

Product Summary

V _{(BR)DSS}	R _{DS(on)TYP}	I _D
110V	2.9mΩ@10V	180A



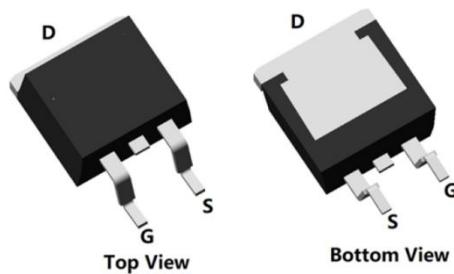
Feature

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

Applications

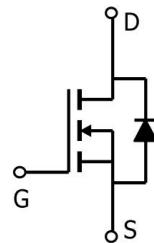
- PWM Application
- Hard switched and high frequency circuits
- Power Management

Package

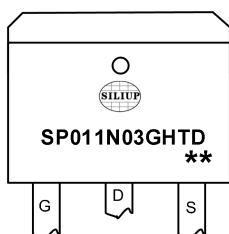


TO-263(1:G 2:D 3:S)

Circuit diagram



Marking



SP011N03GHTD : Product code
** : Week code

Order Information

Device	Package	Unit/Tape
SP011N03GHTD	TO-263	800

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V _{DS}	110	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
Pulsed Drain Current	I _{DM}	720	A
Single Pulse Avalanche Energy ¹	E _{AS}	1260	mJ
Power Dissipation (Tc=25°C)	P _D	195	W
Thermal Resistance Junction-to-Case	R _{θJC}	0.64	°C/W
Storage Temperature Range	T _{STG}	-55 to 150	°C
Operating Junction Temperature Range	T _J	-55 to 150	°C

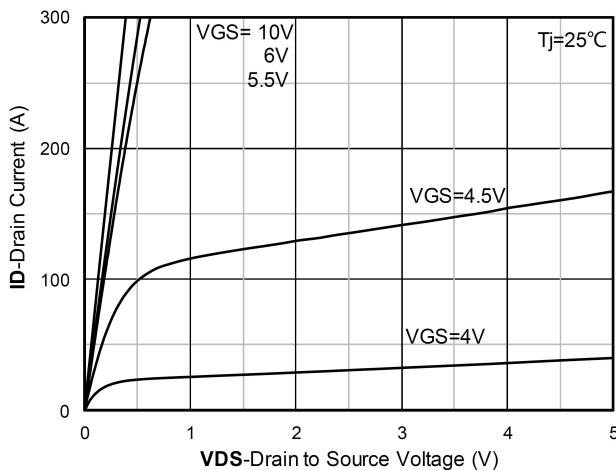
Electrical characteristics (Ta=25°C, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	ID = 250μA, VGS = 0V	110	-	-	V
Drain Cut-Off Current	I _{DSS}	VDS = 80V, VGS = 0V	-	-	1	μA
Gate Leakage Current	I _{GSS}	VGS = ±20V, VDS = 0V	-	-	±0.1	
Gate Threshold Voltage	V _{GS(th)}	VDS = VGS, ID = 250μA	2.0	3.0	4	V
Drain-Source ON Resistance	R _{DS(ON)}	VGS = 10V, ID = 20A	-	2.9	3.6	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	VDS = 50V, VGS = 0V, f = 1.0MHz	-	7162	-	pF
Output Capacitance	C _{oss}		-	1067	-	
Reverse Transfer Capacitance	C _{rss}		-	35	-	
Total Gate Charge	Q _g	VDS = 50V, VGS = 10V, ID = 20A	-	105	-	nC
Gate-Source Charge	Q _{gs}		-	47	-	
Gate-Drain Charge	Q _{gd}		-	23	-	
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	VGS = 10V, VDS = 50V, RL = 2.5Ω RG = 6.0Ω	-	26	-	nS
Rise Time	t _r		-	75	-	
Turn-Off Delay Time	t _{d(off)}		-	87	-	
Fall Time	t _f		-	30	-	
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	I _S = 100A, di/dt = 100A/us, TJ = 25°C	-	-	180	A
Reverse Recovery Time	T _{rr}		-	62	-	nS
Reverse Recovery Charge	Q _{rr}		-	160	-	nC

