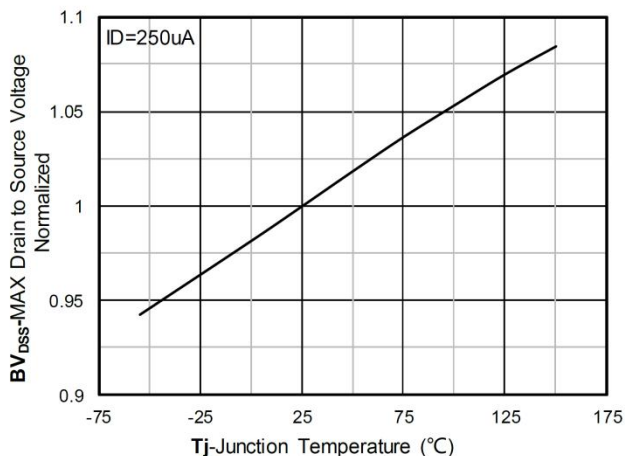
Power dissipation



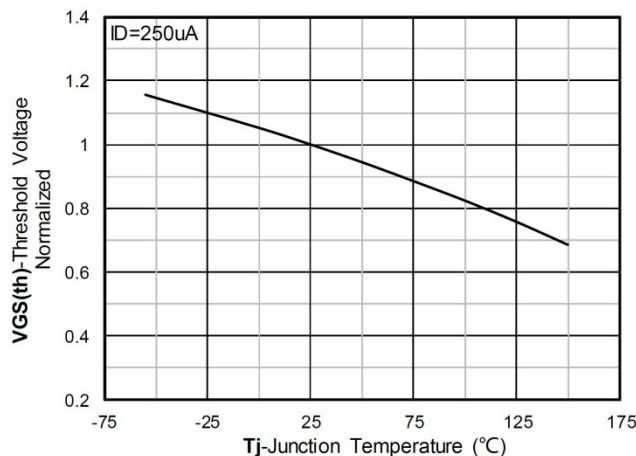
RDS(on) VS Drain Current



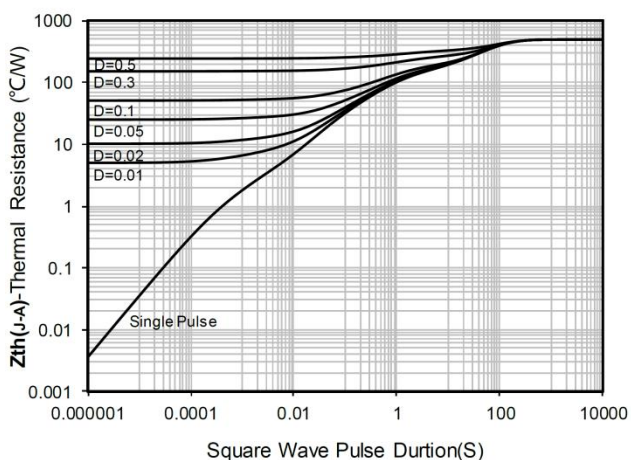
Forward characteristics of reverse diode



