Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-60V	5.5mΩ@-10V	-130A
	7.5mΩ@-4.5V	

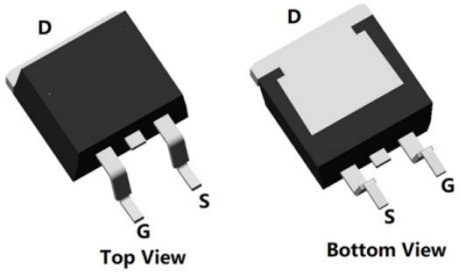
Feature

- Fast Switching
- Low Gate Charge and Rdson
- 100% Single Pulse avalanche energy Test

Applications

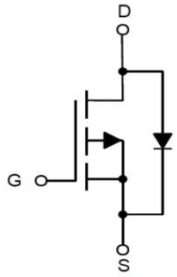
- Power switching application
- DC-DC Converter
- Power Management

Package

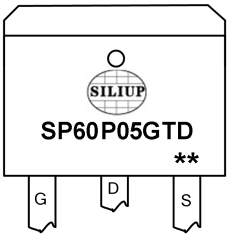


TO-263(G:1 D:2 S:3)

Circuit diagram



Marking



SP60P05GTD : **Product code**
** : **Week code**

Order Information

Device	Package	Unit/Tape
SP60P05GTD	TO-263	800

Absolute maximum ratings (Ta=25℃,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℃)	I_D	-130	A
Continuous drain current (Tc=100℃)	I_D	-87	A
Pulsed drain current	I_{DM}	-520	A
Power dissipation (Tc=25℃)	P_D	153	W
Single pulsed avalanche energy[1]	E_{AS}	1092	mJ
Thermal resistance, junction-case	$R_{\theta JC}$	0.82	℃/W
Storage Temperature Range	T_{STG}	-55 to 150	℃
Operating Junction Temperature Range	T_J	-55 to 150	℃

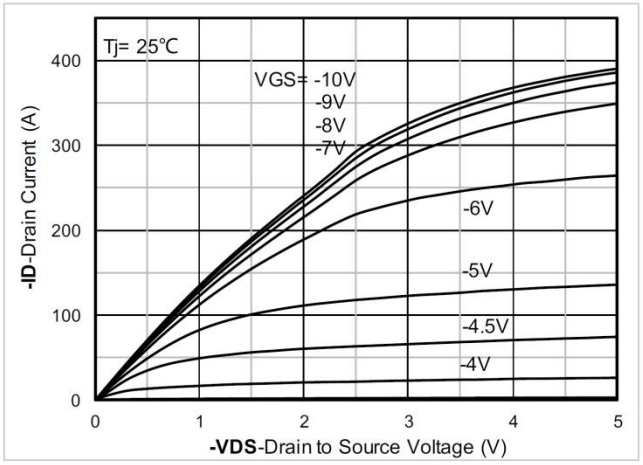
Electrical characteristics (Ta=25℃, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=-250μA	-60	-	-	V
Drain Cut-Off Current	I_{DSS}	V_{DS}=-48V,V_{GS}=0V	-	-	-1	μA
Gate Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±0.1	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	-1.0	-2.0	-3.0	V
Drain-Source ON Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-30A	-	5.5	7.4	mΩ
Drain-Source ON Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-30A	-	7.5	10.0	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} =-30V, V_{GS} =0V, f = 1MHz	-	6185	-	pF
Output Capacitance	C_{oss}		-	2044	-	
Reverse Transfer Capacitance	C_{rss}		-	54.3	-	
Switching Characteristics						
Total Gate Charge	Q_g	VDS= -30V, ID= -40A, VGS= -10V	-	98	-	nC
Gate-Source Charge	Q_{gs}		-	28	-	
Gate-Drain Charge	Q_{gd}		-	18	-	
Turn-On Delay Time	$t_{d(on)}$	VDD= -30V, ID= -40A, VGS= -10V, R_G=2.6Ω	-	18	-	ns
Rise Time	t_r		-	52	-	
Turn-Off Delay Time	$t_{d(off)}$		-	135	-	
Fall Time	t_f		-	168	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	I_S = -1A, V_{GS} = 0V	-	-	-1.2	V
Maximum Body-Diode Continuous	I_S		-	-	-130	A
Reverse Recovery Time	T_{rr}	I_S=-40A, di/dt=200A/us, TJ=25℃	-	65	-	ns
Reverse Recovery Charge	Q_{rr}		-	238	-	nC