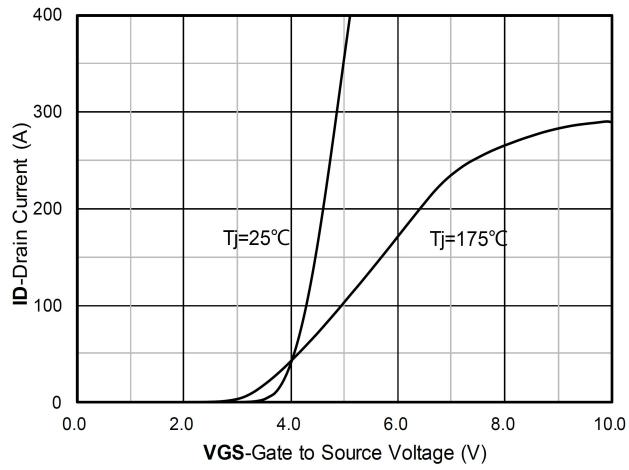
Note :

1. The test condition is VDD=50V,VGS=10V,L=0.5mH,RG=25Ω

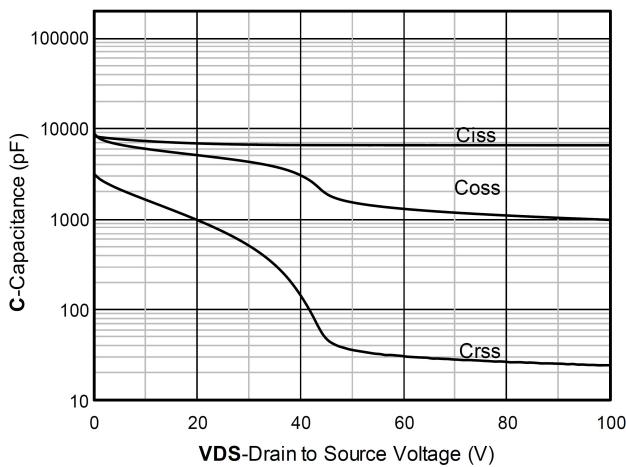
Typical Characteristics

SP011N03GHTD
110V N-Channel Power MOSFET


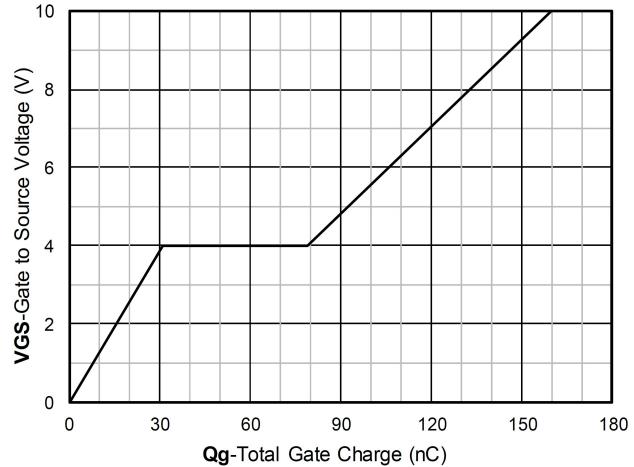
