

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	33mΩ@10V	5A
	38mΩ@4.5V	



合肥矽普半导体

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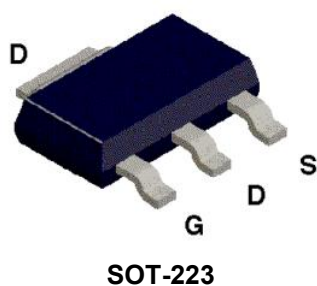
Feature

- High power and current handing capability
- Surface mount package

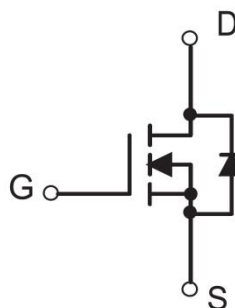
Application

- Battery Switch
- DC/DC Converter

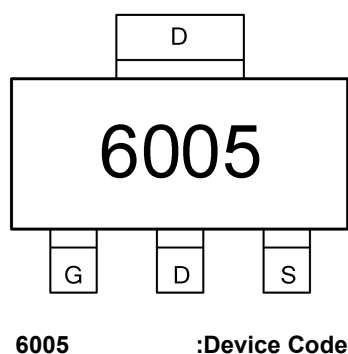
Package



Circuit diagram



Marking



Order Information

Device	Package	Unit/Tape
SP6005TC	SOT-223	2500

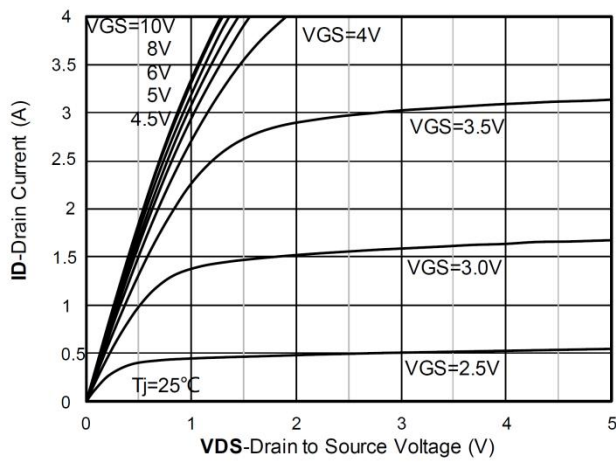
Absolute maximum ratings (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	5	A
Pulse Drain Current Tested	I_{DM}	20	A
Power Dissipation	P_D	2.3	W
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	54	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

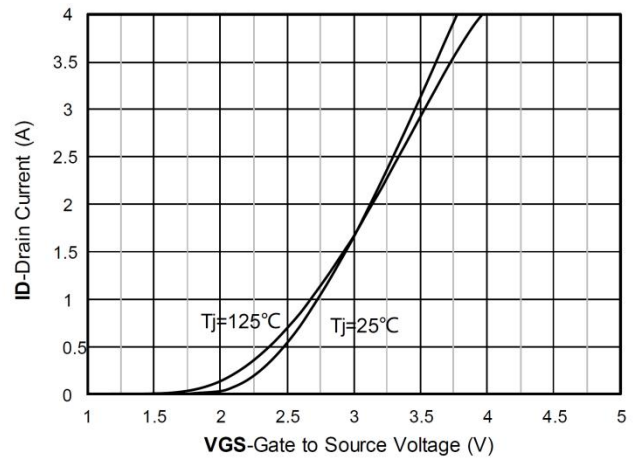
Electrical characteristics (Ta=25°C, unless otherwise noted)

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	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VDS=VGS , ID=250μA	1.2	1.6	2.5	V
Static Drain-Source On-Resistance	RDS(ON)	VGS =10V, ID =3A	-	33	41	mΩ
		VGS =4.5V, ID =2A	-	38	48	
Dynamic characteristics						
Input Capacitance	Ciss	VDS=30V , VGS=0V , f=1MHz	-	1035	-	pF
Output Capacitance	Coss		-	78	-	
Reverse Transfer Capacitance	Crss		-	69	-	
Total Gate Charge	Qg	VDS=30V , VGS=4.5V , ID=3A	-	27	-	nC
Gate-Source Charge	Qgs		-	6.1	-	
Gate-Drain Charge	Qgd		-	6.9	-	
Switching Characteristics						
Turn-On Delay Time	td(on)	VDD=30V VGS=10V , RG=3Ω, ID=2A	-	12	-	nS
Turn-On Rise Time	tr		-	21	-	
Turn-Off Delay Time	td(off)		-	30	-	
Turn-Off Fall Time	tf		-	23	-	
Source-Drain Diode characteristics						
Diode Forward Voltage	VSD	VGS=0V , IS=1A , TJ=25℃	-	-	1.2	V