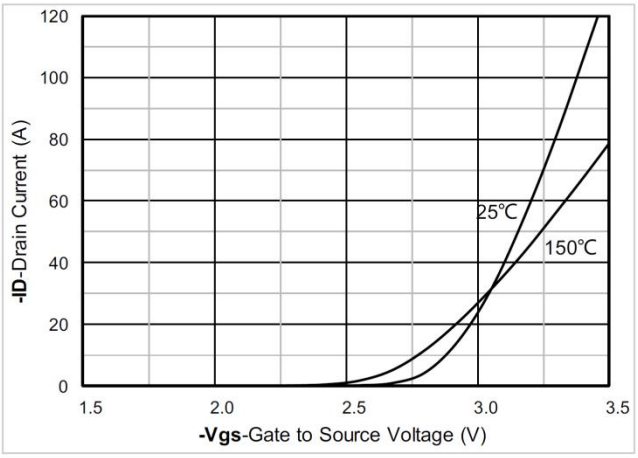
Note:

1. E_{AS} is tested at starting Tj = 25℃, V_{DD}=50V,V_{GS} = 10V,L = 0.5mH, Rg=25mΩ;

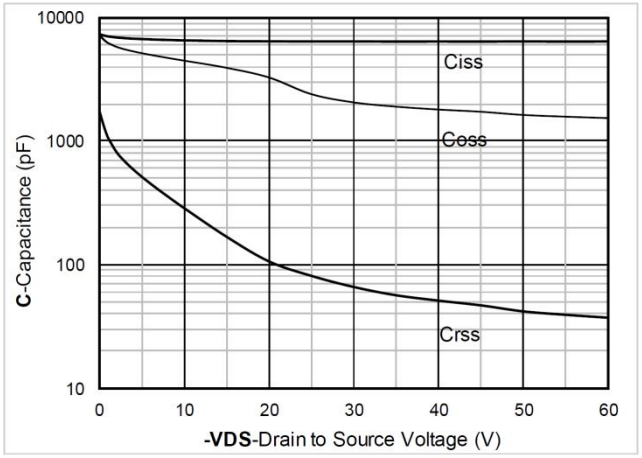
Typical Characteristics



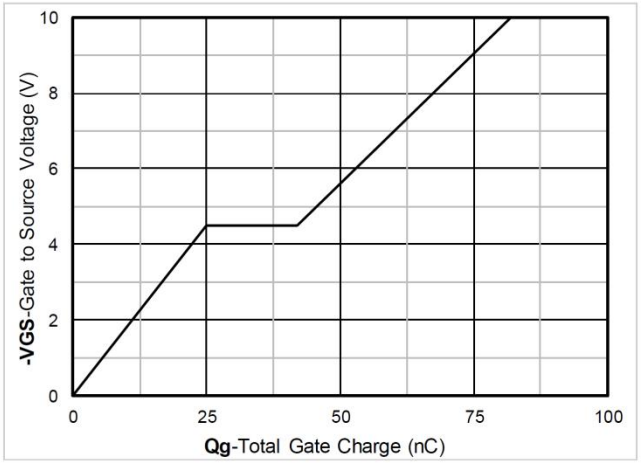
Output Characteristics