Output Characteristics



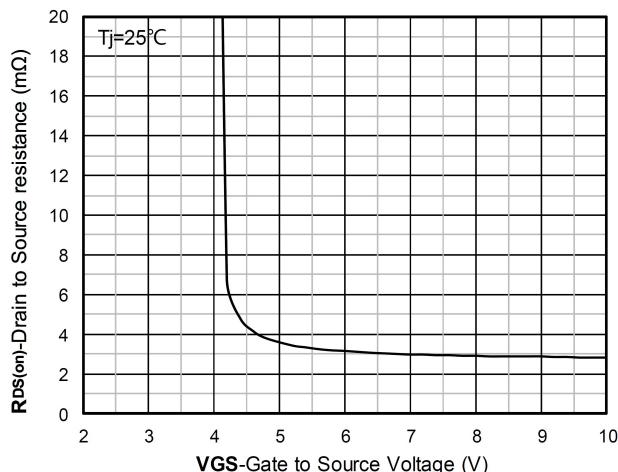
Transfer Characteristics



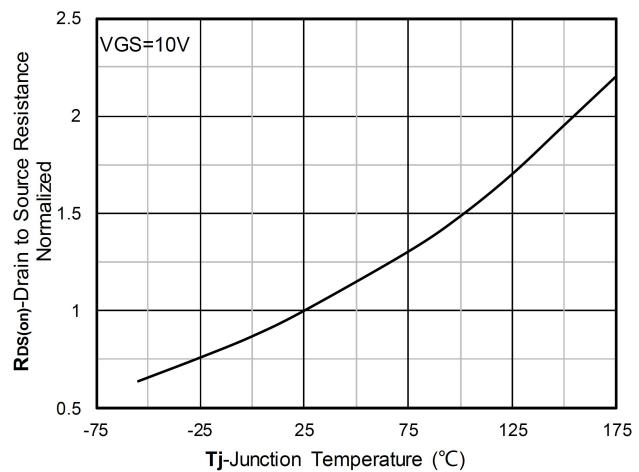
Capacitance Characteristics



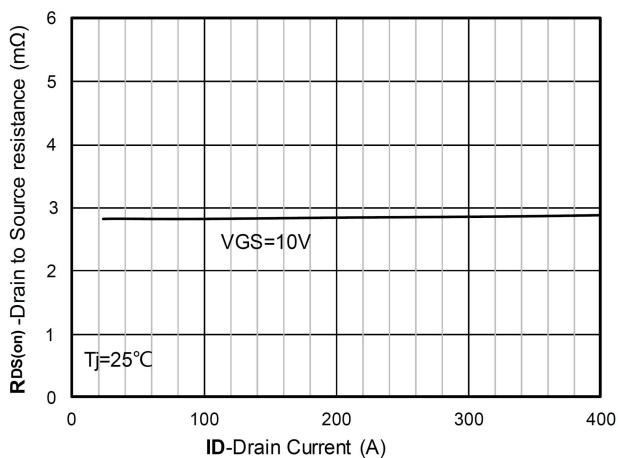
Gate Charge



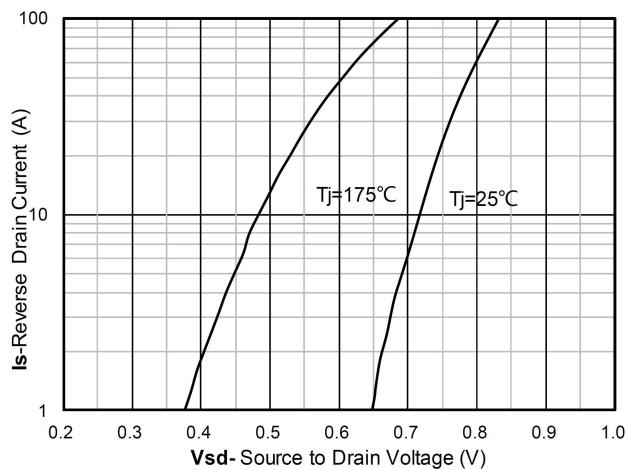