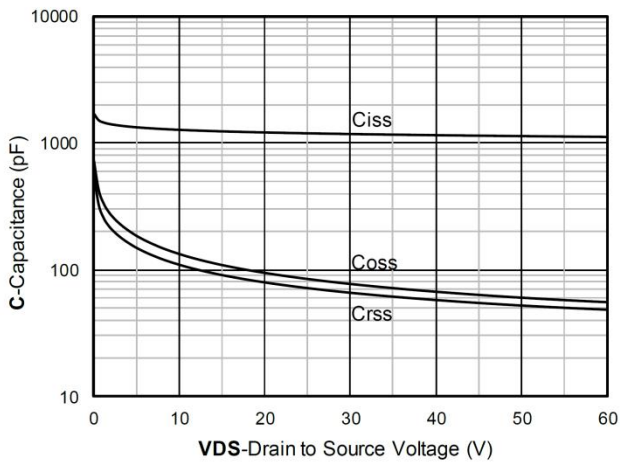
Typical Characteristics



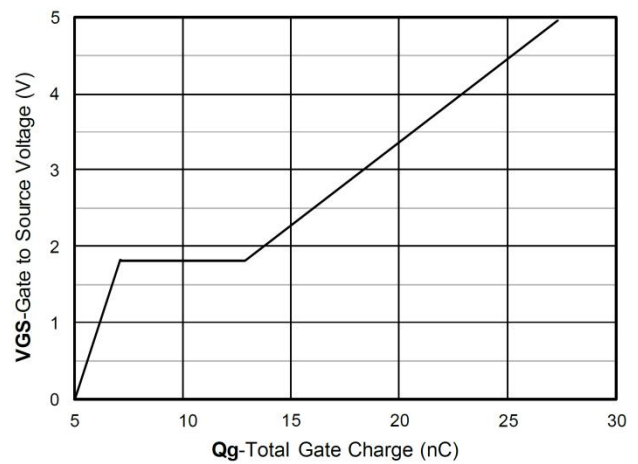
Output Characteristics



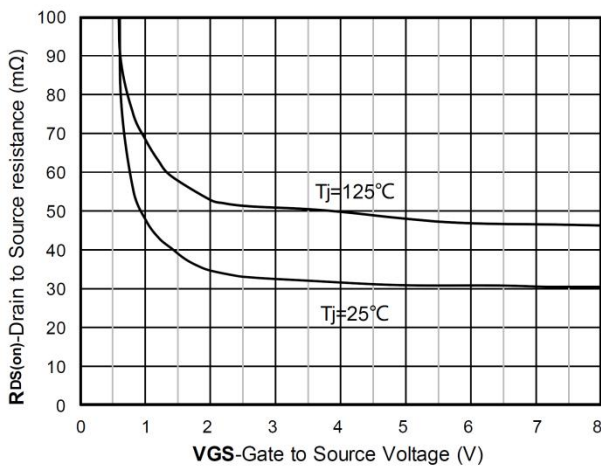
Transfer Characteristics



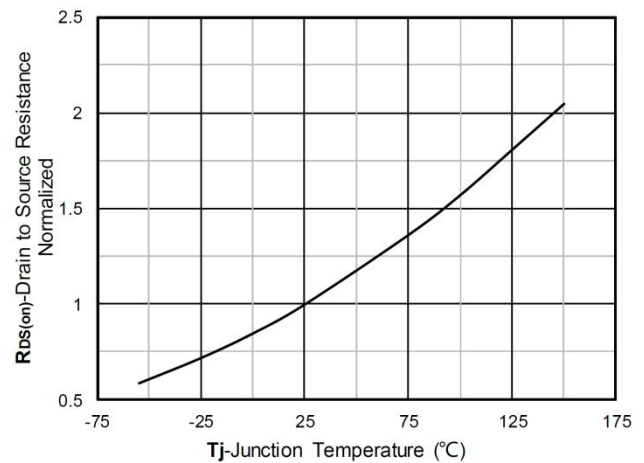
Capacitance Characteristics



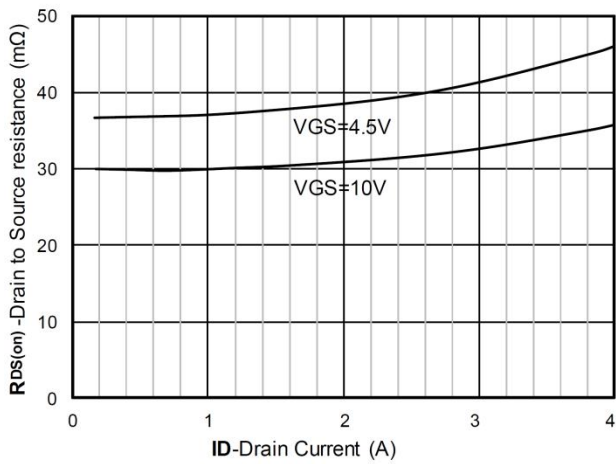
