Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	1.7mΩ@10V	200A

合肥矽普半导体
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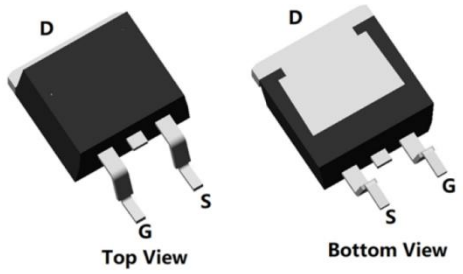
Feature

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

Applications

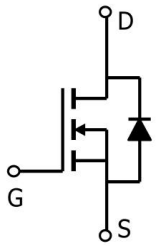
- Charger
- Battery management
- Power Switching application

Package

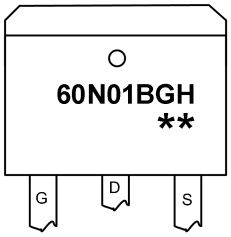


TO-263(1:G 2:D 3:S)

Circuit diagram



Marking



60N01BGH : Product code
** : Week code

Order Information

Device	Package	Unit/Tape
SP60N01BGHTD	TO-263	800

Absolute maximum ratings (Ta=25℃ unless otherwise noted)

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current(Tc=25℃)	Silicon limit	I_D	330	A
Continuous Drain Current(Tc=25℃)	Package limit	I_D	200	A
Pulsed Drain Current		I_{DM}	800	A
Single Pulse Avalanche Energy[1]		E_{AS}	1332	mJ
Power Dissipation(Tc=25℃)		P_D	213	W
Thermal Resistance Junction-to-Case		$R_{\theta JC}$	0.58	℃/W
Storage Temperature Range		T_{STG}	-55 to 150	℃
Operating Junction Temperature Range		T_J	-55 to 150	℃

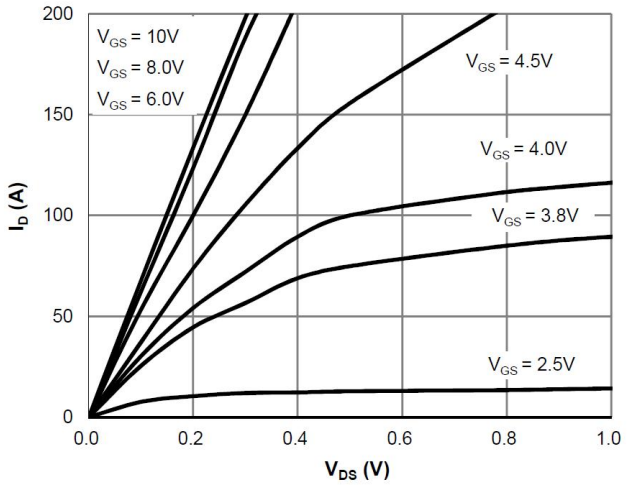
Electrical characteristics (Ta=25℃, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	VGS=0V , ID=250uA	60	-	-	V
Drain Cut-Off Current	I_{DSS}	VDS=48V , VGS=0V	-	-	1	μA
Gate Leakage Current	I_{GSS}	VGS=±20V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	VGS=VDS , ID =250uA	2.0	3.0	4.0	V
Drain-Source ON Resistance	$R_{DS(ON)}$	VGS=10V , ID=30A	-	1.7	2.1	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	VDS=25V , VGS=0V , f=1MHz	-	7397	-	pF
Output Capacitance	C_{oss}		-	3885	-	
Reverse Transfer Capacitance	C_{rss}		-	32	-	
Total Gate Charge	Q_g	VDS=48V , VGS=10V , ID=30A	-	105	-	nC
Gate-Source Charge	Q_{gs}		-	20	-	
Gate-Drain Charge	Q_{gd}		-	18	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	VDD=48V,VGS=10V,RG=2Ω, ID=30A	-	32.3	-	nS
Rise Time	t_r		-	52.1	-	
Turn-Off Delay Time	$t_{d(off)}$		-	91	-	
Fall Time	t_f		-	27.8	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	I_S = 1A, VGS = 0V	-	-	1.2	V
Maximum Body-Diode Continuous Current	I_S		-	-	200	A
Reverse Recovery Time	Trr	I_S=20A, di/dt=100A/us, TJ=25℃	-	76	-	nS
Reverse Recovery Charge	Qrr		-	106	-	nC

