

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	2.5mΩ@10V	180A
	2.9mΩ@4.5V	



合肥矽普半导体

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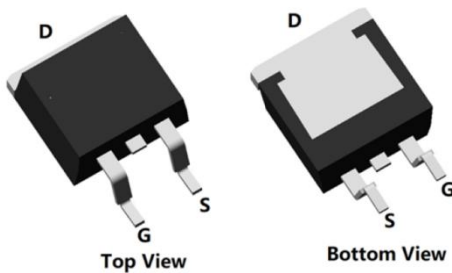
Feature

- Fast Switching
- Low Gate Charge and Rdson
- Advanced Split Gate Trench Technology
- 100% Single Pulse avalanche energy Test

Applications

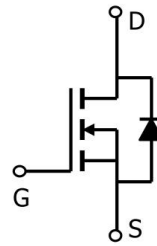
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package

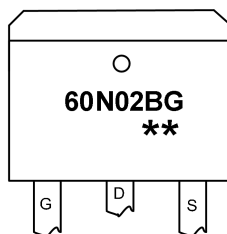


TO-263(1:G 2:D 3:S)

Circuit diagram



Marking



60N02BG
**

: Device Code
: Week Code

Order Information

Device	Package	Unit/Tape
SP60N02BGTD	TO-263	800

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current (Tc=25°C)	I_D	180	A
Continuous Drain Current (Tc=100°C)	I_D	120	A
Pulse Drain Current Tested	I_{DM}	720	A
Single Pulse Avalanche Energy ¹	E_{AS}	675	mJ
Power Dissipation (Tc=25°C)	P_D	170	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.74	°C/W
Maximum Junction Temperature	T_J	-55 to 150	°C
Storage Temperature Range	T_{STG}	-55 to 150	°C

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

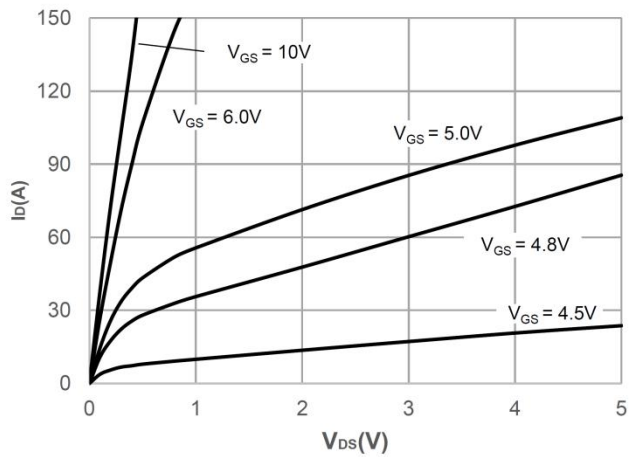
Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V, ID=250mA	60	-	-	V
Zero Gate Voltage Drain Current	IDSS	VDS=48V, VGS=0V	-	-	1	uA
Gate Leakage Current	IGSS	VGS=±20V, VDS=0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VDS=VGS, ID=250uA	1.2	1.7	2.2	V
Drain-Source On-state Resistance	RDS(ON)	VGS=10V, ID=40A	-	2.5	3.2	mΩ
		VGS=4.5V, ID=40A	-	2.9	5.2	
Dynamic Characteristics						
Input Capacitance	Ciss	VGS=0V, VDS=30V,F=1MHz	-	5441	-	pF
Output Capacitance	Coss		-	2201	-	
Reverse Transfer Capacitance	Crss		-	136	-	
Total Gate Charge	Qg	VDS=30V, VGS=10V, ID=30A	-	101	-	nC
Gate-Source Charge	Qgs		-	17	-	
Gate-Drain Charge	Qgd		-	21	-	
Switching Characteristics						
Turn-On Delay Time	td(on)	VDD=30V, ID=30A, VGS=10V, RG=3Ω	-	15	-	nS
Rise Time	tr		-	34	-	
Turn-Off Delay Time	td(off)		-	76	-	
Fall Time	tf		-	95	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	VSD	VGS=0V , IS=1A , TJ=25℃	-	-	1.2	V
Maximum Body-Diode Continuous Current	Is		-	-	180	A
Reverse Recovery Time	Trr	Is=20 A,di/dt=100 A/μs, TJ=25℃	-	45	-	nS
Reverse Recovery Charge	Qrr		-	41	-	nC