Gate Charge



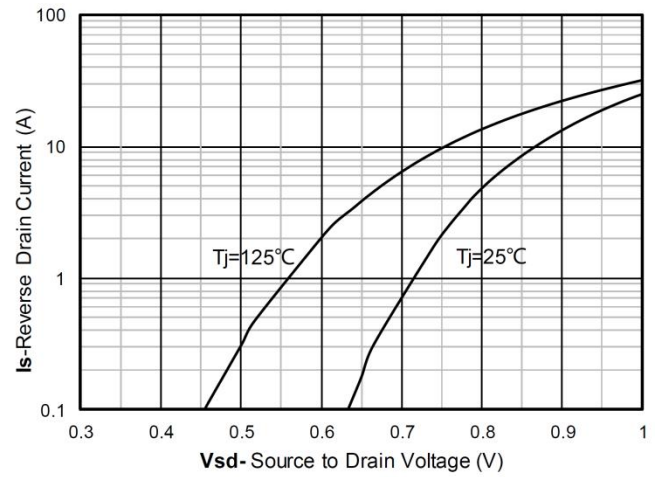
On-Resistance vs Gate to Source Voltage



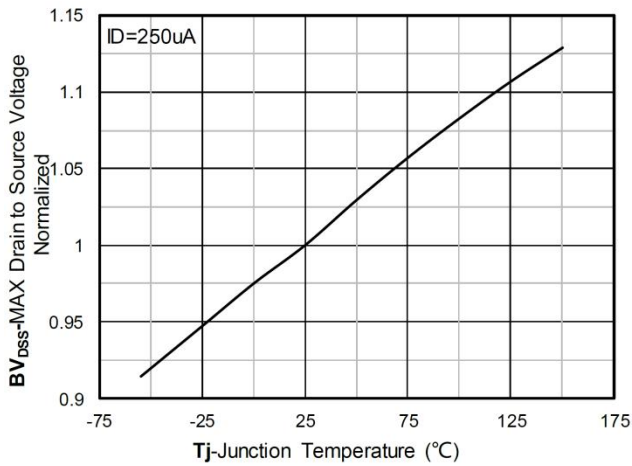
Normalized On-Resistance



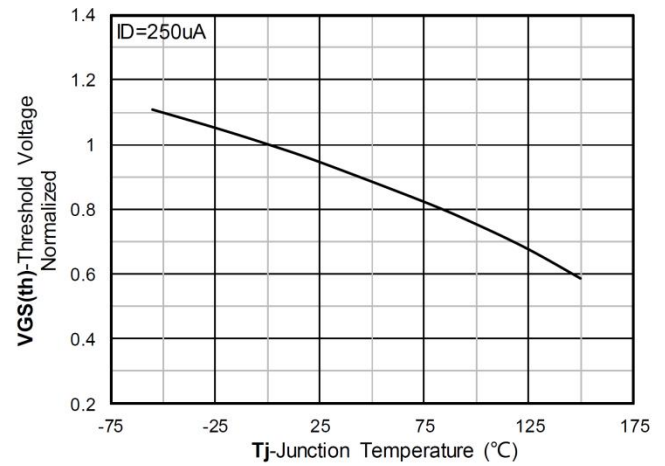
RDS(on) VS Drain Current



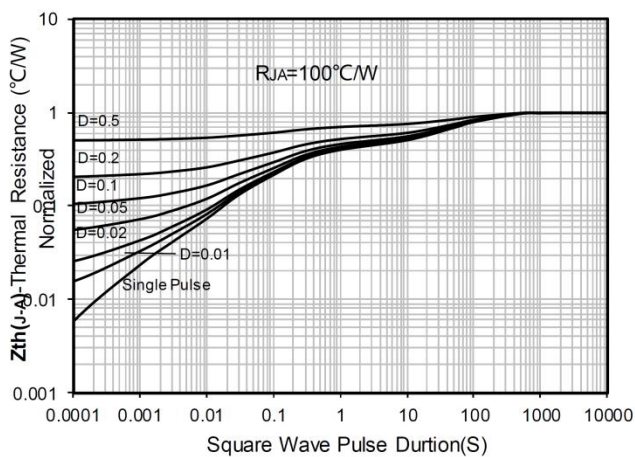
Forward characteristics of reverse diode



