

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	1.7Ω@10V	300mA
	1.8Ω@4.5V	



合肥矽普半导体

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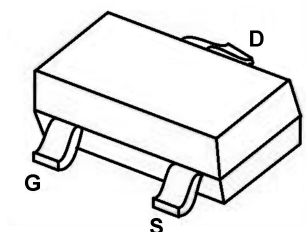
Feature

- High power and current handling capability
- Surface mount package

Application

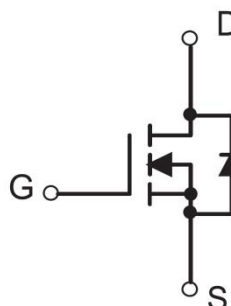
- Battery Switch
- DC/DC Converter

Package

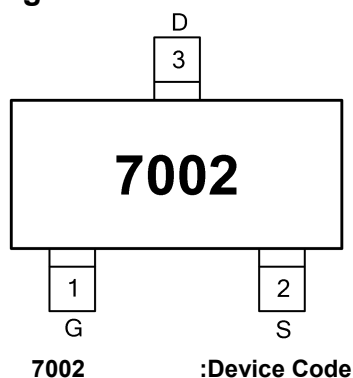


SOT-23

Circuit diagram



Marking



Order Information

Device	Package	Unit/Tape
2N7002	SOT-23	3000

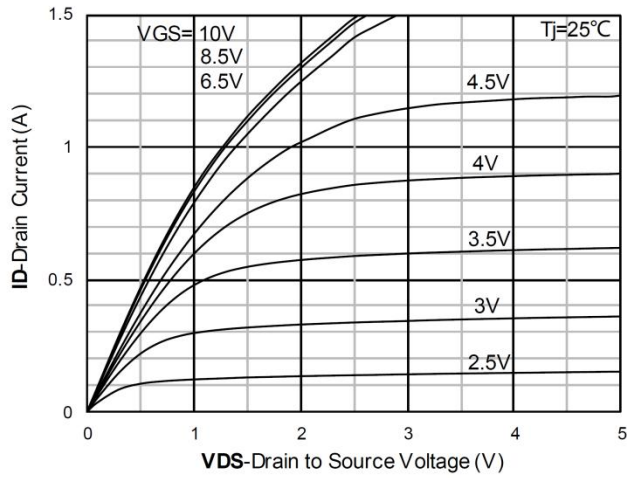
Absolute maximum ratings (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	300	mA
Pulse Drain Current Tested	I_{DM}	1200	mA
Power Dissipation	P_D	350	mW
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	357	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

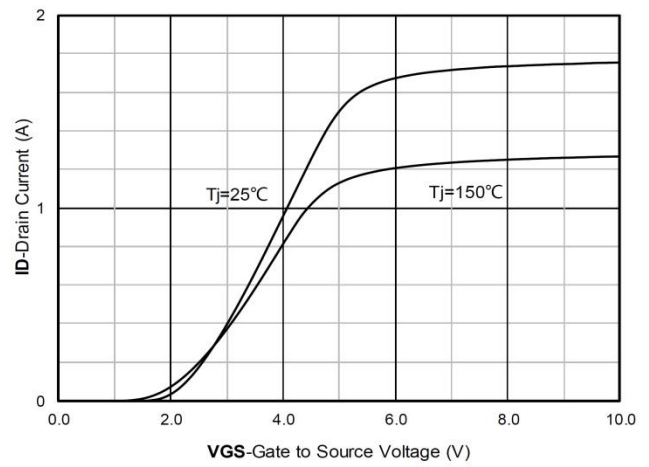
Electrical characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V , ID=250μA	60	-	-	V
Drain-Source Leakage Current	IDSS	VDS=48V , VGS=0V	-	-	1	uA
Gate-Source Leakage Current	IGSS	VGS=±20V , VDS=0V	-	-	±1	uA
Gate Threshold Voltage	VGS(th)	VDS=VGS , ID=250μA	1	1.5	2.5	V
Static Drain-Source On-Resistance	RDS(ON)	VGS =10V, ID =200mA	-	1.7	3	Ω
		VGS =4.5V, ID =200mA	-	1.8	4	
Dynamic characteristics						
Input Capacitance	Ciss	VDS=25V , VGS=0V , f=1MHz	-	28	-	pF
Output Capacitance	Coss		-	10	-	
Reverse Transfer Capacitance	Crss		-	5	-	
Total Gate Charge	Qg	VDS=10V , VGS=4.5V , ID=300mA	-	1.7	-	nC
Gate-Source Charge	Qgs		-	0.35	-	
Gate-Drain Charge	Qgd		-	0.5	-	
Switching Characteristics						
Turn-On Delay Time	td(on)	VDD=30V VGS=10V , RG=25Ω , ID=300mA	-	3	-	nS
Turn-On Rise Time	tr		-	17	-	
Turn-Off Delay Time	td(off)		-	10	-	
Turn-Off Fall Time	tf		-	21	-	
Source-Drain Diode characteristics						
Diode Forward Voltage	VSD	VGS=0V , IS=1A , TJ=25℃	-	-	1.2	V

