Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	4.5mΩ@10V	100A
	5.5mΩ@4.5V	

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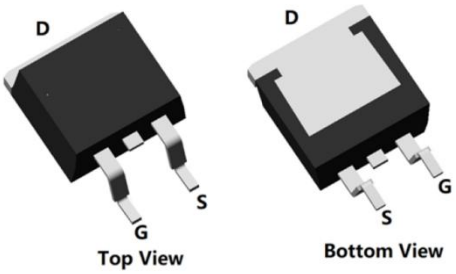
Feature

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

Applications

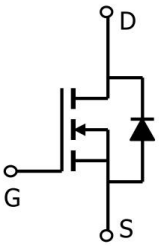
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package

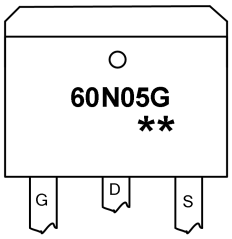


TO-263(1:G 2:D 3:S)

Circuit diagram



Marking



60N05G : Device Code
** : Week Code

Order Information

Device	Package	Unit/Tape
SP60N05GTD	TO-263	800

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

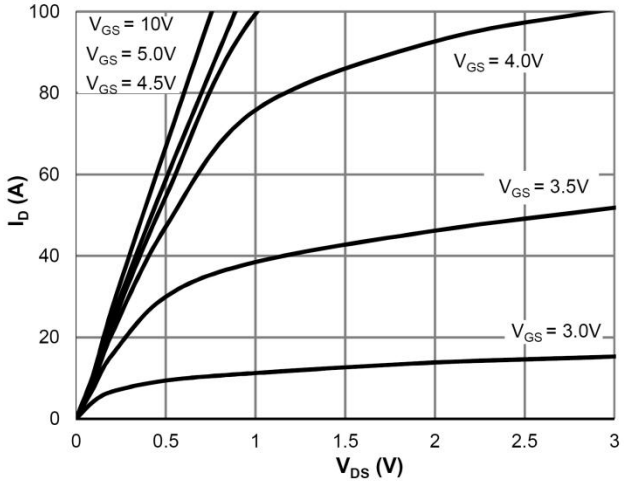
Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	60	V
Gate-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current (Tc=25°C)	I_D	100	A
Continuous Drain Current (Tc=100°C)	I_D	67	A
Pulse Drain Current Tested	I_{DM}	400	A
Single Pulse Avalanche Energy[1]	E_{AS}	256	mJ
Power Dissipation (Tc=25°C)	P_D	95	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	1.32	°C/W
Maximum Junction Temperature	T_J	-55 to 150	°C
Storage Temperature Range	T_{STG}	-55 to 150	°C

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

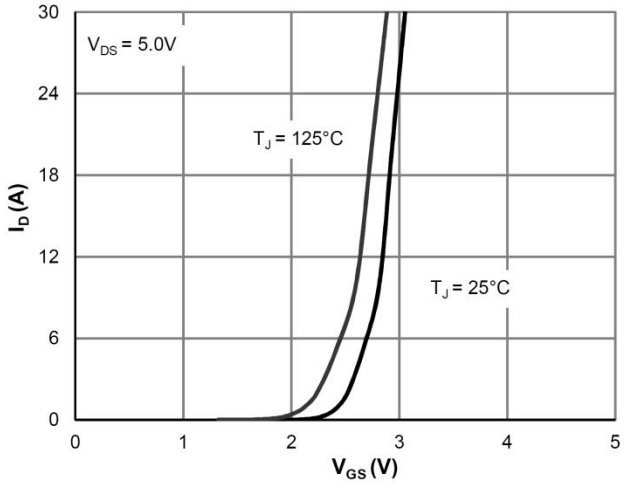
Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	VGS=0V, ID=250mA	60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	VDS=48V, VGS=0V	-	-	1	uA
Gate Leakage Current	I_{GSS}	VGS=±20V, VDS=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	VDS=VGS, ID=250uA	1.0	1.6	2.5	V
Drain-Source On-state Resistance	$R_{DS(ON)}$	VGS=10V, ID=20A	-	4.5	6.0	mΩ
		VGS=4.5V, ID=10A	-	5.5	7.3	
Dynamic Characteristics						
Input Capacitance	C_{iss}	VGS=0V, VDS=30V,F=1MHz	-	2174	-	pF
Output Capacitance	C_{oss}		-	632	-	
Reverse Transfer Capacitance	C_{rss}		-	19	-	
Total Gate Charge	Q_g	VDS=30V, VGS=10V, ID=20A	-	37.5	-	nC
Gate-Source Charge	Q_{gs}		-	6.5	-	
Gate-Drain Charge	Q_{gd}		-	10	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	VDD=30V, ID=20A, VGS=10V, R_G=4.7Ω	-	9	-	nS
Rise Time	t_r		-	35	-	
Turn-Off Delay Time	$t_{d(off)}$		-	32	-	
Fall Time	t_f		-	58	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	VGS=0V , IS=1A , TJ=25℃	-	-	1.2	V
Maximum Body-Diode Continuous Current	I_S		-	-	100	A
Reverse Recovery Time	Trr	I_S=20 A,di/dt=100 A/μs, T_J=25℃	-	27	-	nS
Reverse Recovery Charge	Qrr		-	39	-	nC