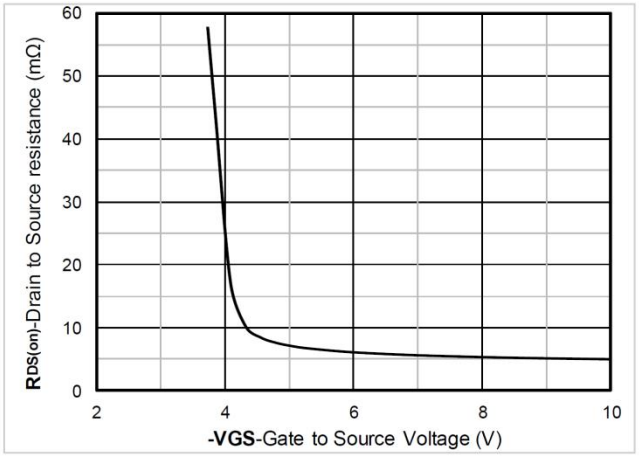
Transfer Characteristics



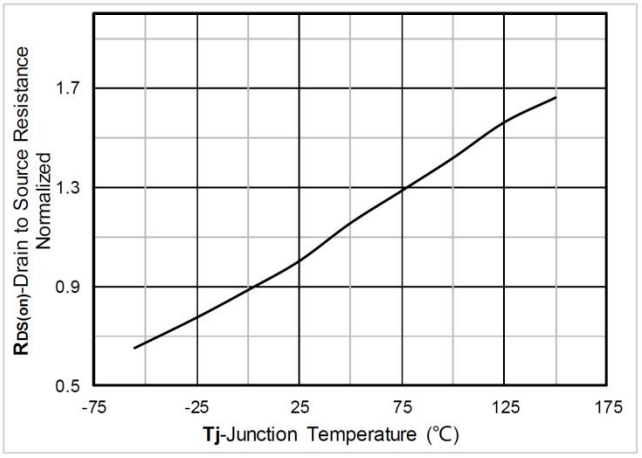
Capacitance Characteristics



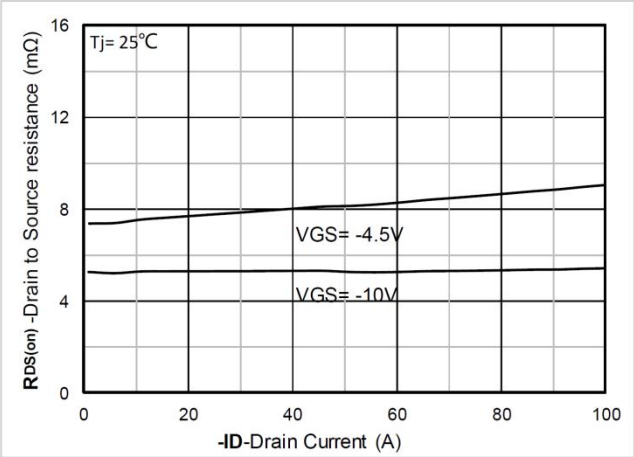
Gate Charge



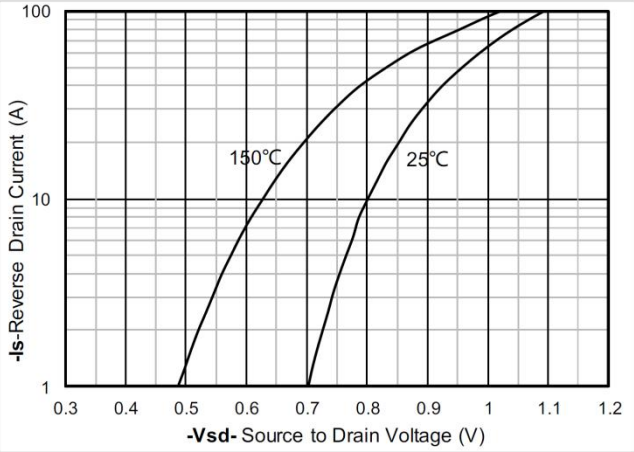
