

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
20V	28mΩ@4.5V	4A
	33mΩ@2.5V	



合肥矽普半导体

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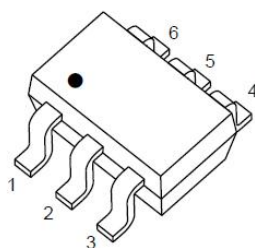
Feature

- High power and current handling capability
- Surface mount package

Application

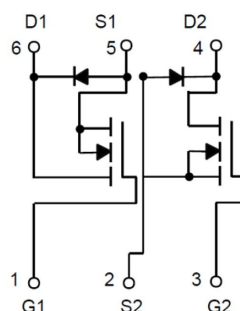
- Battery Switch
- DC/DC Converter

Package

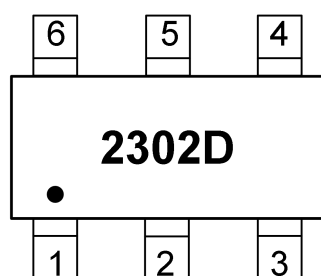


SOT-23-6L

Circuit diagram



Marking



2302D

:Device Code

Order Information

Device	Package	Unit/Tape
SP2302DTS	SOT-23-6L	3000

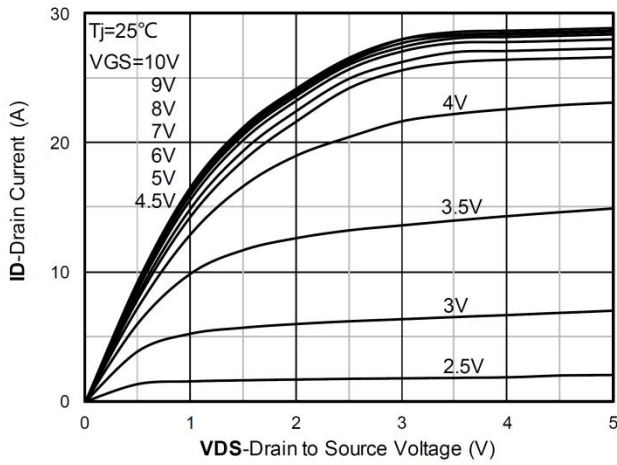
Absolute maximum ratings (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	4	A
Pulse Drain Current Tested	I_{DM}	16	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

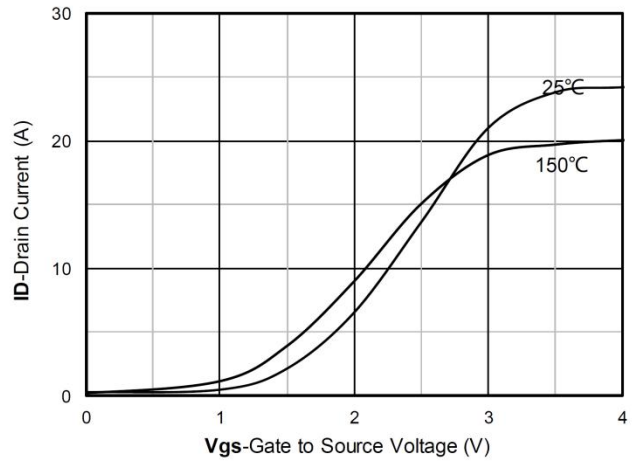
Electrical characteristics (Ta=25°C, unless otherwise noted)

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	I _{DSS}	VDS=16V , VGS=0V	-	-	1	uA
Gate-Source Leakage Current	I _{GSS}	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 =3A	-	28	45	mΩ
		VGS=2.5V , ID =2A	-	33	60	
Dynamic characteristics						
Input Capacitance	Ciss	VDS=10V , VGS=0V , f=1MHz	-	300	-	pF
Output Capacitance	Coss		-	120	-	
Reverse Transfer Capacitance	Crss		-	80	-	
Total Gate Charge	Qg	VDS=10V , VGS=4.5V , ID=3.6A	-	4.0	-	nC
Gate-Source Charge	Qgs		-	0.65	-	
Gate-Drain Charge	Qgd		-	1.5	-	
Switching Characteristics						
Turn-On Delay Time	td(on)	VDD=10V VGS=4.5V , RG=6Ω, ID=3.6A	-	7	-	nS
Turn-On Rise Time	tr		-	55	-	
Turn-Off Delay Time	td(off)		-	16	-	
Turn-Off Fall Time	tf		-	10	-	
Source-Drain Diode characteristics						
Diode Forward Voltage	VSD	VGS=0V , IS=1A , TJ=25℃	-	-	1.2	V

