Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
150V	4.0mΩ@10V	250A

合肥矽普半导体
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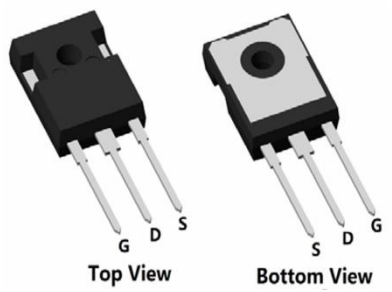
Feature

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

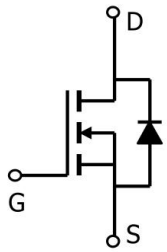
Applications

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

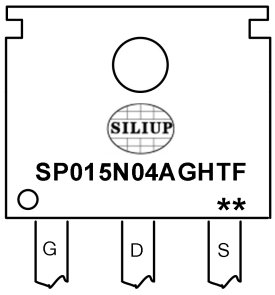
Package



Circuit diagram



Marking



SP015N04AGHTF : **Product code**
** : **Week code**

Order Information

Device	Package	Unit/Tube
SP015N04AGHTF	TO-247	30

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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	135	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current(Tc=25℃)	I_D	230	A
Continuous Drain Current(Tc=100℃)	I_D	153	A
Pulsed Drain Current	I_{DM}	920	A
Single Pulse Avalanche Energy[1]	E_{AS}	1214	mJ
Power Dissipation(Tc=25℃)	P_D	178	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.71	℃/W
Storage Temperature Range	T_{STG}	-55 to 150	℃
Operating Junction Temperature Range	T_J	-55 to 150	℃

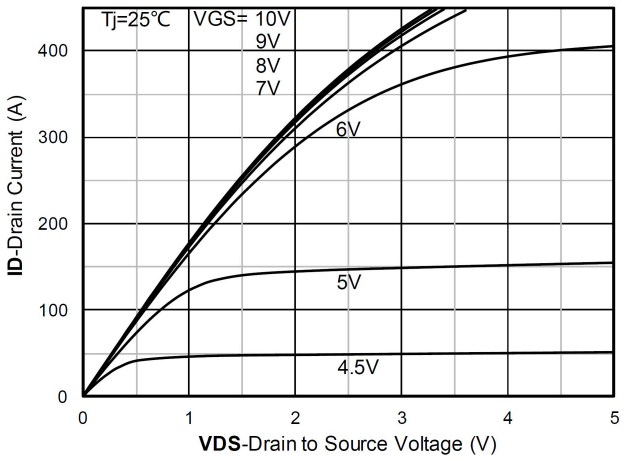
Electrical characteristics (Ta=25℃, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	ID = 250μA, VGS = 0V	135	150	-	V
Drain-Source Leakage Current	I_{DSS}	VDS =108V, VGS = 0V	-	-	1	uA
Gate-Source Leakage Current	I_{GSS}	VGS = ±20V, VDS = 0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	VDS = VGS, ID = 250μA	2	3	4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	VGS = 10V, ID = 20A	-	4.0	4.6	mΩ
Dynamic characteristics						
Input Capacitance	C_{iss}	VDS=75V , VGS=0V , f=1MHz	-	9023	-	pF
Output Capacitance	C_{oss}		-	587	-	
Reverse Transfer Capacitance	C_{rss}		-	23	-	
Total Gate Charge	Q_g	VDS=75V , VGS=10V , ID=20A	-	89	-	nC
Gate-Source Charge	Q_{gs}		-	43	-	
Gate-Drain Charge	Q_{gd}		-	28	-	
Switching Characteristics						
Turn-On Delay Time	$T_{d(on)}$	VDD=75V, VGS=10V , RG=3.0Ω, ID=20A	-	26	-	nS
Rise Time	T_r		-	39	-	
Turn-Off Delay Time	$T_{d(off)}$		-	54	-	
Fall Time	T_f		-	21	-	
Diode Characteristics						
Diode Forward Voltage	V_{SD}	VGS=0V , I_S=1A , TJ=25℃	-	-	1.2	V
Maximum Body-Diode Continuous Current	I_S		-	-	230	A
Reverse Recovery Time	T_{rr}	I_S=140A, di/dt=100A/us, TJ=25℃	-	175	-	nS
Reverse Recovery Charge	Q_{rr}		-	544	-	nC

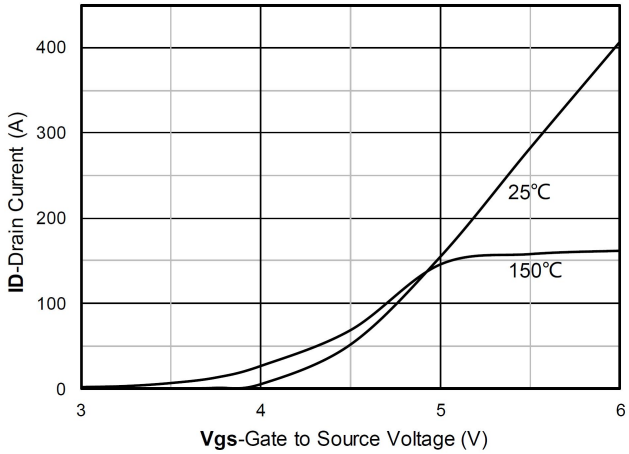
Note :

