

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	9mΩ@10V	60A
	11mΩ@4.5V	



合肥矽普半导体

Siliup Semiconductor Technology Co., Ltd

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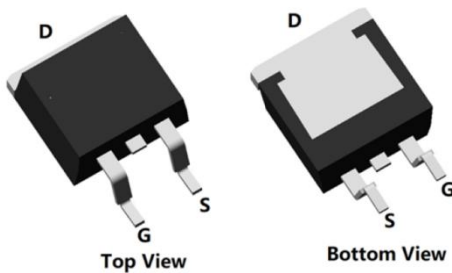
Feature

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

Applications

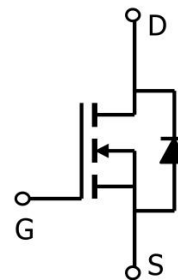
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package

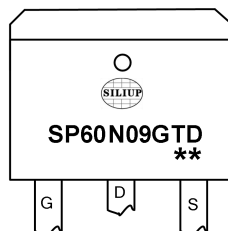


TO-263(1:G 2:D 3:S)

Circuit diagram



Marking



SP60N09GTD : Device Code
****** : Week Code

Order Information

Device	Package	Unit/Tape
SP60N09GTD	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	60	A
Continuous Drain Current (Tc=100°C)	I_D	38	A
Pulse Drain Current Tested	I_{DM}	240	A
Single Pulse Avalanche Energy ¹	E_{AS}	100	mJ
Power Dissipation (Tc=25°C)	P_D	227	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.55	°C/W
Maximum Junction Temperature	T_J	-55 to 150	°C
Storage Temperature Range	T_{STG}	-55 to 150	°C

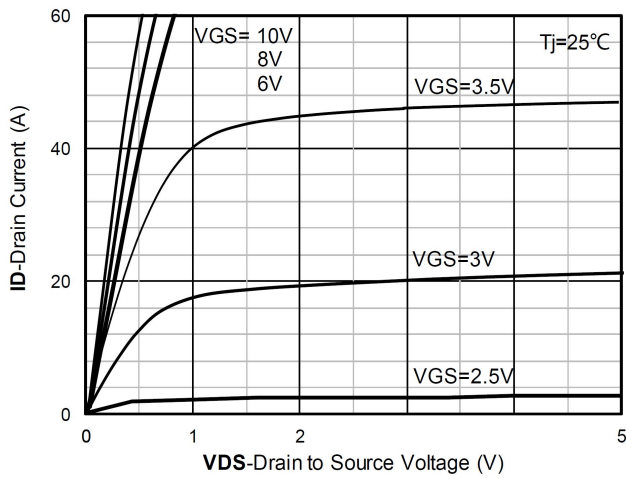
Electrical characteristics (Ta=25°C, unless otherwise noted)

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	1.0	1.6	2.5	V
Drain-Source On-state Resistance	RDS(ON)	VGS=10V, ID=20A	-	9	11.5	mΩ
		VGS=4.5V, ID=10A	-	11	15	
Dynamic Characteristics						
Input Capacitance	Ciss	VDS=30V, VGS=0V, f=1MHz	-	998	-	pF
Output Capacitance	Coss		-	242	-	
Reverse Transfer Capacitance	Crss		-	8	-	
Total Gate Charge	Qg	VDS=30V, VGS=10V, ID=35A	-	17	-	nC
Gate-Source Charge	Qgs		-	4.5	-	
Gate-Drain Charge	Qgd		-	2.6	-	
Switching Characteristics						
Turn-On Delay Time	td(on)	VDD=30V, VGS=10V, ID=35A, RG=3Ω	-	16.7	-	nS
Rise Time	tr		-	48	-	
Turn-Off Delay Time	td(off)		-	15.4	-	
Fall Time	tf		-	52	-	
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		-	-	60	A
Reverse Recovery Time	Trr	IS=35A, di/dt=100A/μs, TJ=25℃	-	26	-	nS
Reverse Recovery Charge	Qrr		-	17.1	-	nC

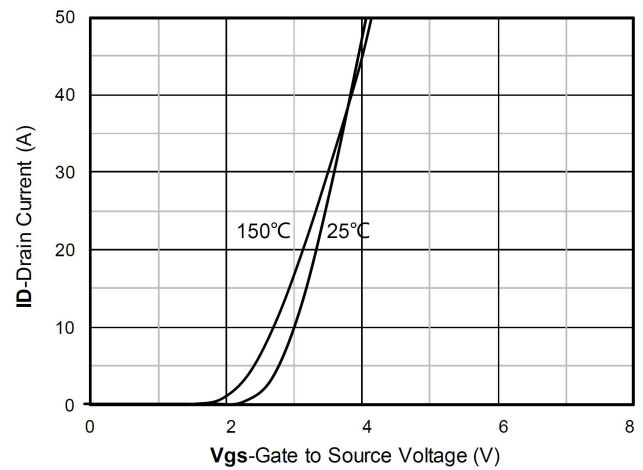
Note :