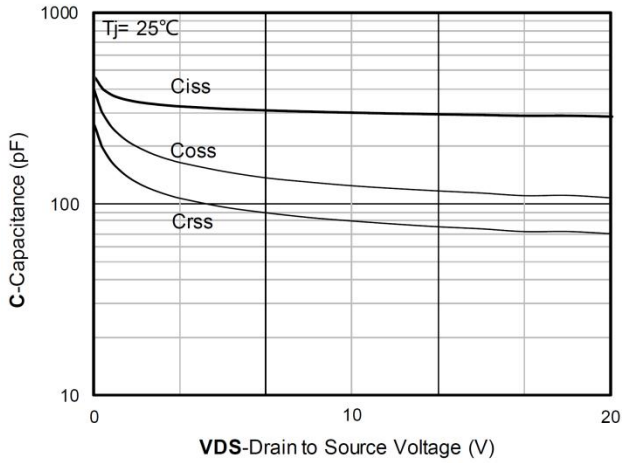
Typical Characteristics



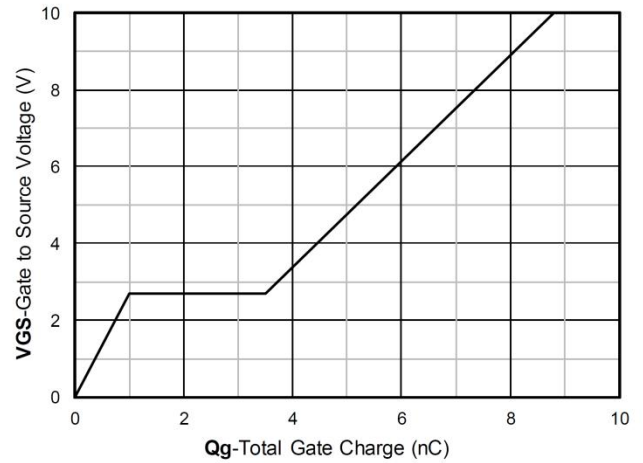
Output Characteristics



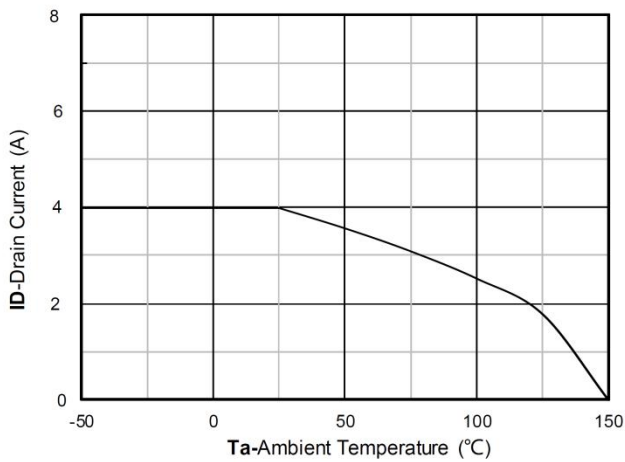
Transfer Characteristics



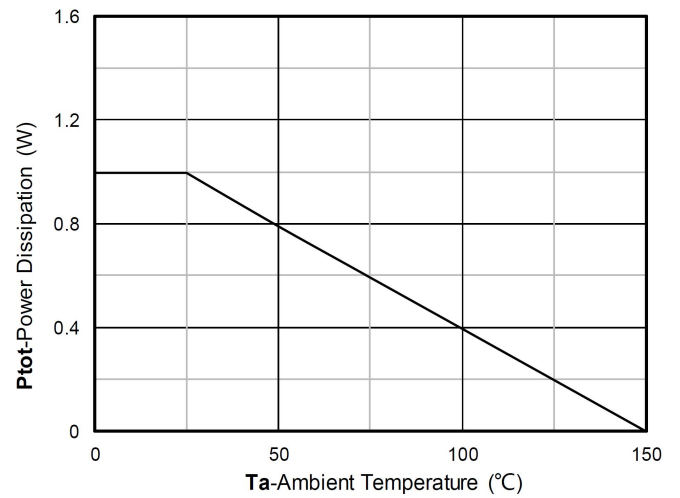
Capacitance Characteristics



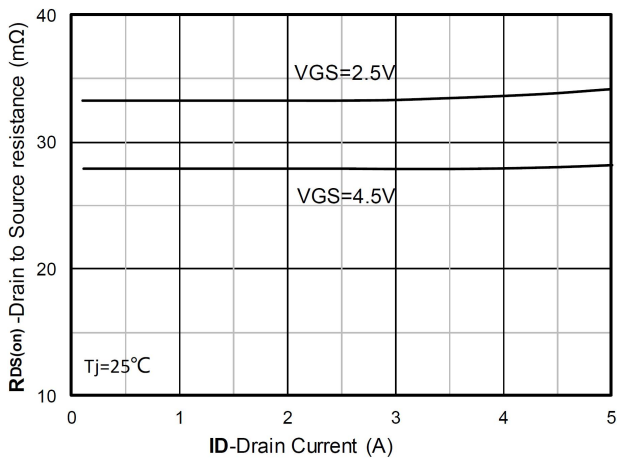