Note :

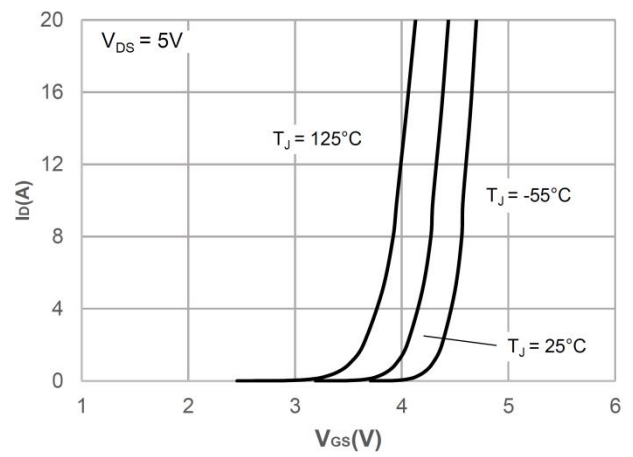
The test condition is $V_{DD}=30V, V_{GS}=10V, L=0.3mH, R_G=25\Omega$



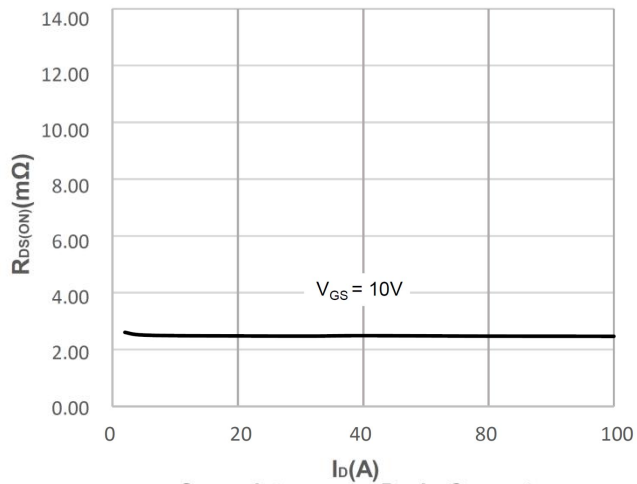
Typical Characteristics



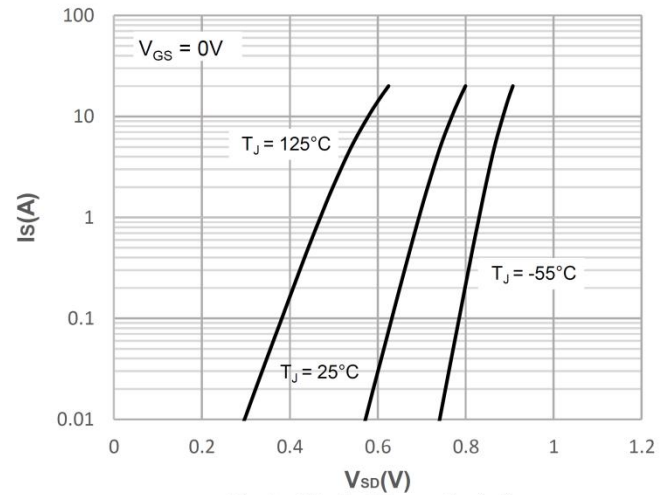
