

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	16mΩ@10V	5.6A
	24mΩ@4.5V	



合肥矽普半导体

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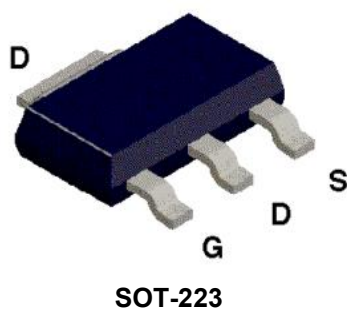
Feature

- High power and current handling capability
- Surface mount package

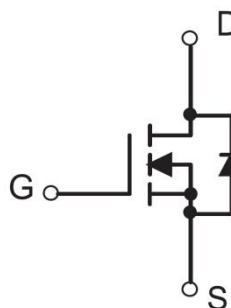
Application

- Battery Switch
- DC/DC Converter

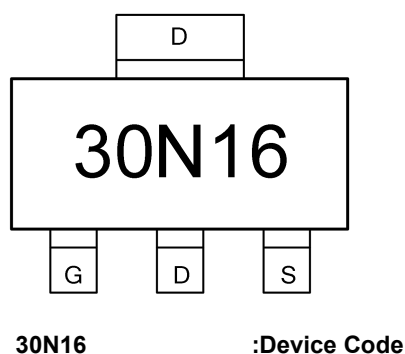
Package



Circuit diagram



Marking



Order Information

Device	Package	Unit/Tape
SP30N16TC	SOT-223	2500

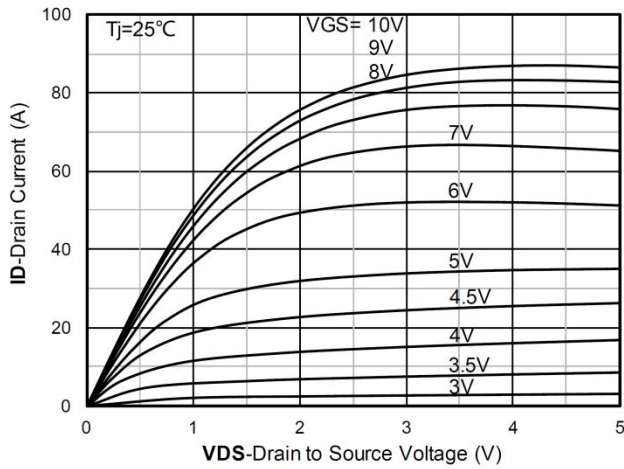
Absolute maximum ratings (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	5.6	A
Pulse Drain Current Tested	I_{DM}	22.4	A
Power Dissipation	P_D	1.8	W
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	69	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

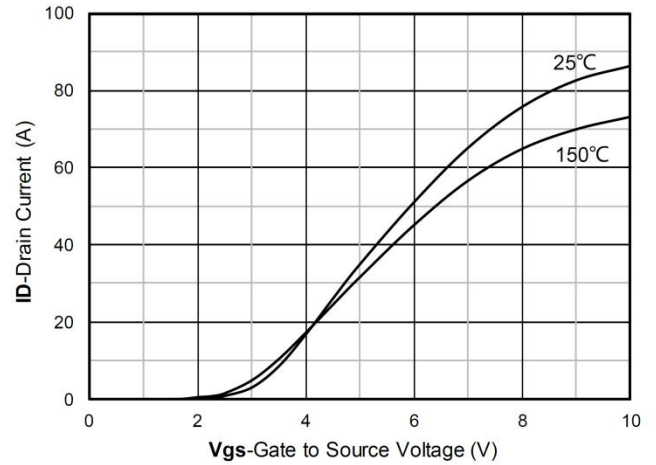
Electrical characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V , ID=250μA	30	-	-	V
Drain-Source Leakage Current	I _{DSS}	VDS=24V , VGS=0V	-	-	1	uA
Gate-Source Leakage Current	I _{GSS}	VGS=±20V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VDS=VGS , ID=250μA	1.0	1.5	2.2	V
Static Drain-Source On-Resistance	R _{DS(ON)}	VGS =10V, ID =3.2A	-	16	28	mΩ
		VGS =4.5V, ID =2.8A	-	24	42	
Dynamic characteristics						
Input Capacitance	C _{iss}	VDS=15V , VGS=0V , f=1MHz	-	420	-	pF
Output Capacitance	C _{oss}		-	60	-	
Reverse Transfer Capacitance	C _{rss}		-	53	-	
Total Gate Charge	Q _g	VDS=15V , VGS=4.5V , ID=3A	-	9	-	nC
Gate-Source Charge	Q _{gs}		-	1.9	-	
Gate-Drain Charge	Q _{gd}		-	2.1	-	
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	VDD=15V VGS=10V , RG=3.3Ω , ID=4A	-	5	-	nS
Turn-On Rise Time	t _r		-	11	-	
Turn-Off Delay Time	t _{d(off)}		-	14	-	
Turn-Off Fall Time	t _f		-	2.1	-	
Source-Drain Diode characteristics						
Diode Forward Voltage	V _{SD}	VGS=0V , IS=1A , TJ=25℃	-	-	1.2	V