1. The test condition is $V_{DD}=30V, V_{GS}=10V, L=0.5mH, R_G=25\Omega$

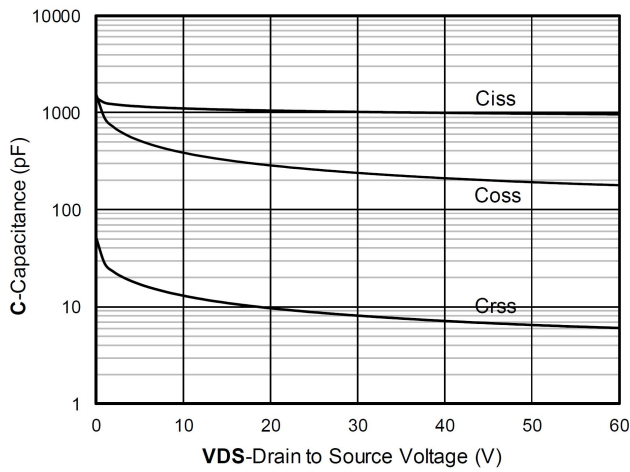
Typical Characteristics



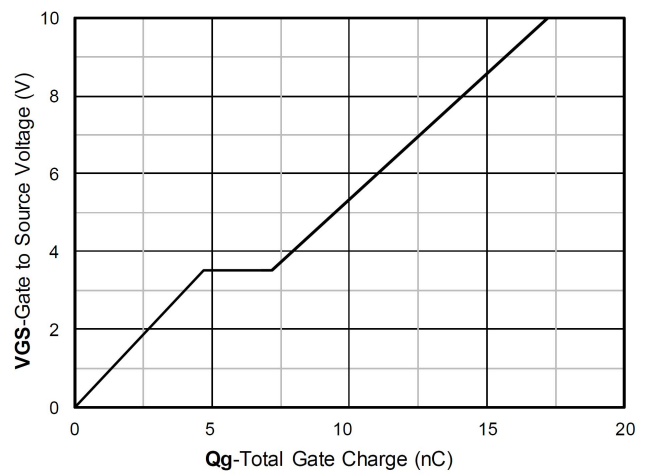
Output Characteristics



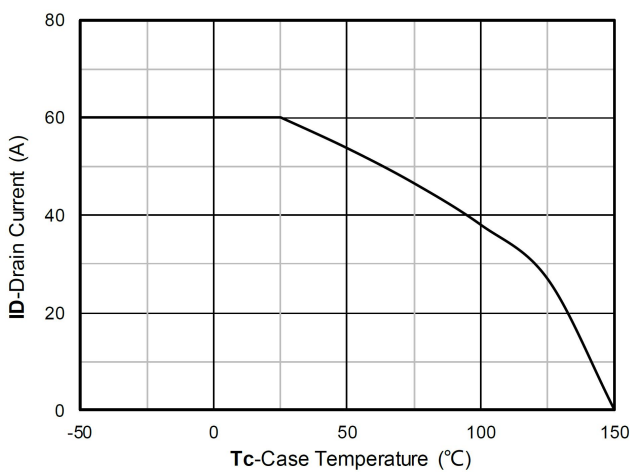
Transfer Characteristics



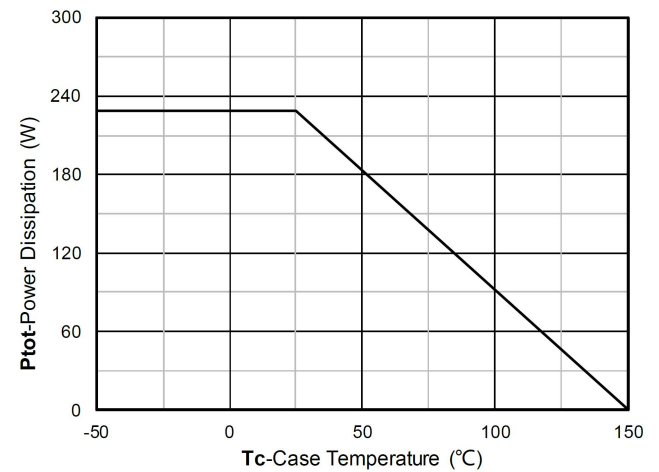