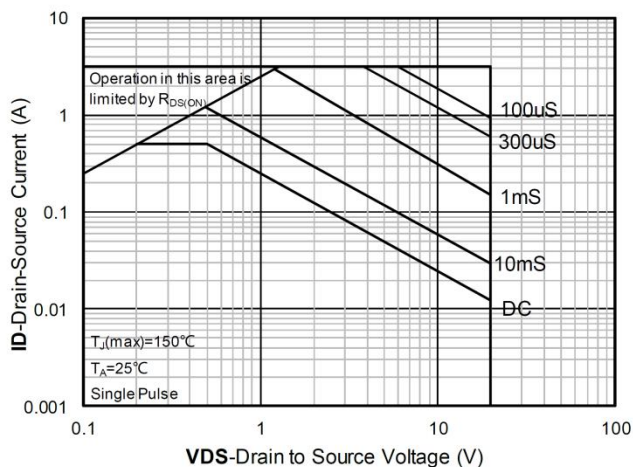
Normalized breakdown voltage



Normalized Threshold voltage

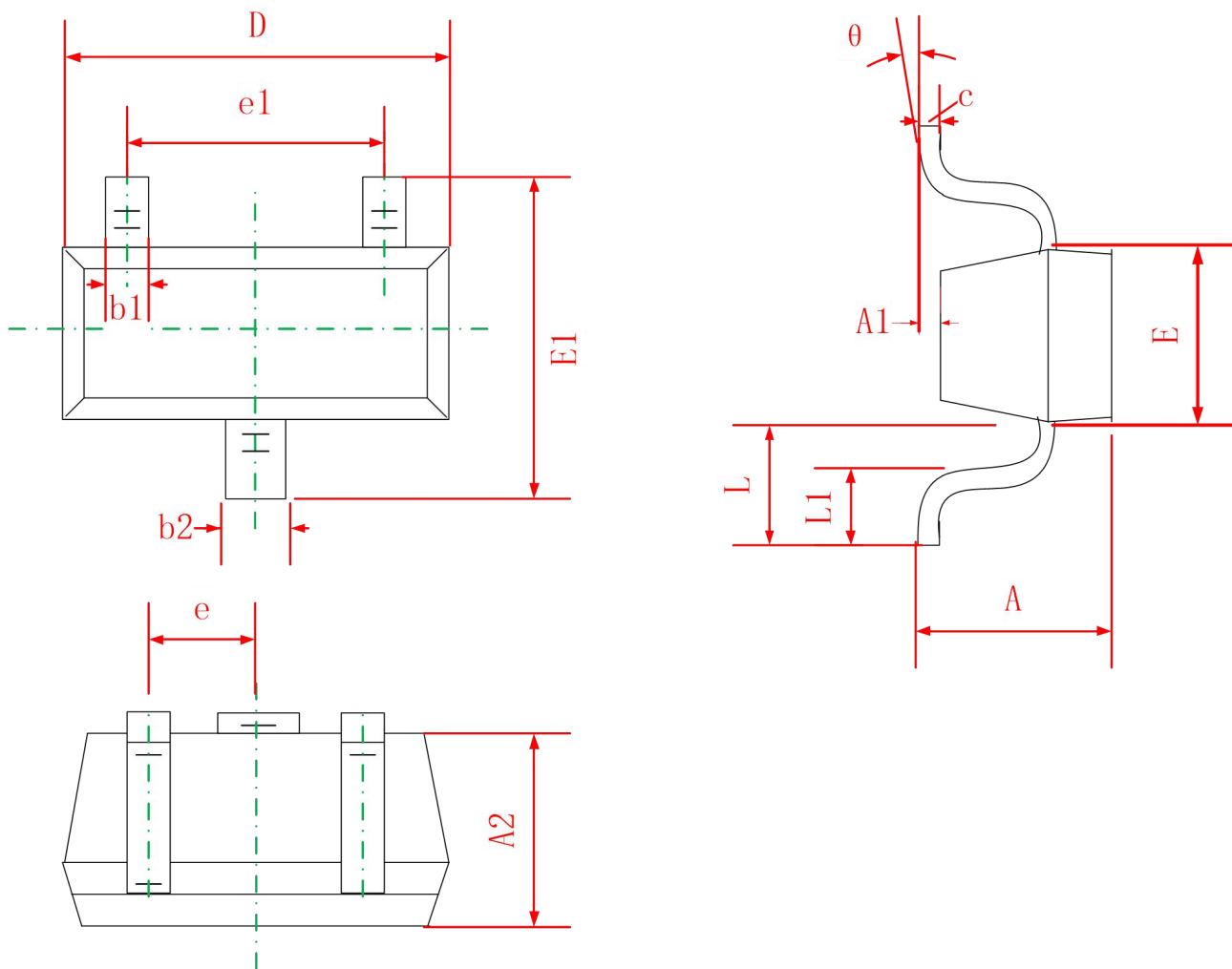


Maximum Transient Thermal Impedance



Safe Operation Area

**SOT-523 Package Information**



Symbol	Dimensions In Millimeters	
	Min	Max
A	0.700	0.900
A1	0.000	0.100
A2	0.700	0.800
b1	0.150	0.250
b2	0.250	0.350
C	0.100	0.200
D	1.500	1.700
E	0.700	0.900
E1	1.450	1.750
e	0.500 TYP	
e1	0.900	1.100
L	0.400 REF	
L1	0.260	0.460
θ	0°	8°