Note :
The test condition is VDD=30V,VGS=10V,L=0.5mH,RG=25Ω

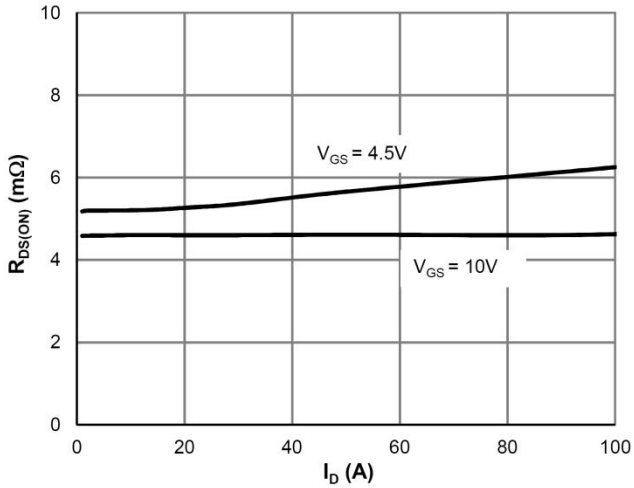
Typical Characteristics



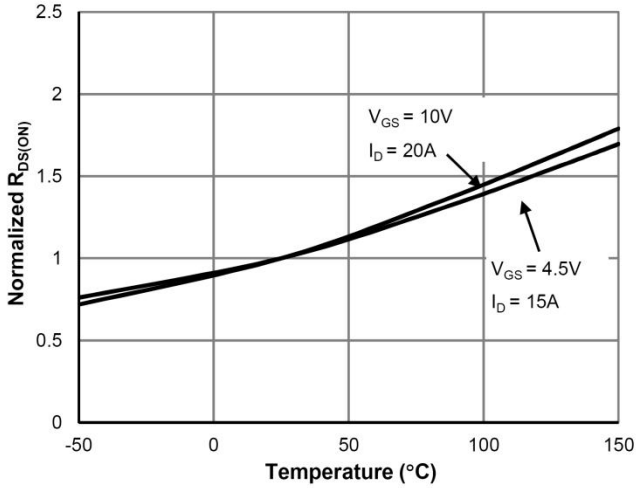
Saturation Characteristics



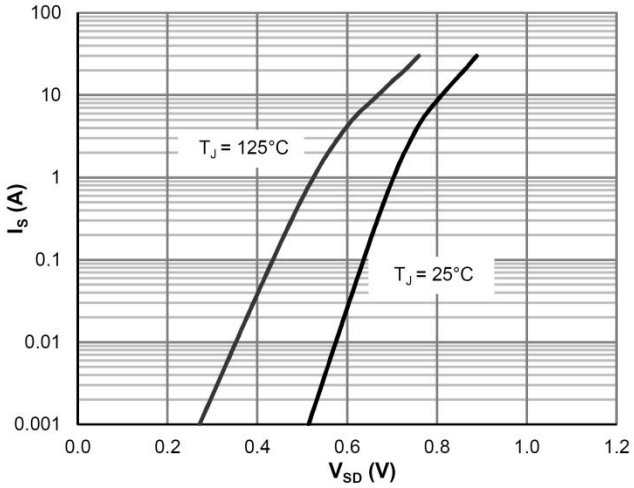
Transfer Characteristics