Capacitance Characteristics



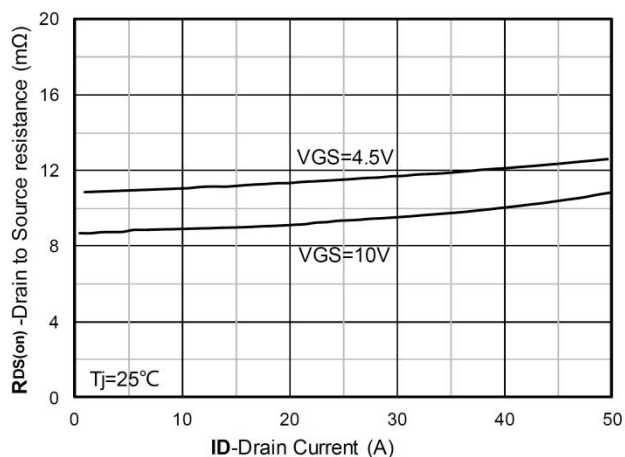
Gate Charge



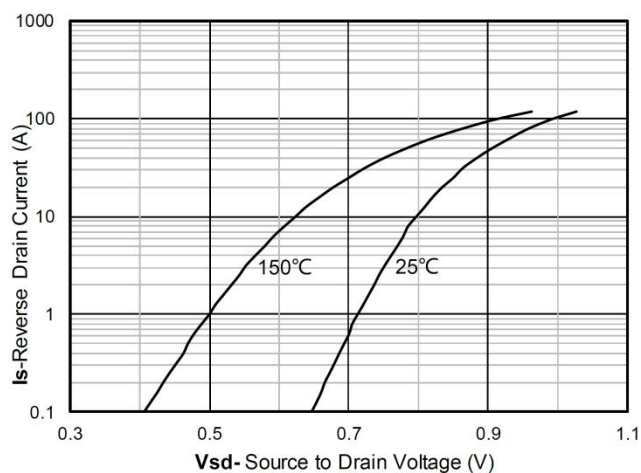
Current dissipation



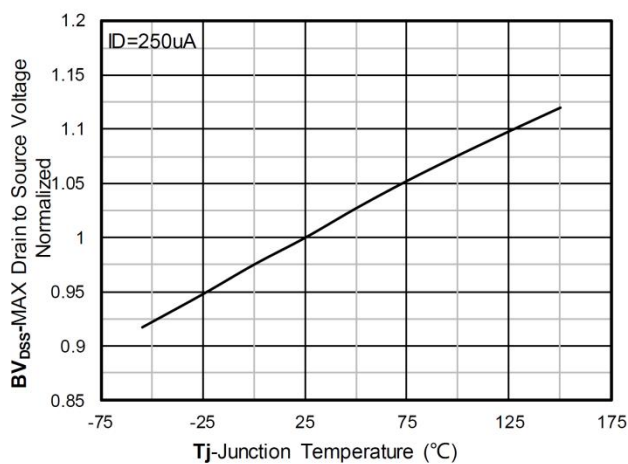
Power dissipation



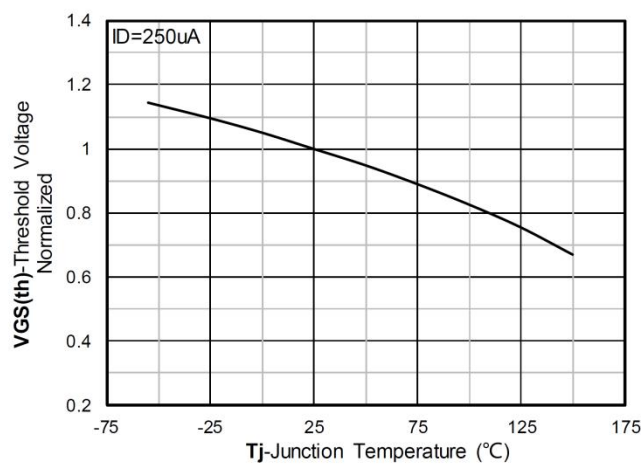
RDS(on) VS Drain Current



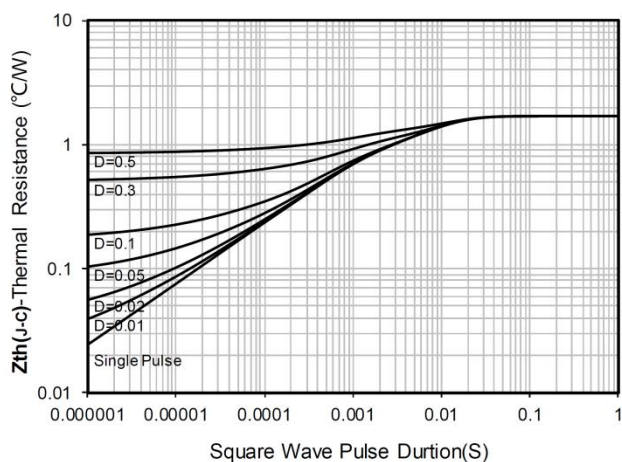