On-Resistance vs Gate to Source Voltage



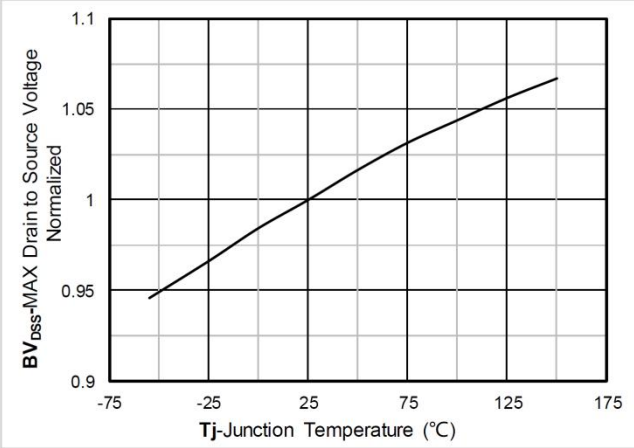
Normalized On-Resistance



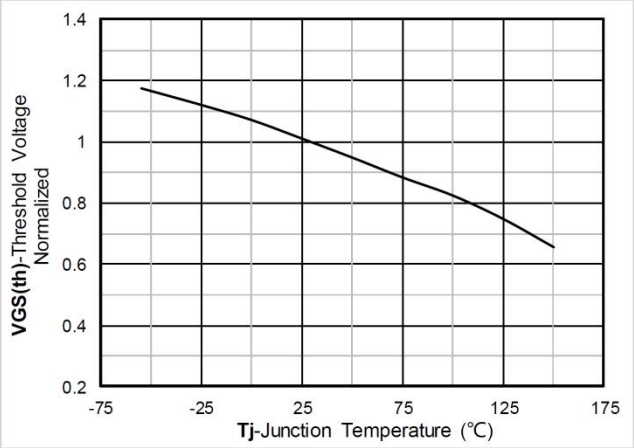
RDS(on) VS Drain Current



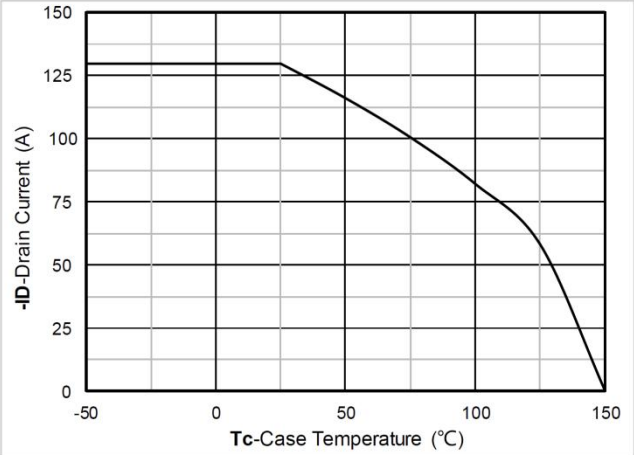
Forward characteristics of reverse diode