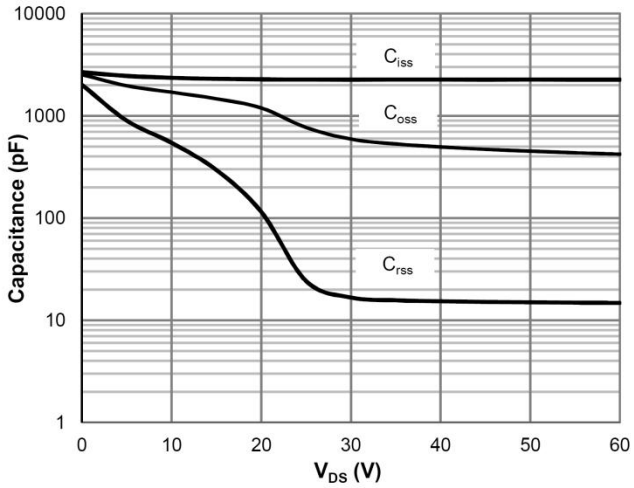
$R_{DS(ON)}$ vs. Drain Current



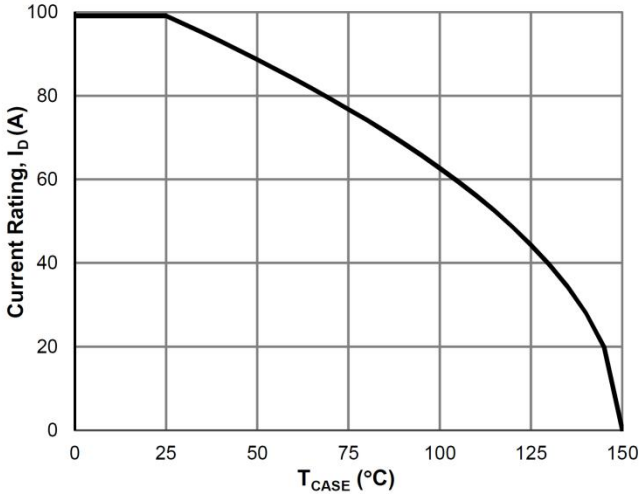
$R_{DS(ON)}$ vs. Junction Temperature



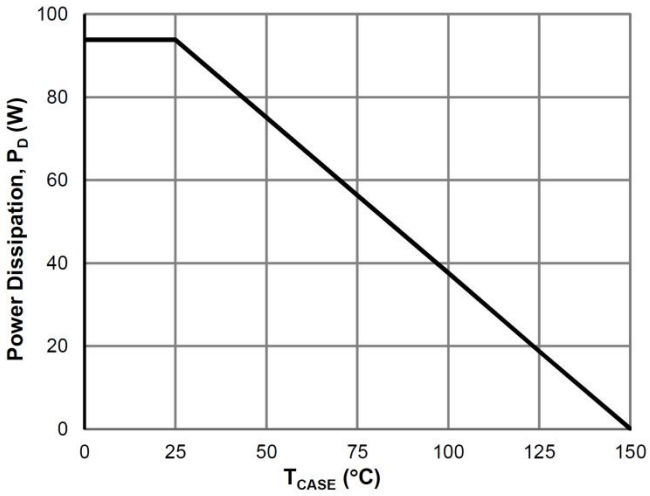
Body-Diode Characteristics



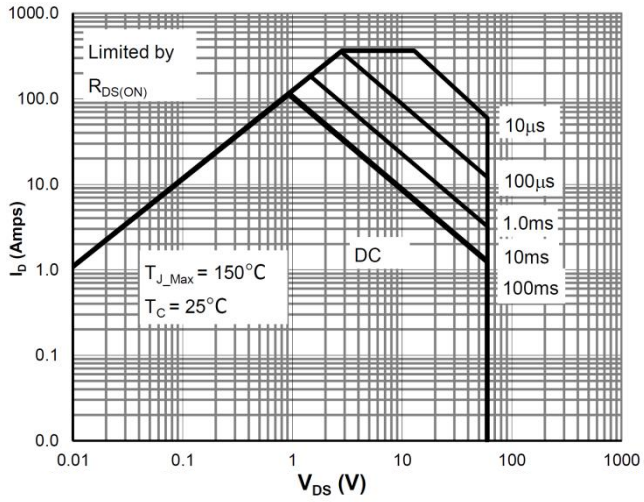
Capacitance Characteristics