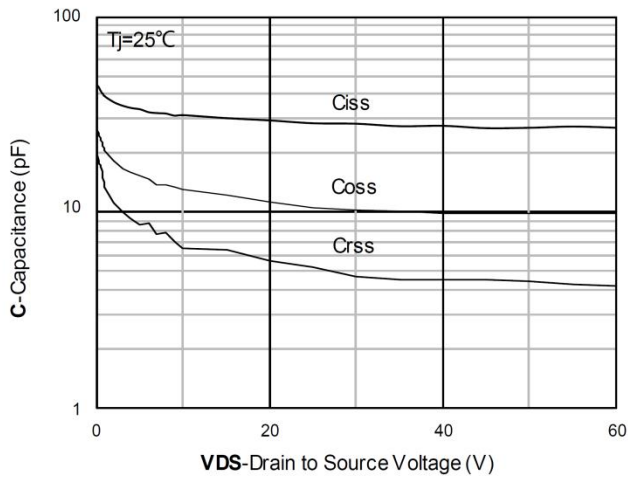
Typical Characteristics



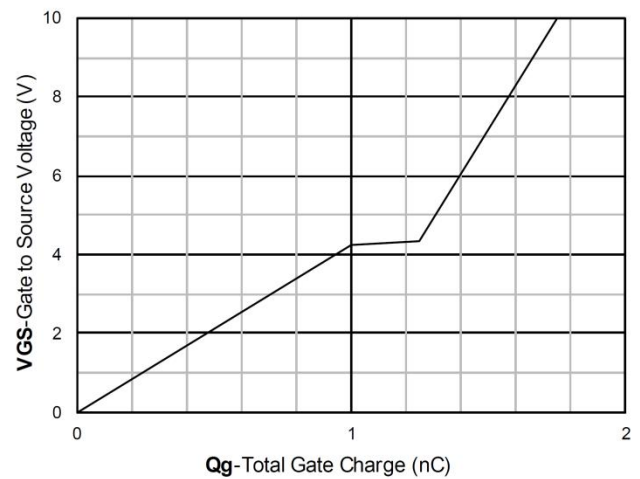
Output Characteristics



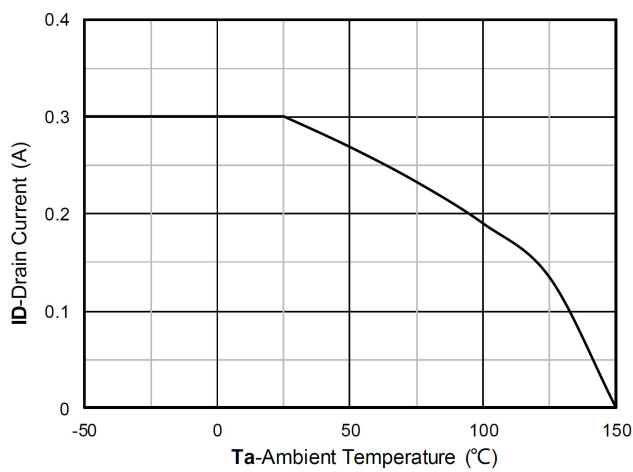
Transfer Characteristics