Gate Charge



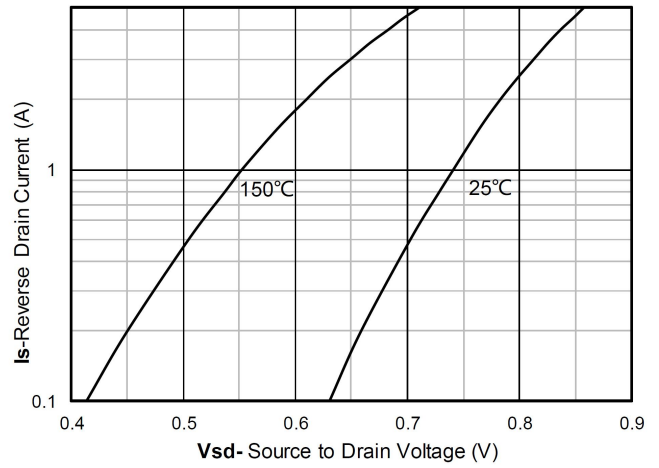
Current dissipation



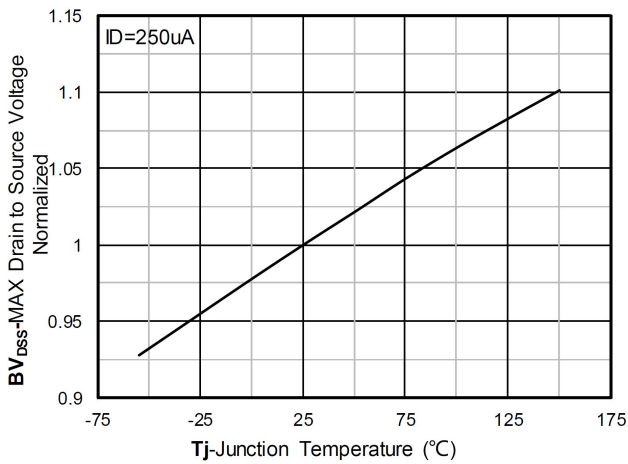
Power dissipation



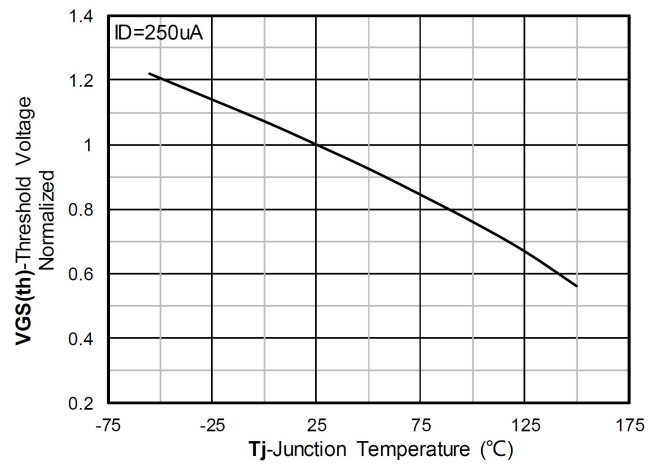
RDS(on) VS Drain Current



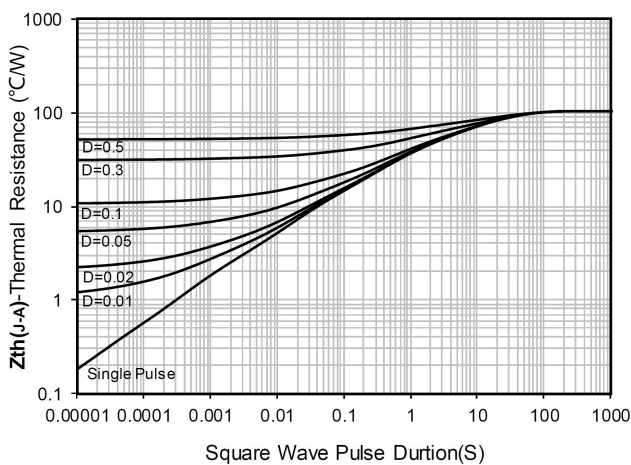
Forward characteristics of reverse diode