On-Resistance vs Gate to Source Voltage



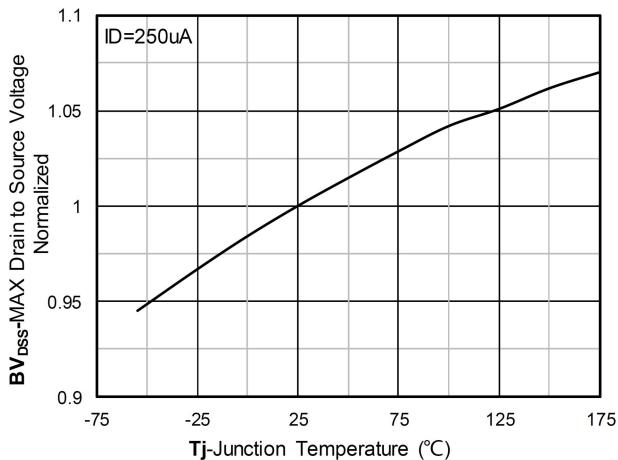
Normalized On-Resistance



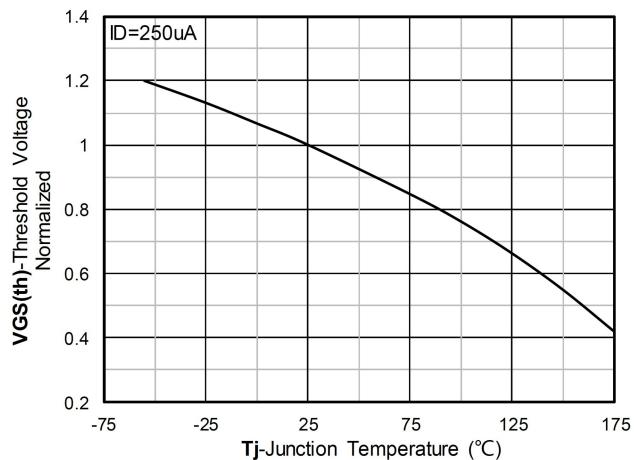
RDS(on) VS Drain Current



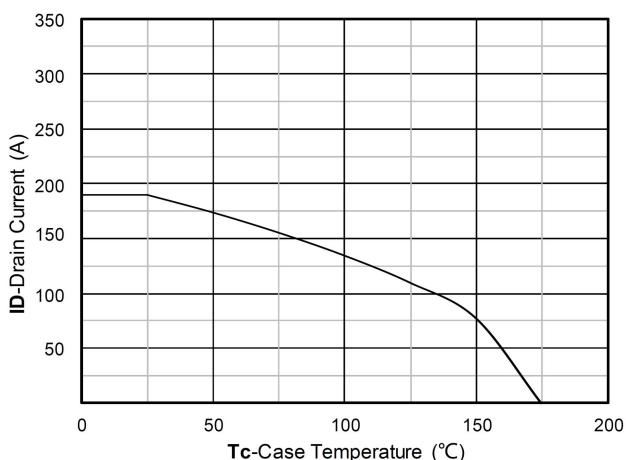
Forward characteristics of reverse diode