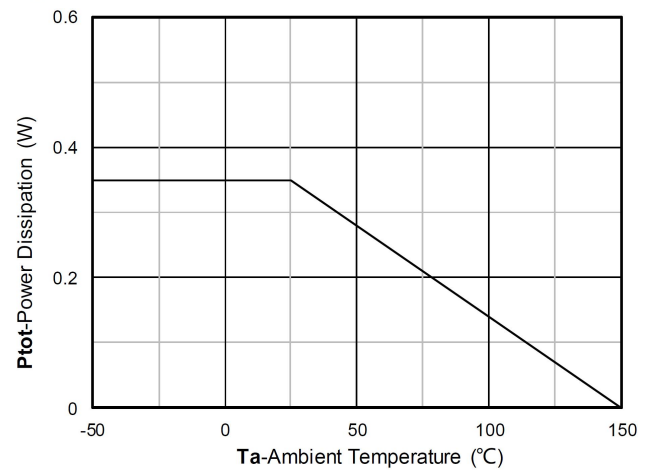
Capacitance Characteristics



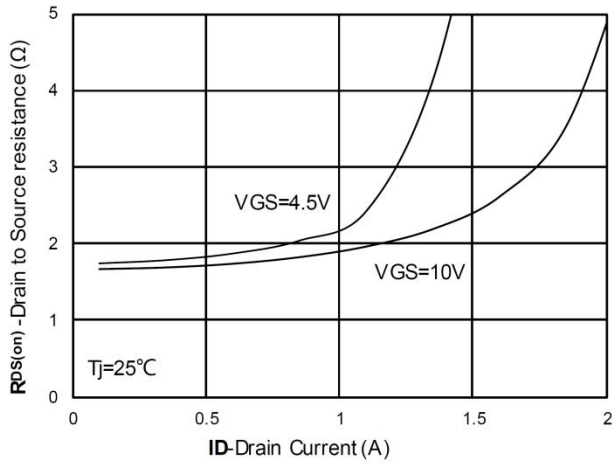
Gate Charge



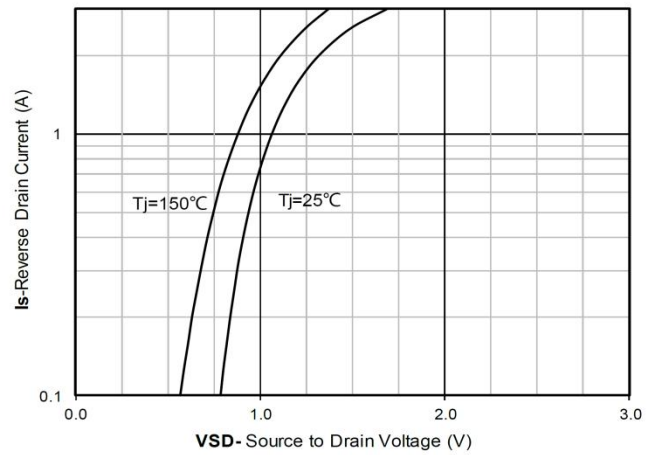
Current dissipation