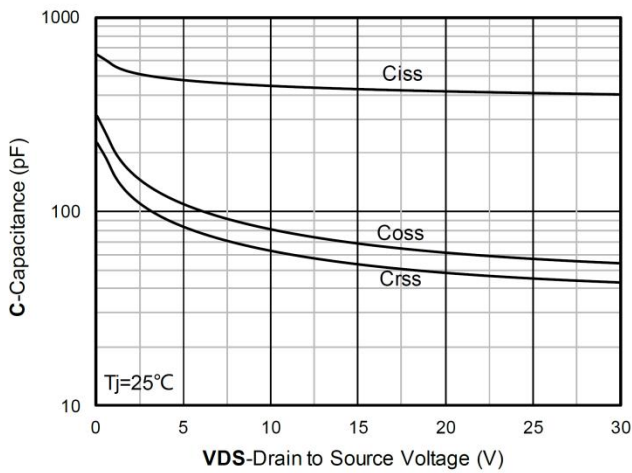
Typical Characteristics



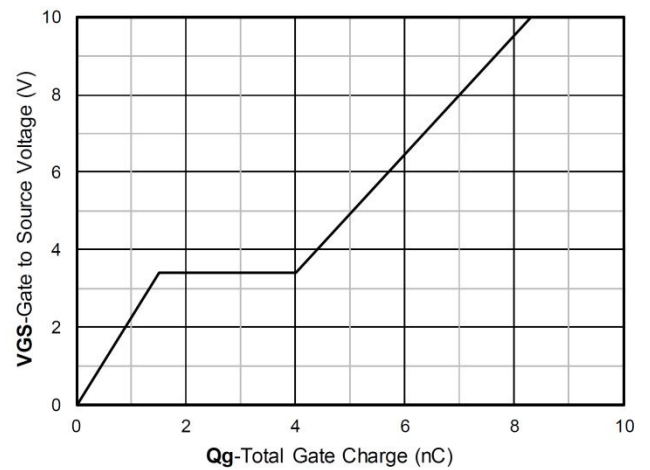
Output Characteristics



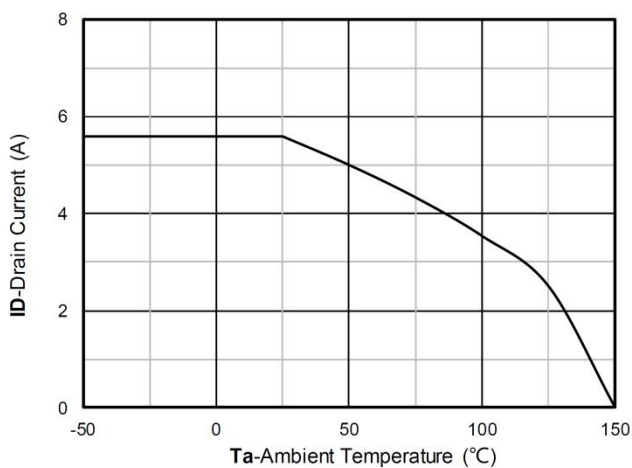
Transfer Characteristics



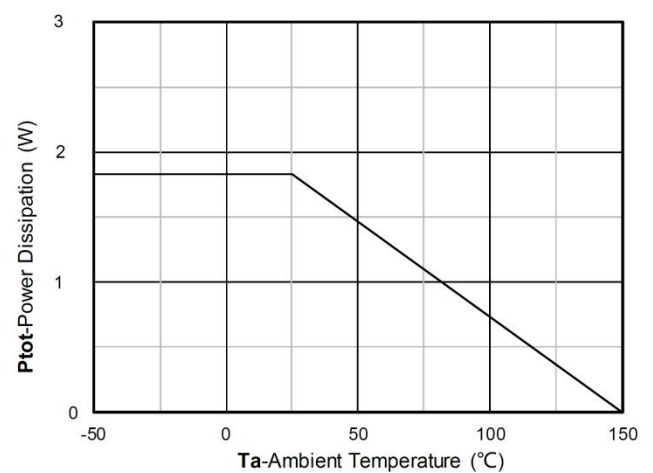
Capacitance Characteristics



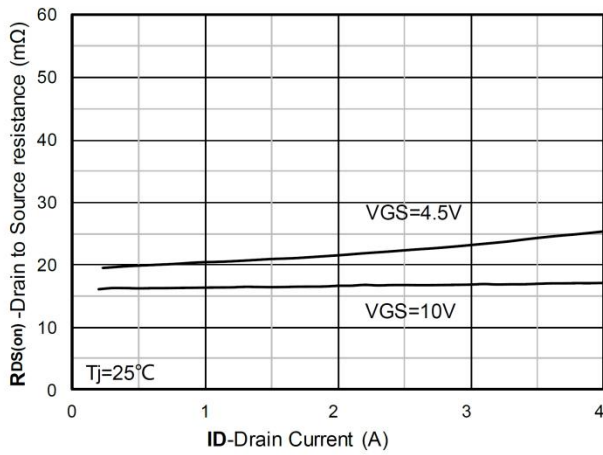