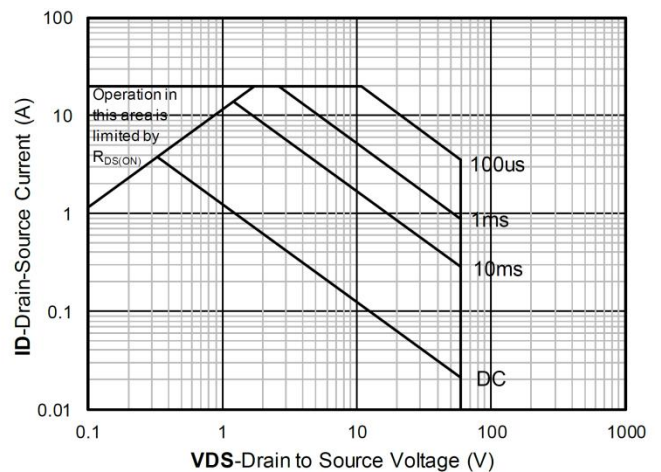
Normalized breakdown voltage



Normalized Threshold voltage

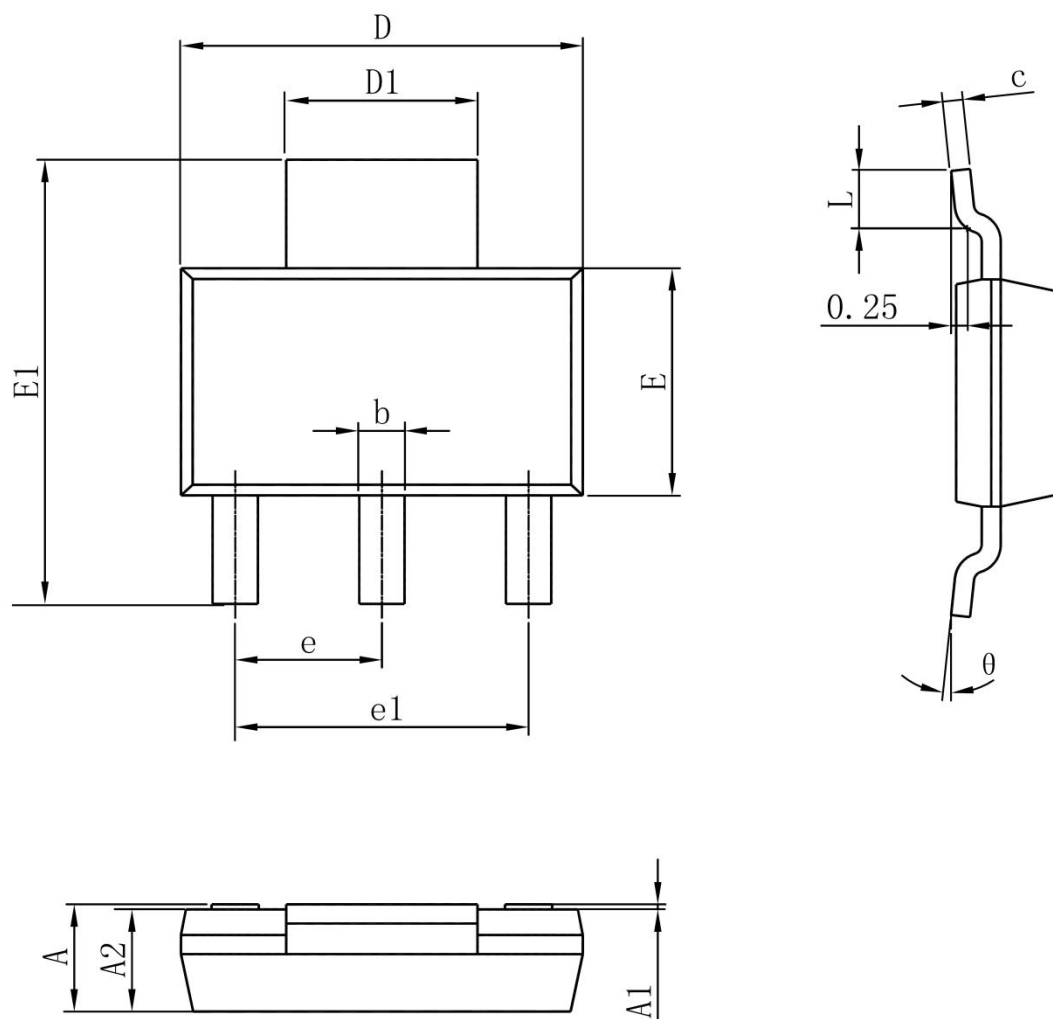


Maximum Transient Thermal Impedance



Safe Operation Area

SOT-223 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.520	1.800	0.060	0.071
A1	0.000	0.100	0.000	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.820	0.026	0.032
c	0.250	0.350	0.010	0.014
D	6.200	6.400	0.244	0.252
D1	2.900	3.100	0.114	0.122
E	3.300	3.700	0.130	0.146
E1	6.830	7.070	0.269	0.278
e	2.300(BSC)		0.091(BSC)	
e1	4.500	4.700	0.177	0.185
L	0.900	1.150	0.035	0.045
θ	0°	10°	0°	10°