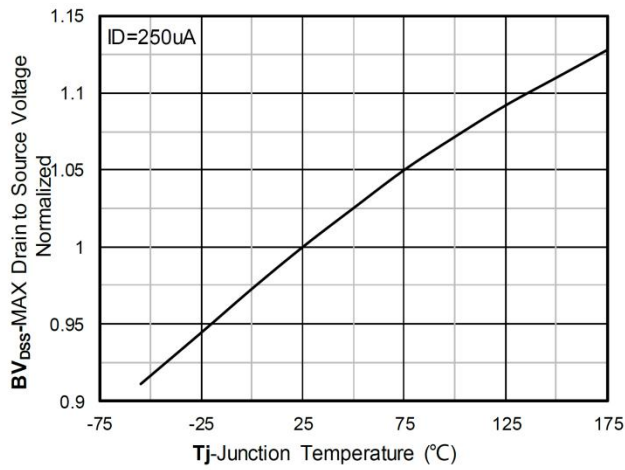
Power dissipation



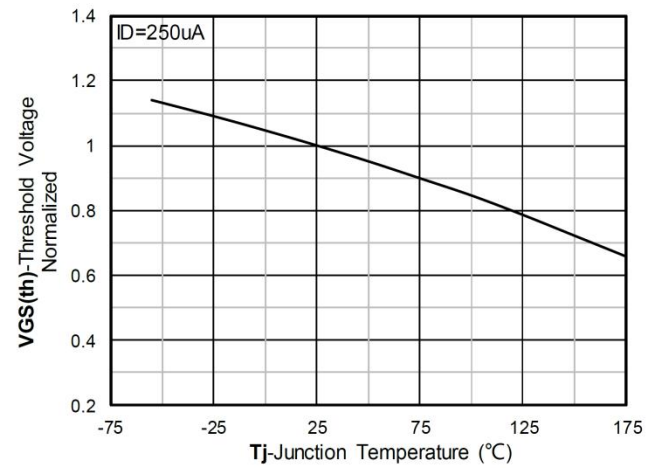
$R_{DS(on)}$ VS Drain Current



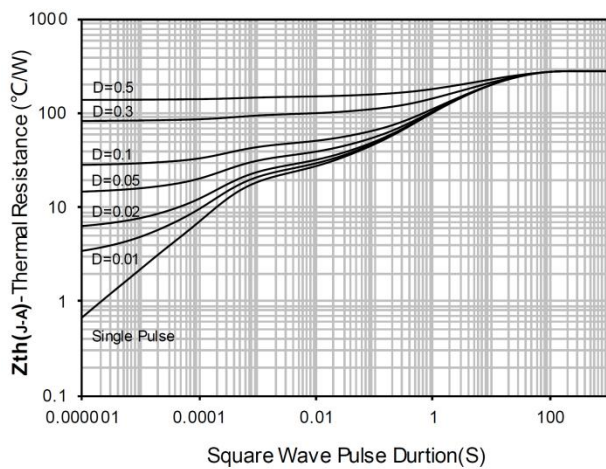
Forward characteristics of reverse diode