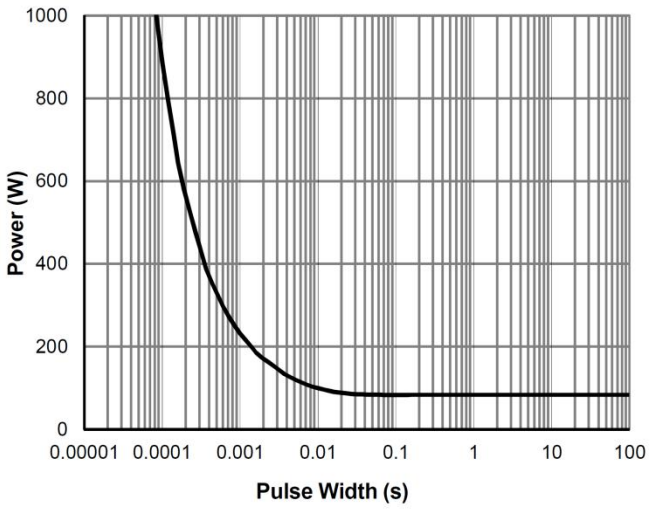
Current De-rating



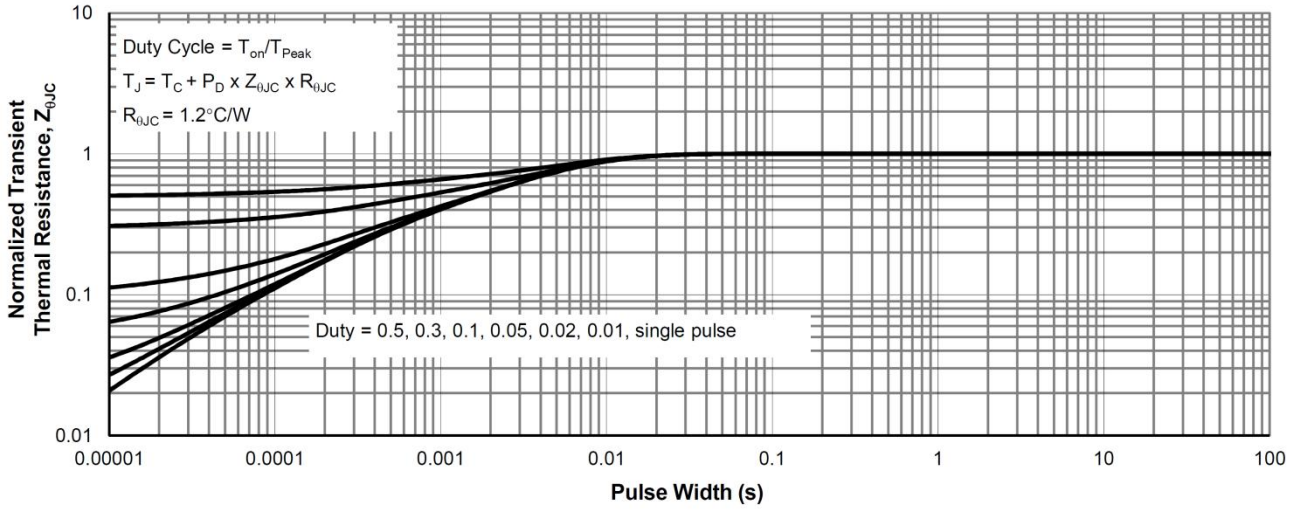
Power De-rating



Maximum Safe Operating Area

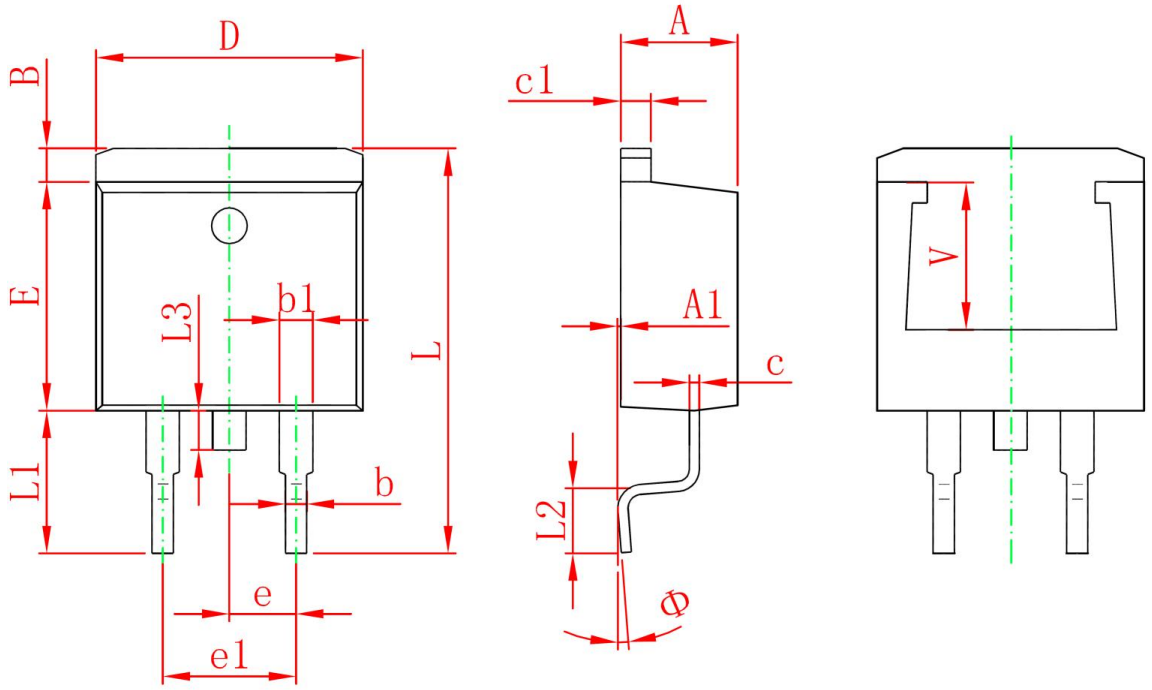


Single Pulse Power Rating, Junction-to-Case



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.	