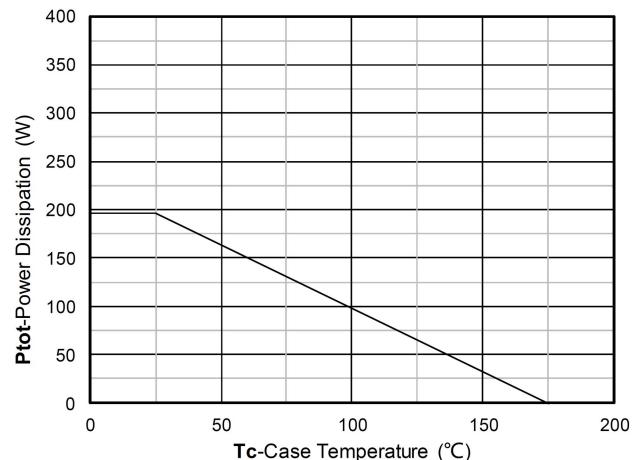
Normalized breakdown voltage



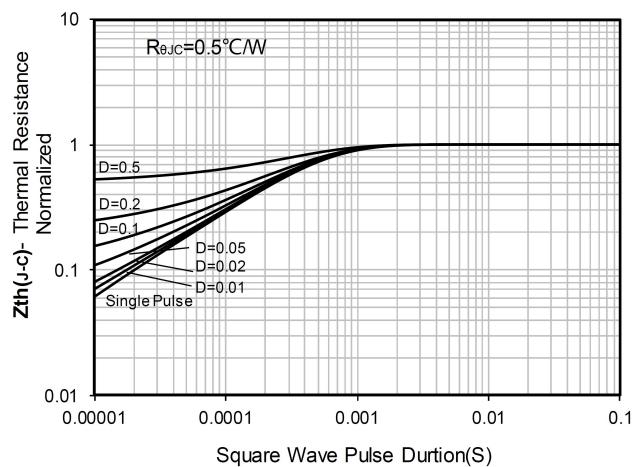
Normalized Threshold voltage



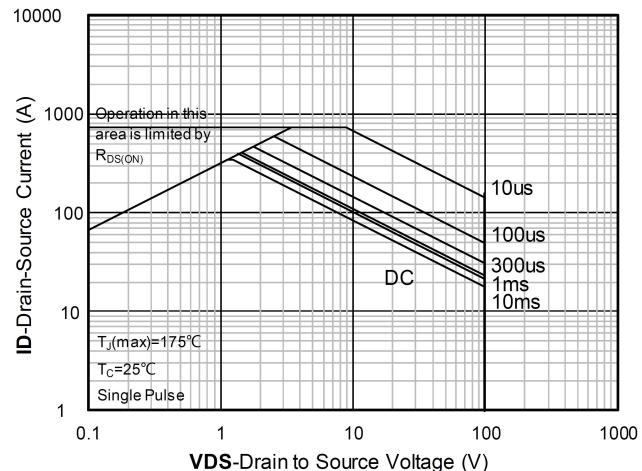
Current dissipation



Power dissipation

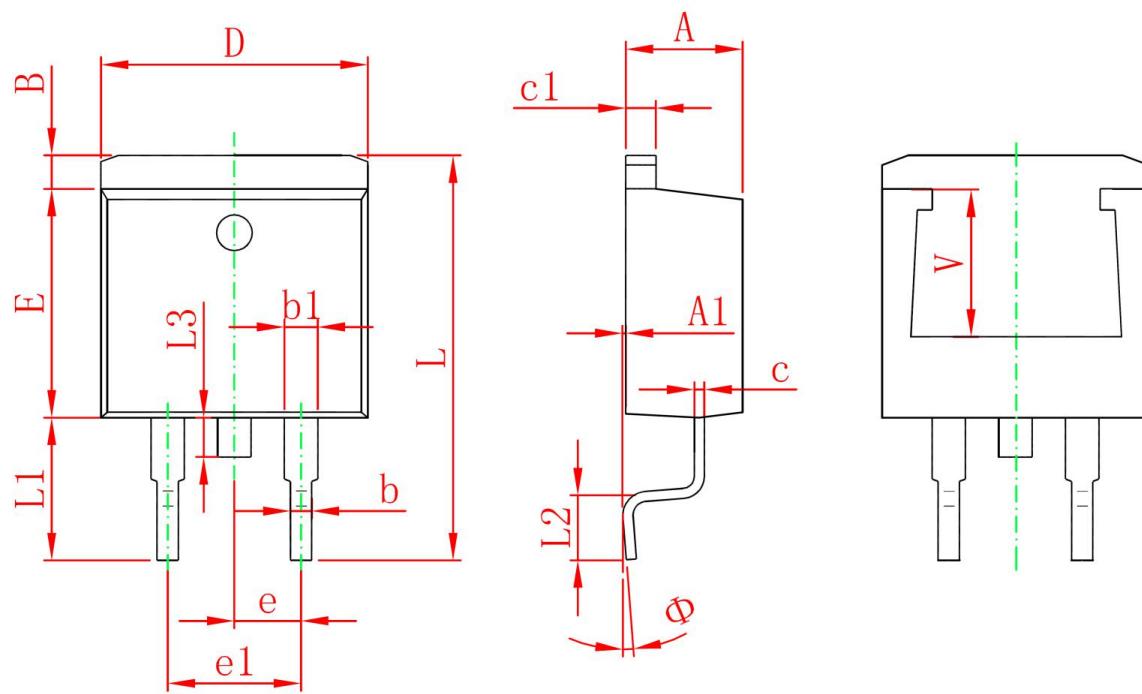


Maximum Transient Thermal Impedance



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.	