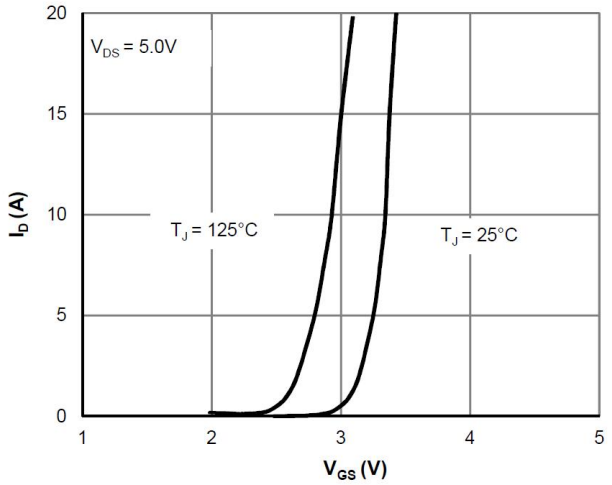
Note:

1. The EAS test condition is VDD=30V,VGS=10V,L=0.5mH,RG=25Ω

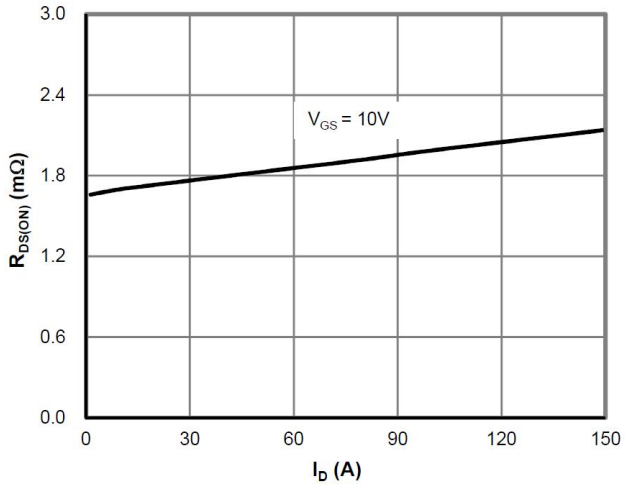
Typical Characteristics



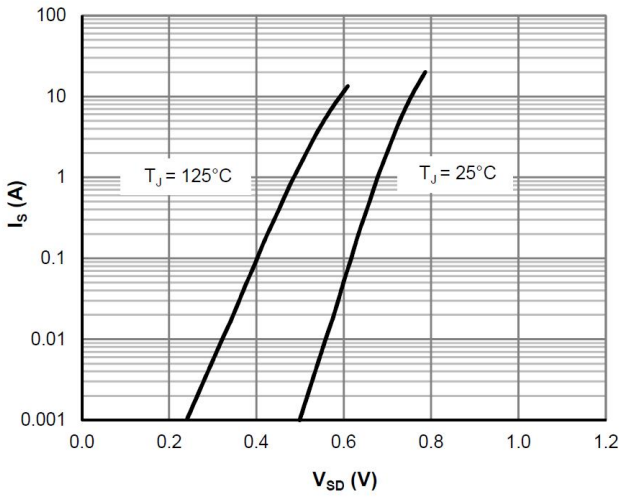
Saturation Characteristics



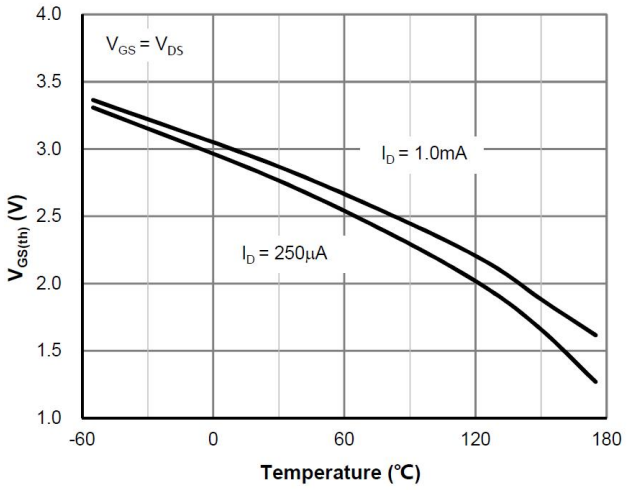
Transfer Characteristics