Gate Charge



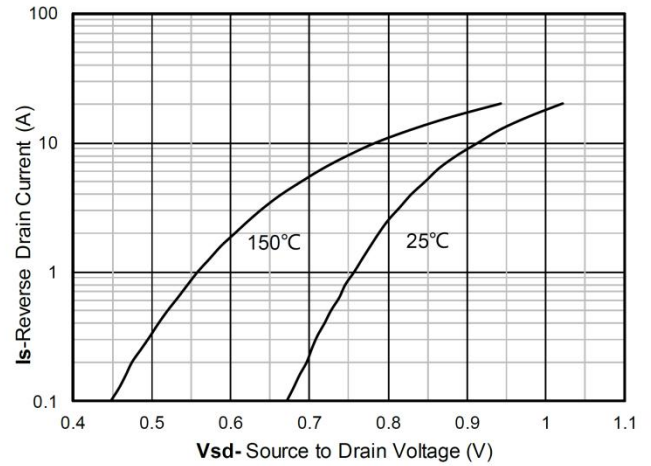
Current dissipation



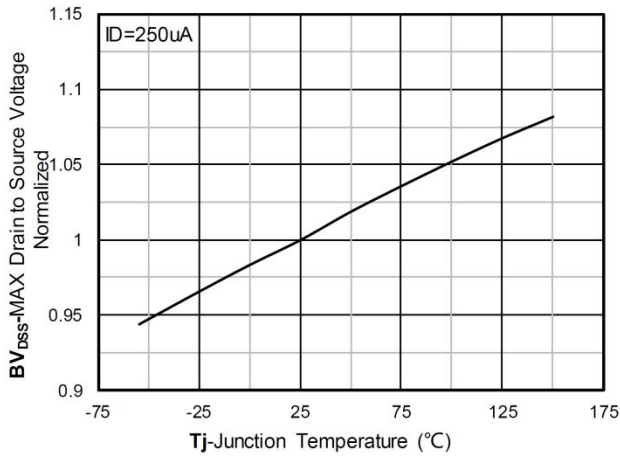
Power dissipation



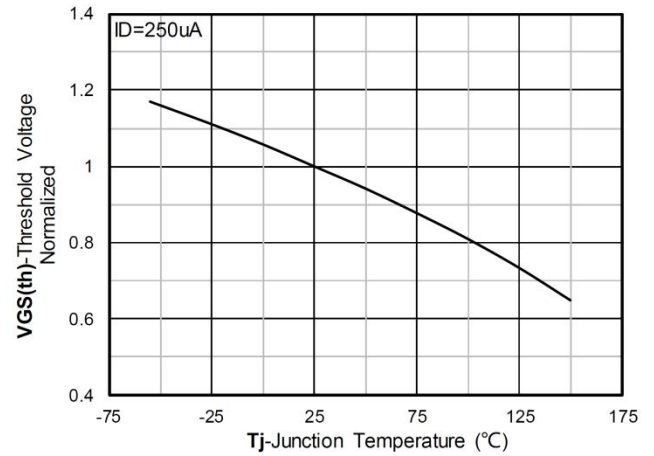
$R_{DS(on)}$ VS Drain Current



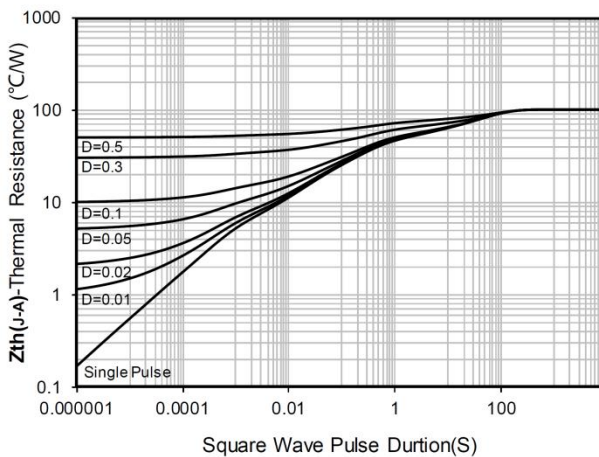
Forward characteristics of reverse diode