Output Characteristics



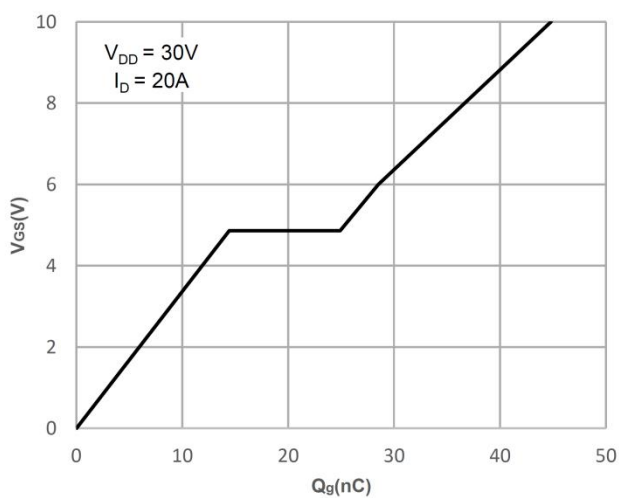
Typical Transfer Characteristics



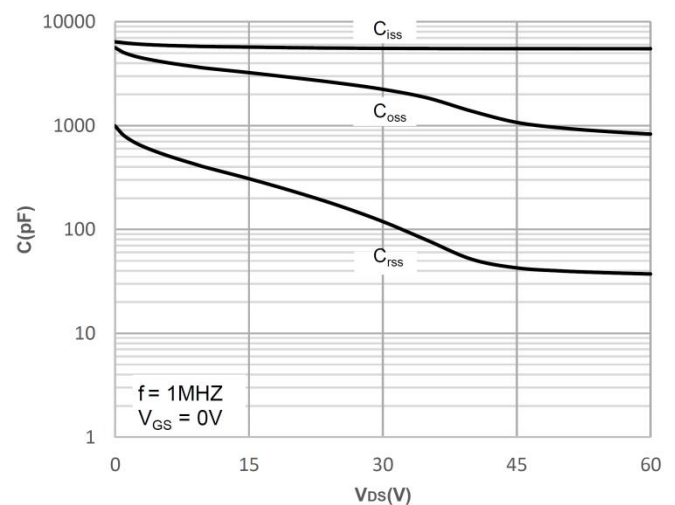
On-resistance vs. Drain Current



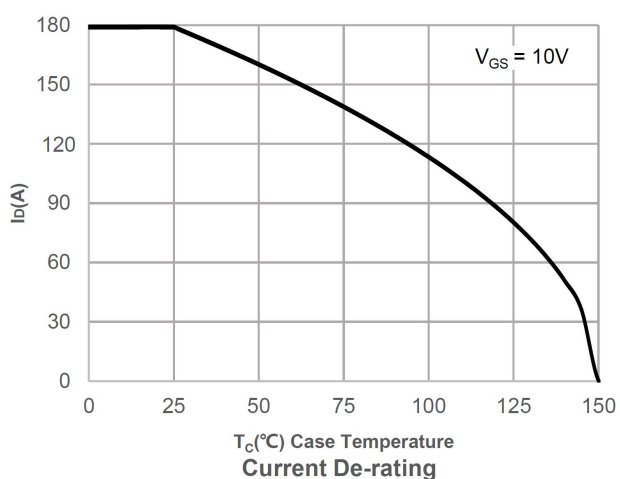