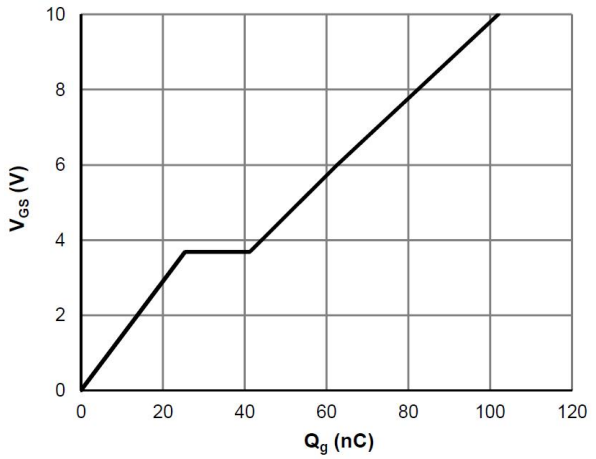
$R_{DS(ON)}$ vs. Drain Current



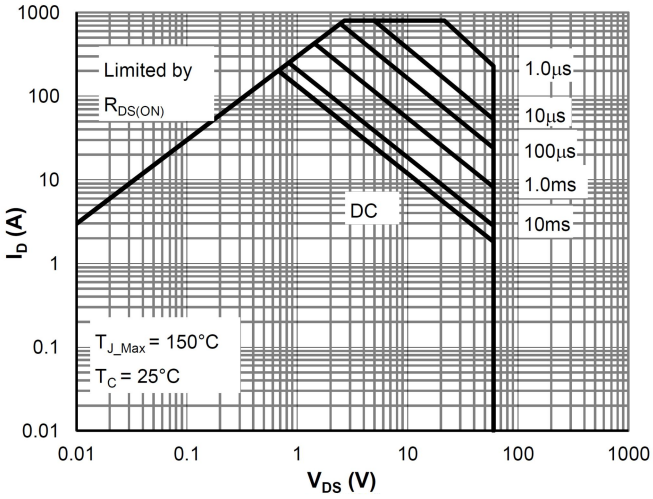
Body-Diode Characteristics



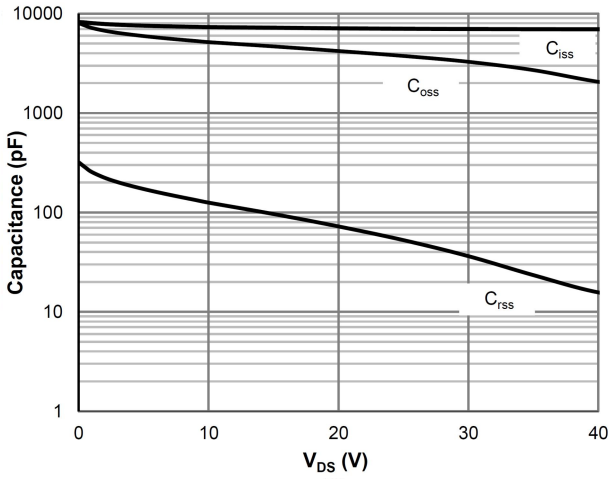
$V_{GS(th)}$ vs. Junction Temperature



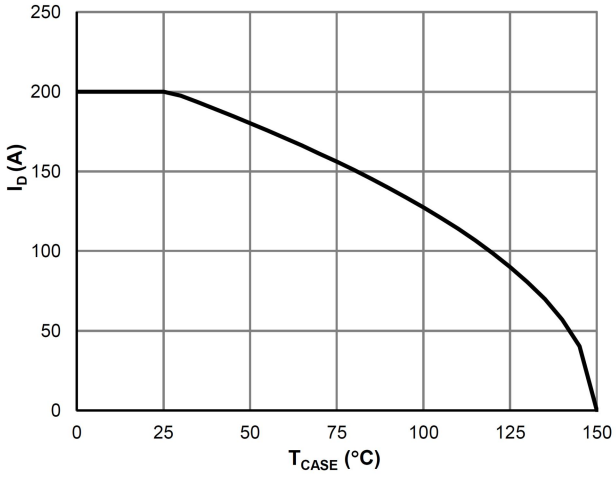
Gate Charge