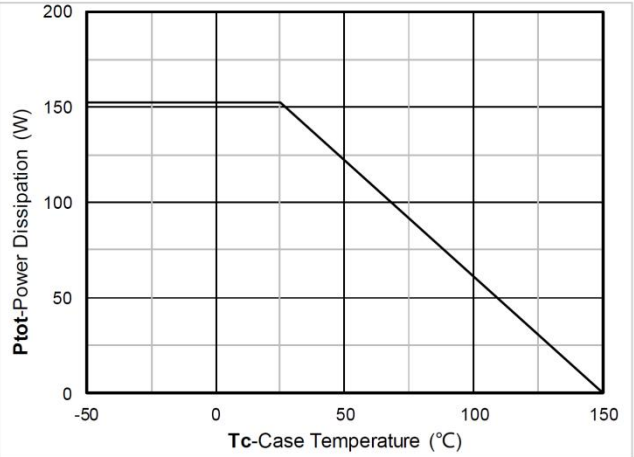
Normalized breakdown voltage



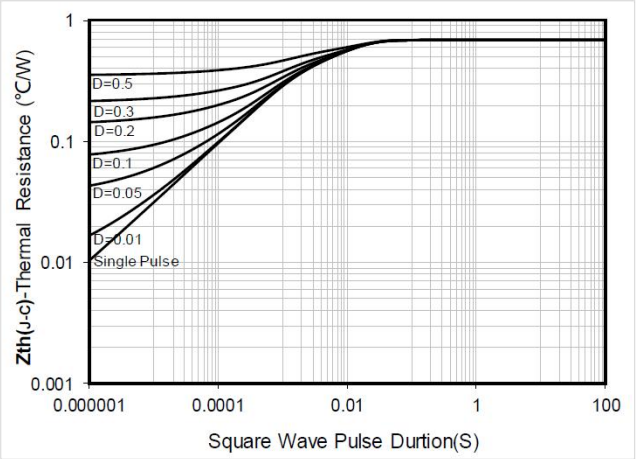
Normalized Threshold voltage



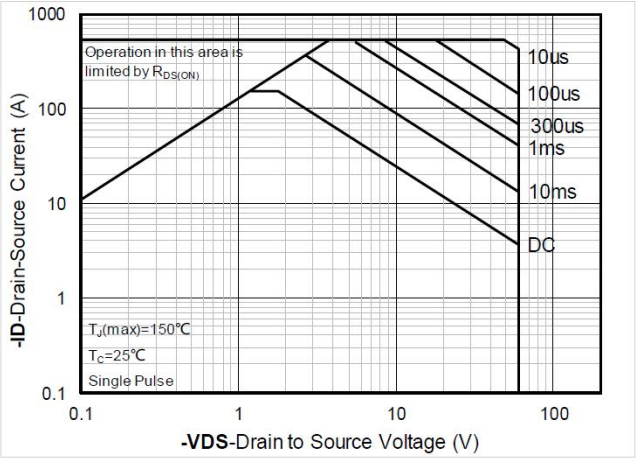
Current dissipation



Power dissipation

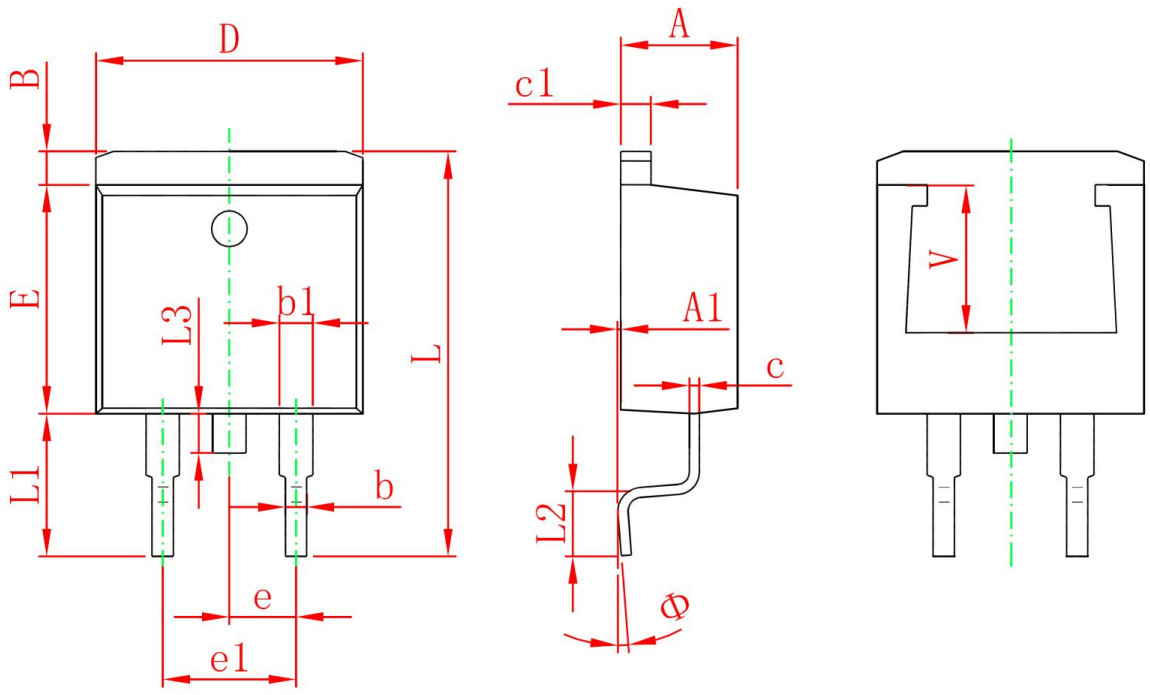


Maximum Transient Thermal Impedance



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.	