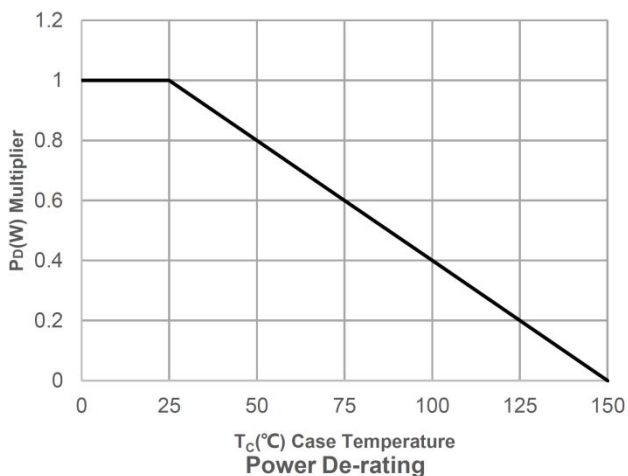
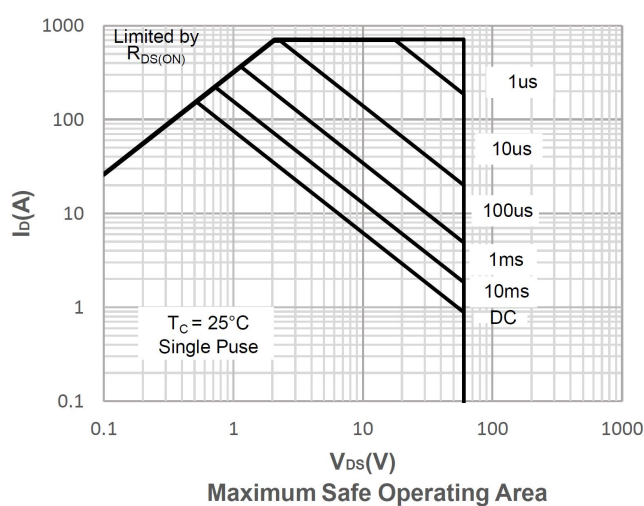
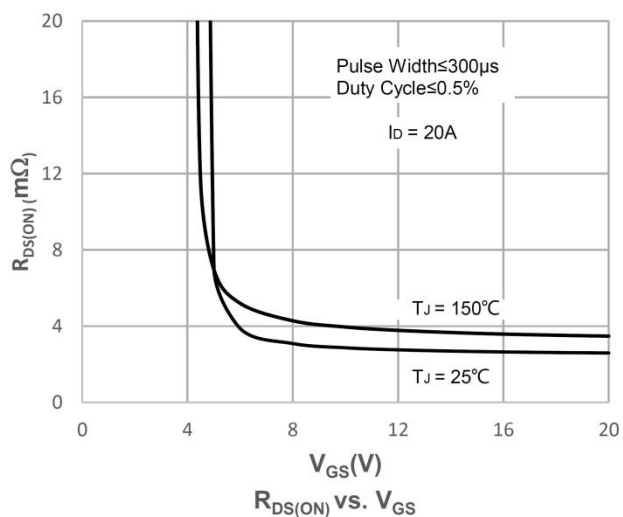
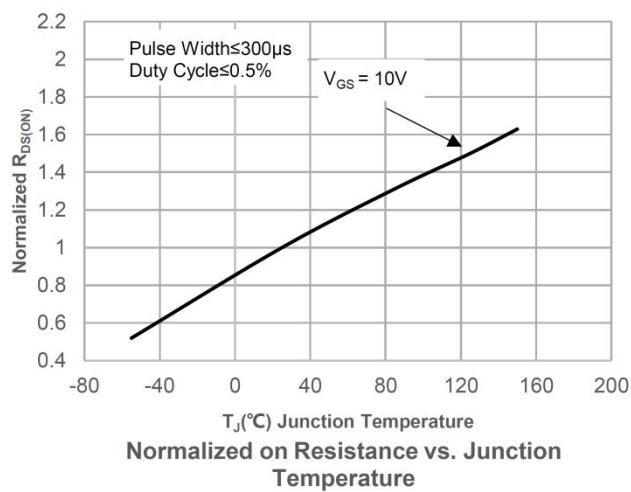
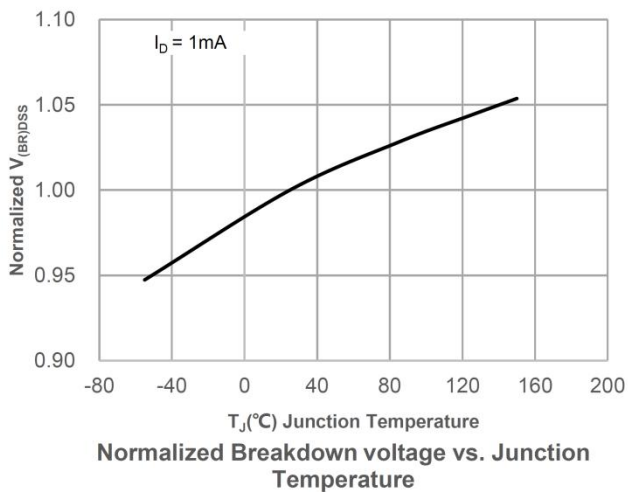
Body Diode Characteristics