Forward characteristics of reverse diode



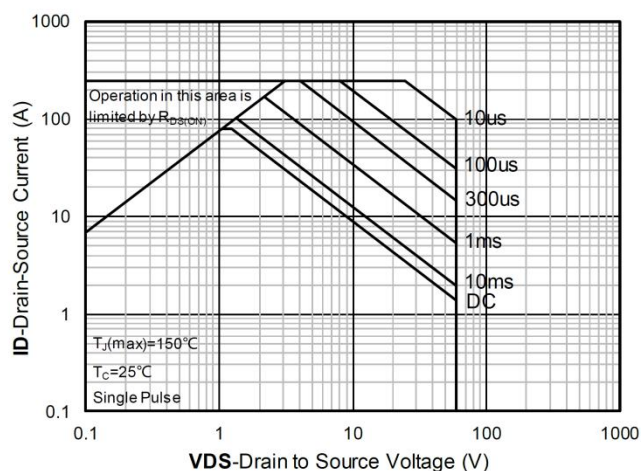
Normalized breakdown voltage



Normalized Threshold voltage

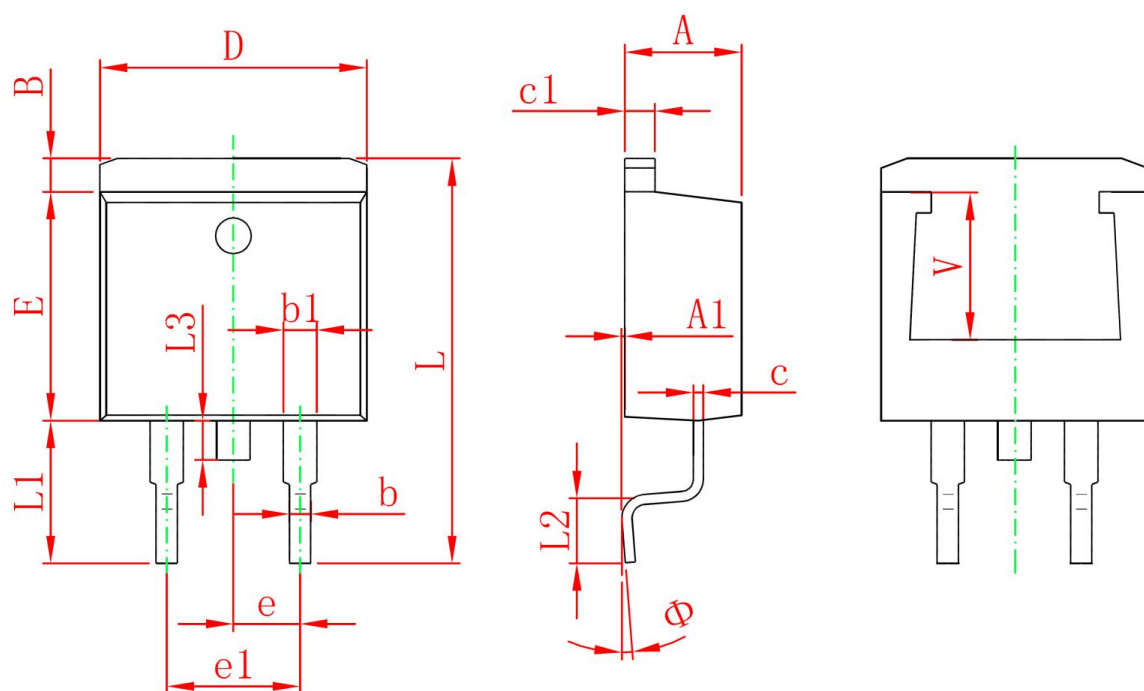


Maximum Transient Thermal Impedance



Safe Operation Area

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.	