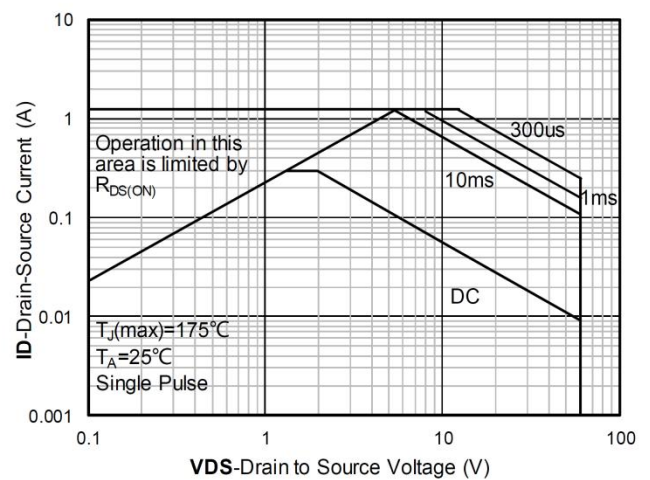
Normalized breakdown voltage



Normalized Threshold voltage

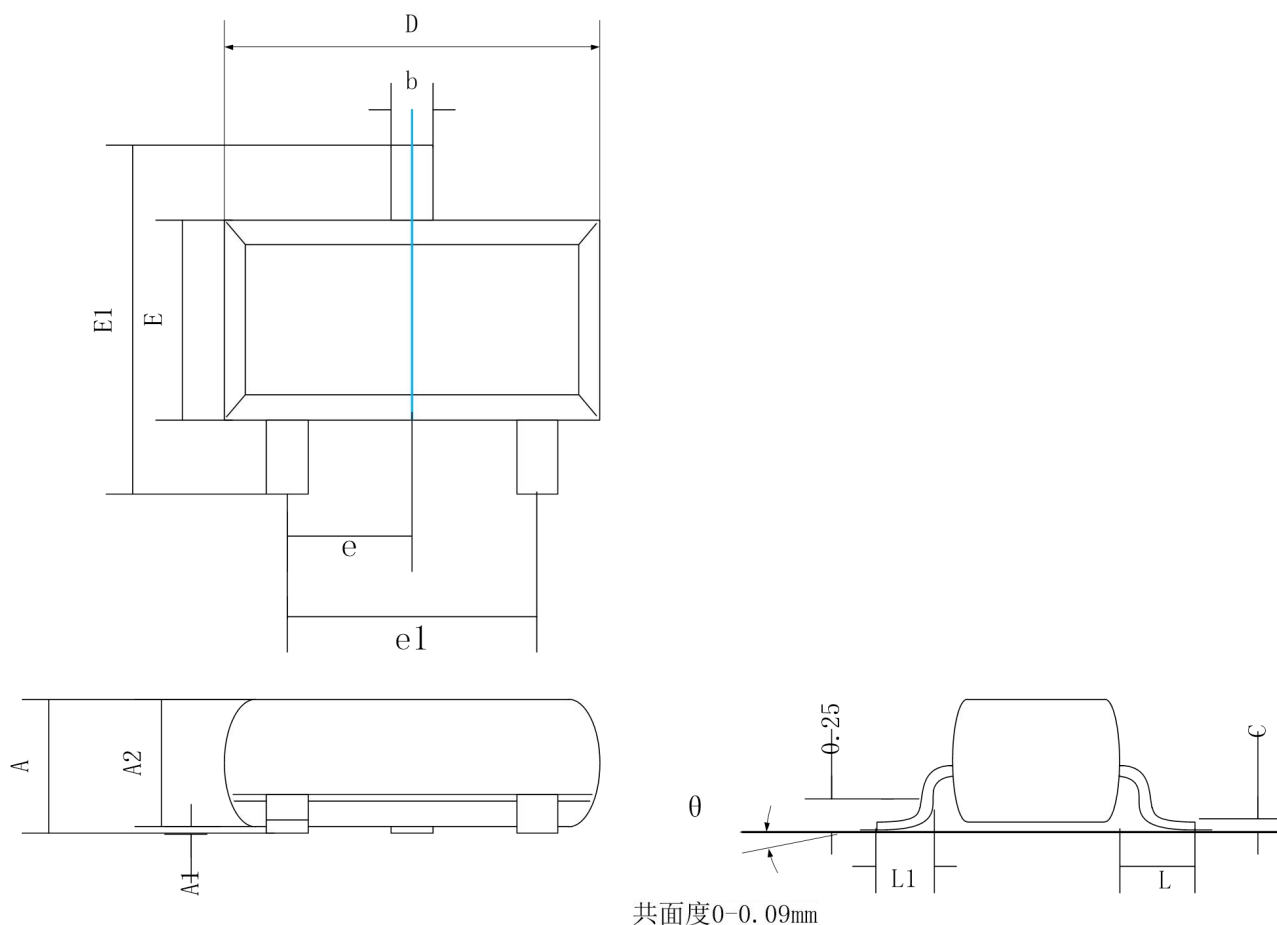


Maximum Transient Thermal Impedance



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°