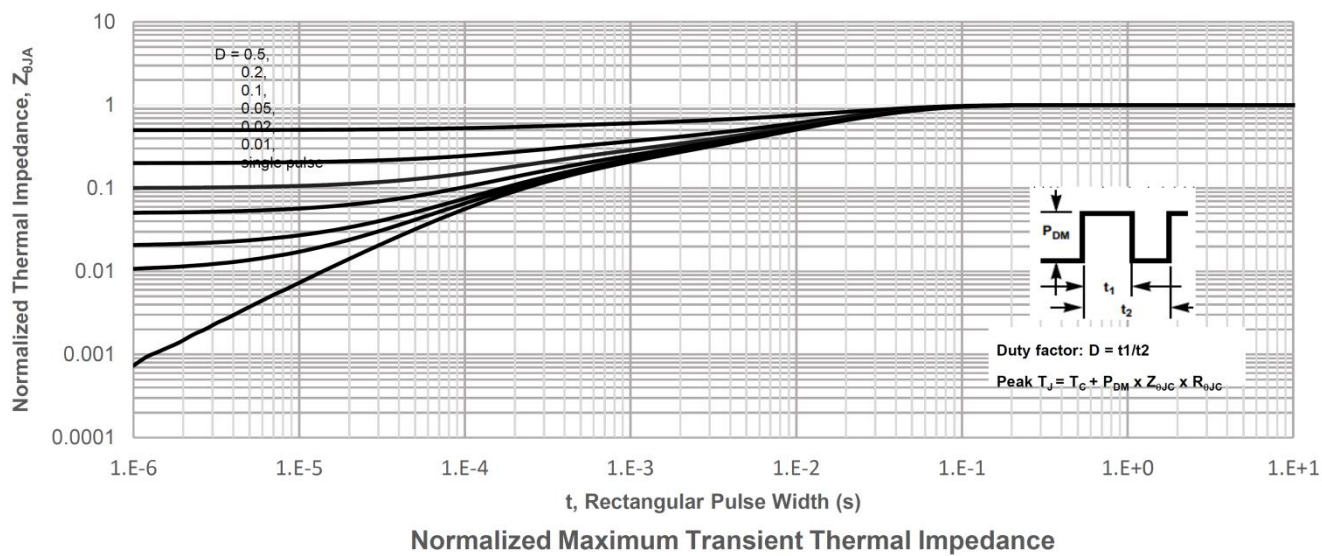


Gate Charge Characteristics

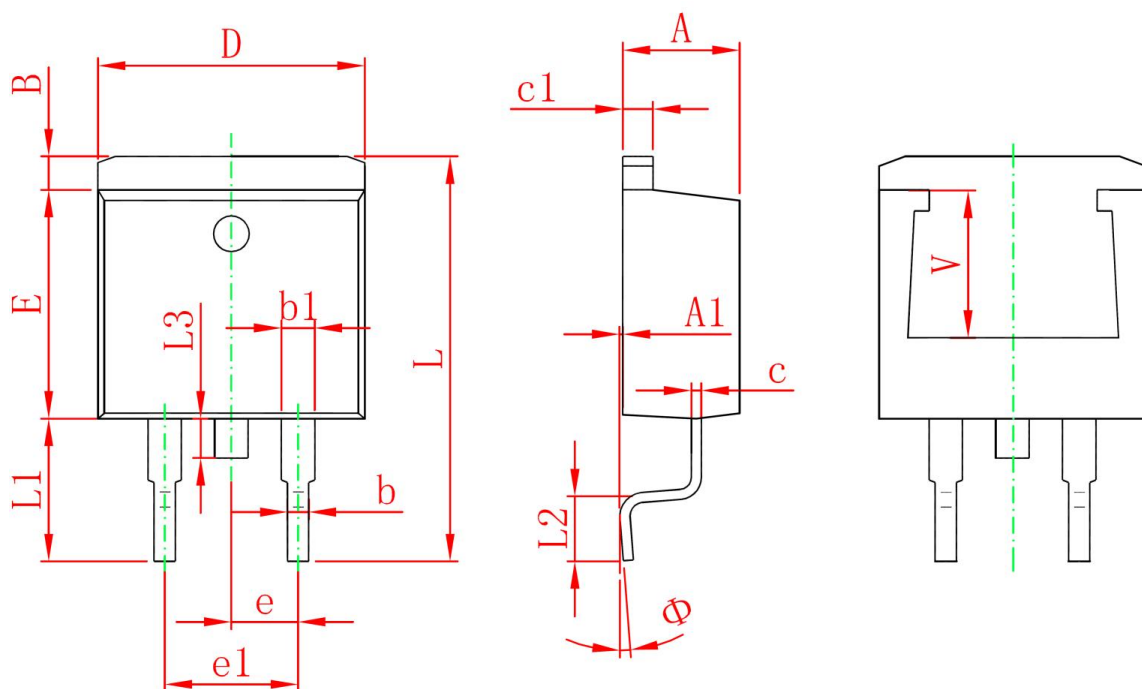


Capacitance Characteristics





TO-263 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.120	1.420	0.044	0.056
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
L	14.940	15.500	0.588	0.610
L1	4.950	5.450	0.195	0.215
L2	2.340	2.740	0.092	0.108
L3	1.300	1.700	0.051	0.067
Φ	0°	8°	0°	8°
V	5.600 REF.		0.220 REF.	