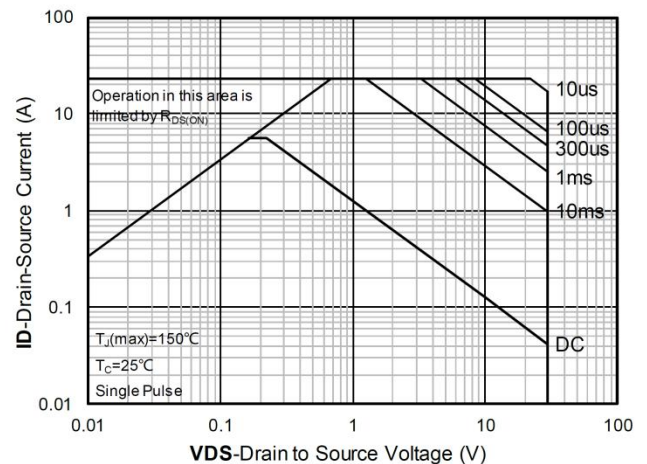
Normalized breakdown voltage



Normalized Threshold voltage

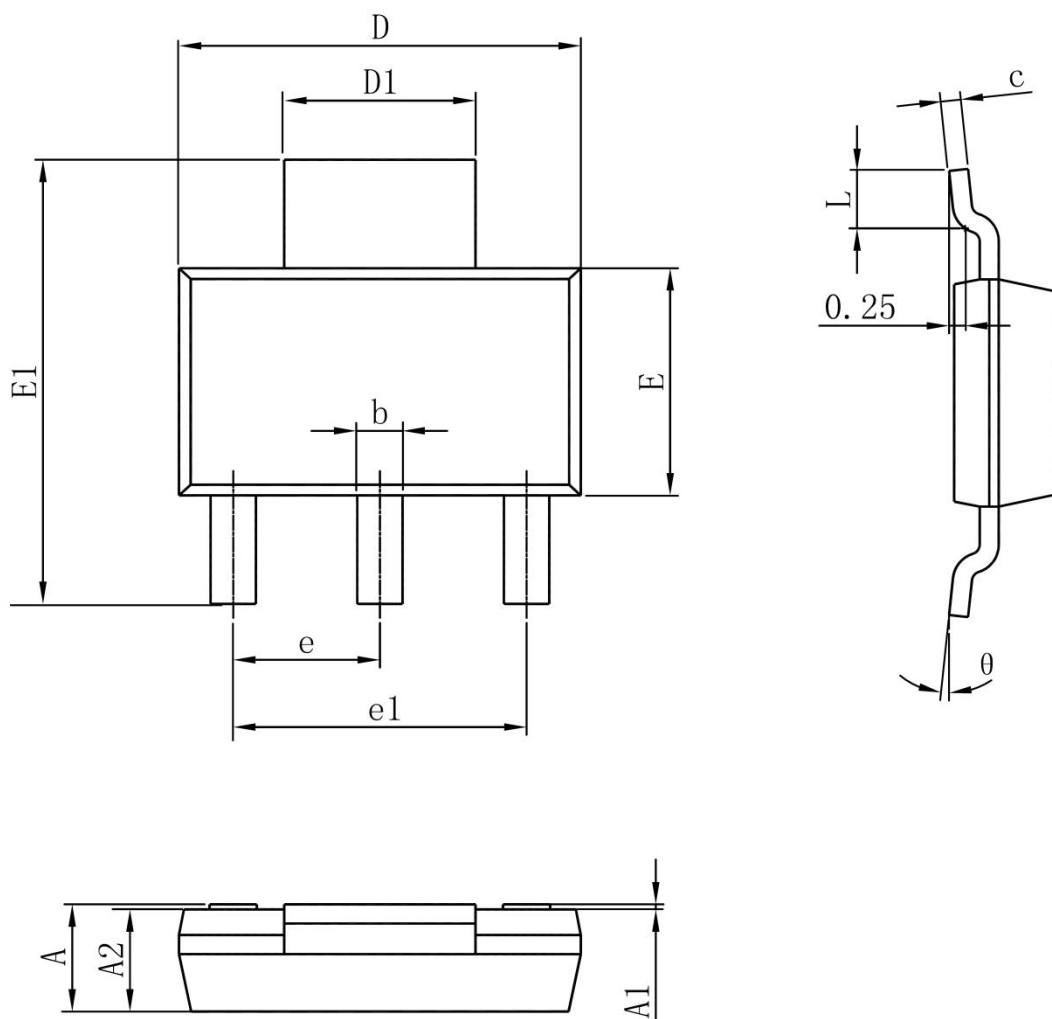


Maximum Transient Thermal Impedance



Safe Operation Area

SOT-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°