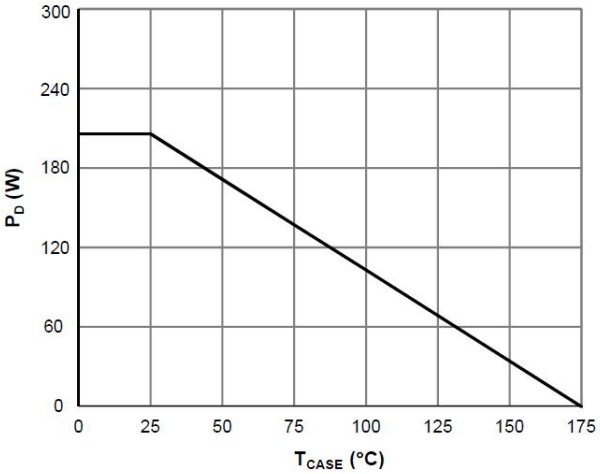
Maximum Safe Operating Area



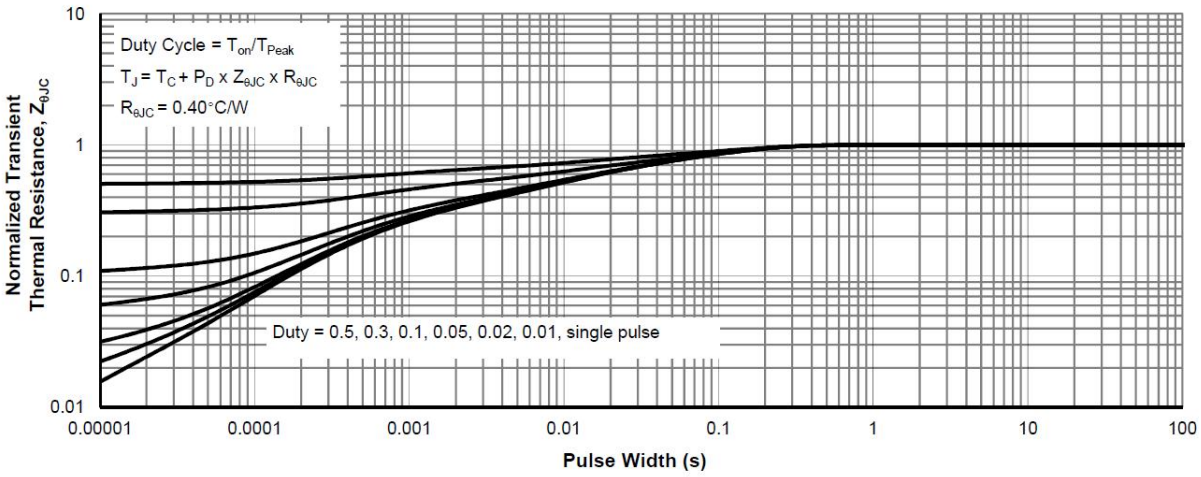
Capacitance Characteristics



Current De-rating

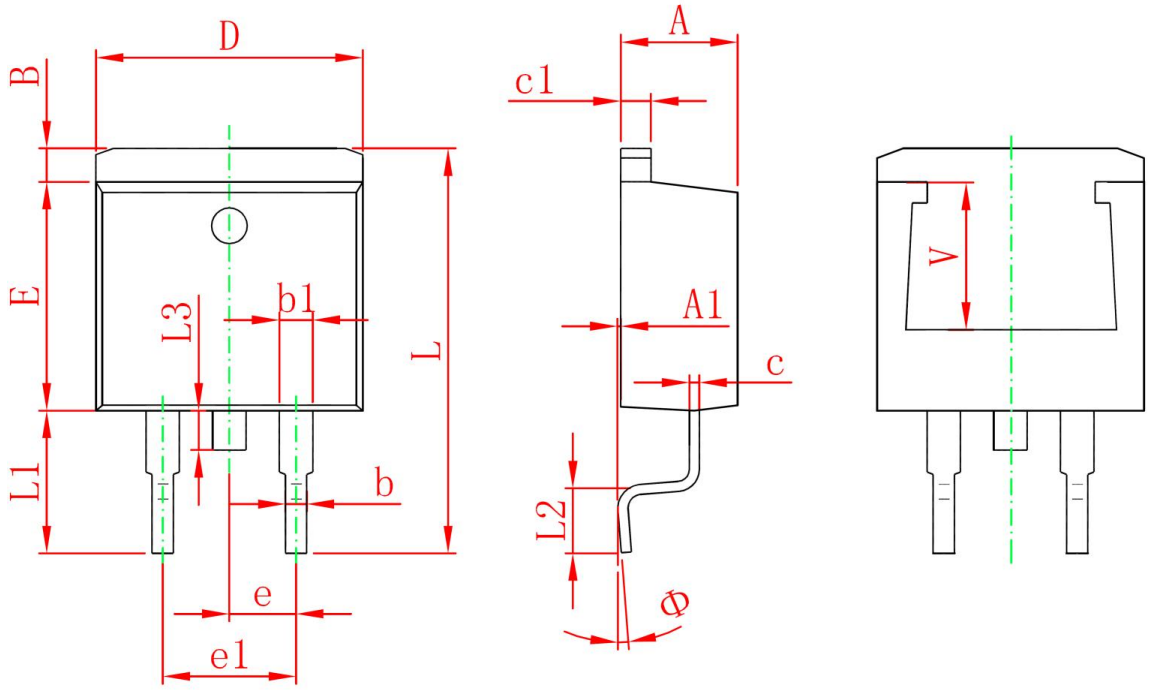


Power De-rating



Normalized Maximum Transient Thermal Impedance

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.	