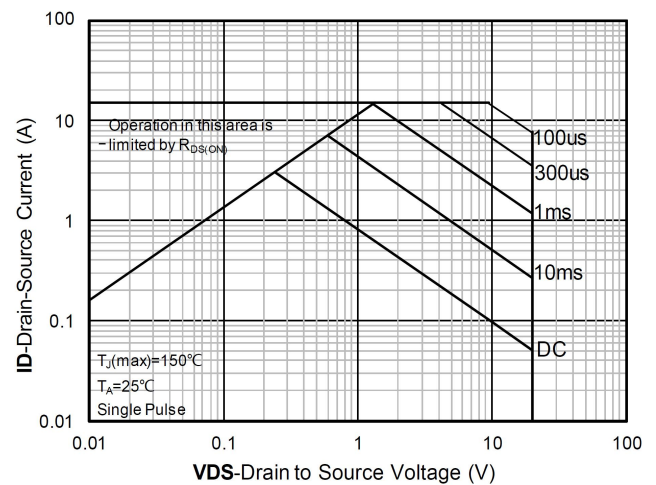
Normalized breakdown voltage



Normalized Threshold voltage

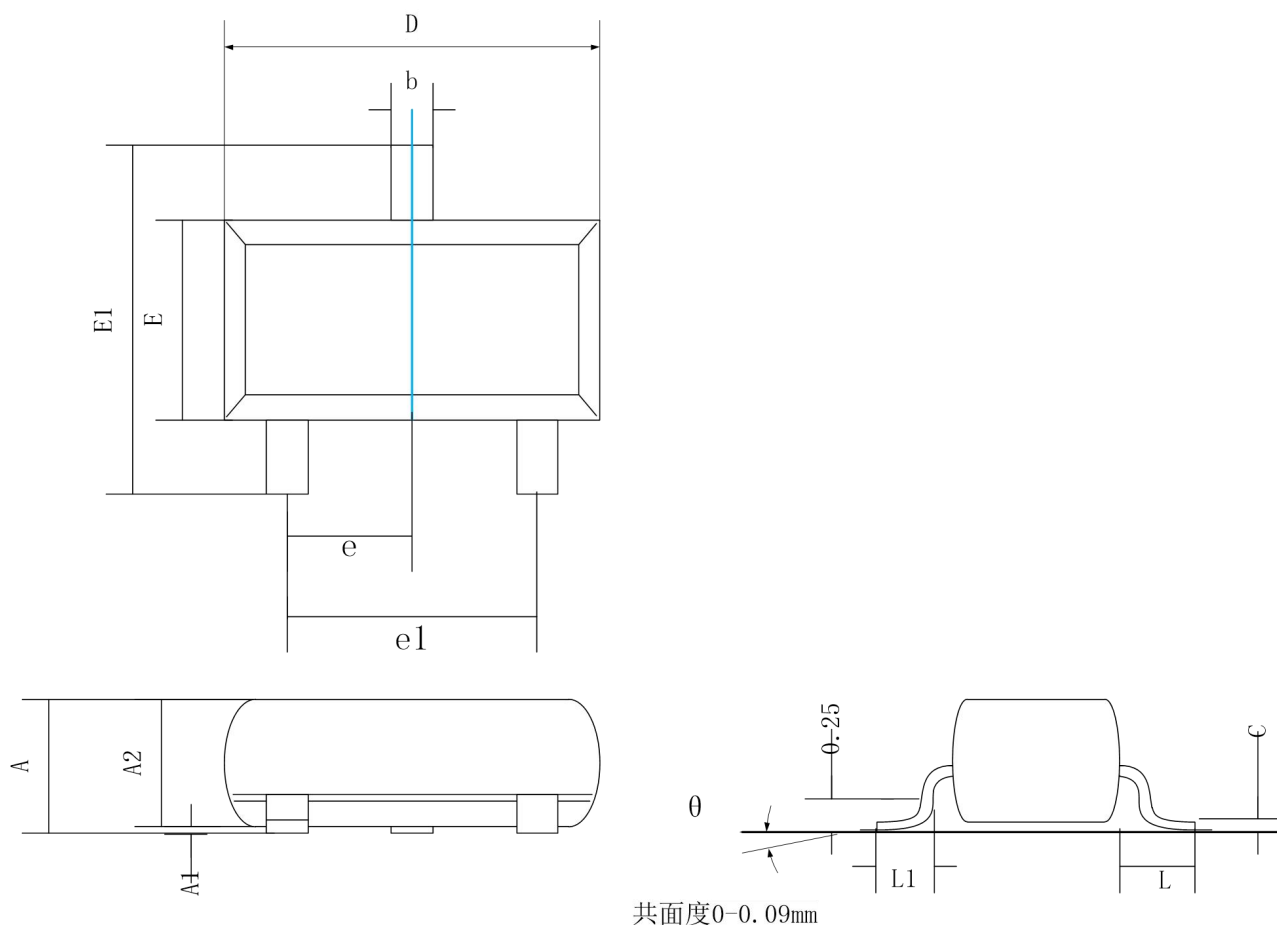


Maximum Transient Thermal Impedance



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°