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

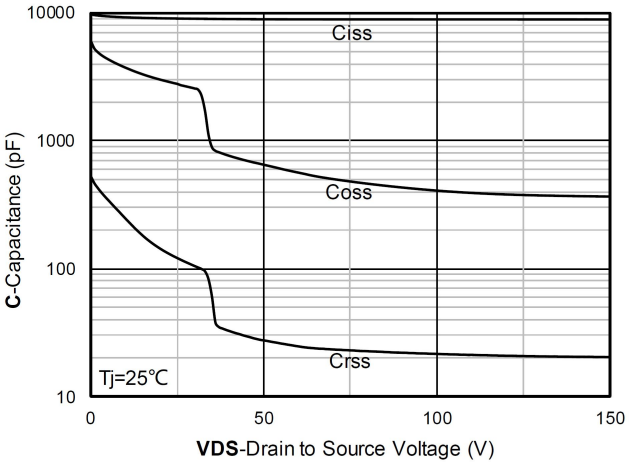
Typical Characteristics



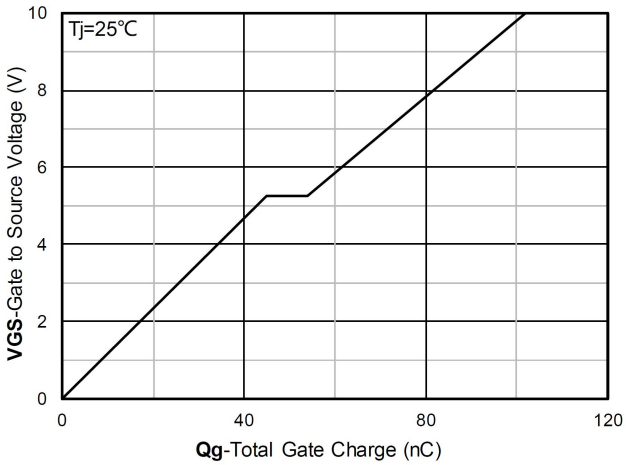
Output Characteristics



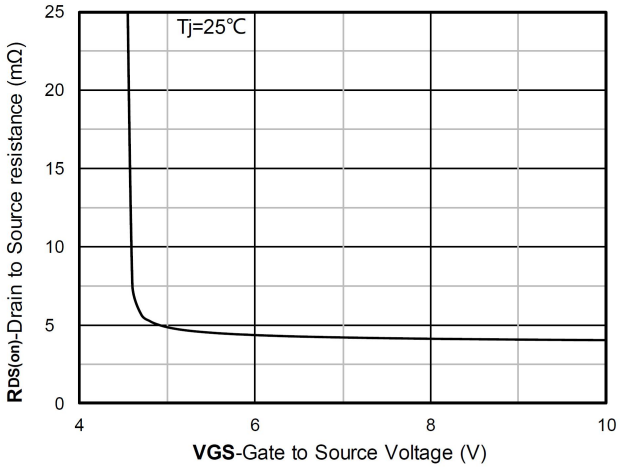
Transfer Characteristics



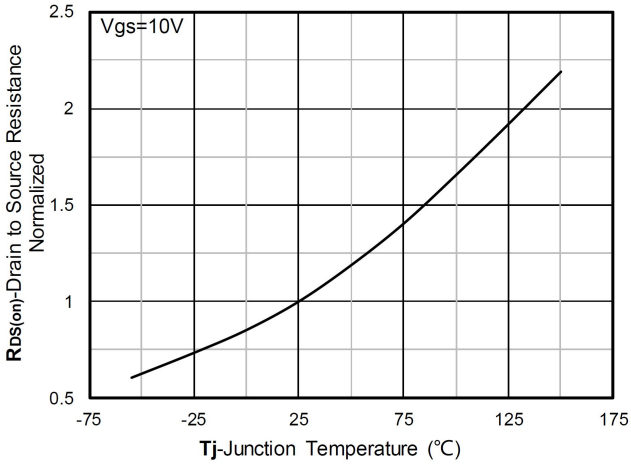
Capacitance Characteristics



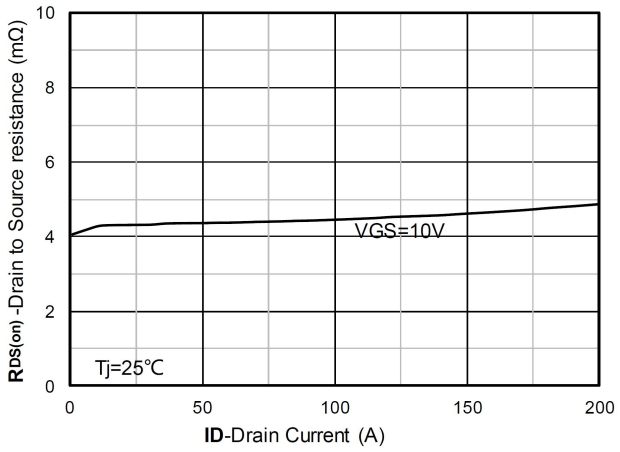
Gate Charge



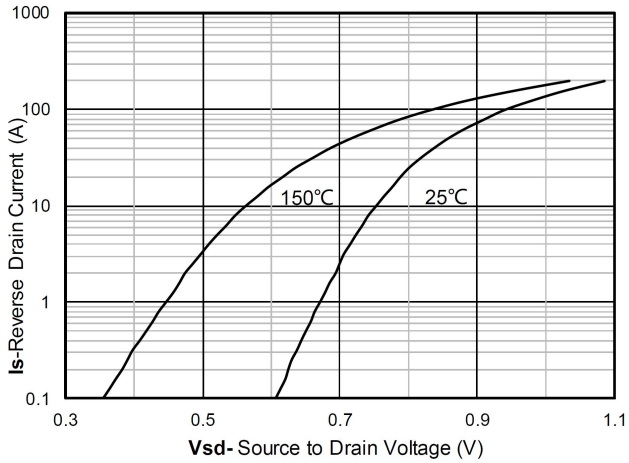
On-Resistance vs Gate to Source Voltage



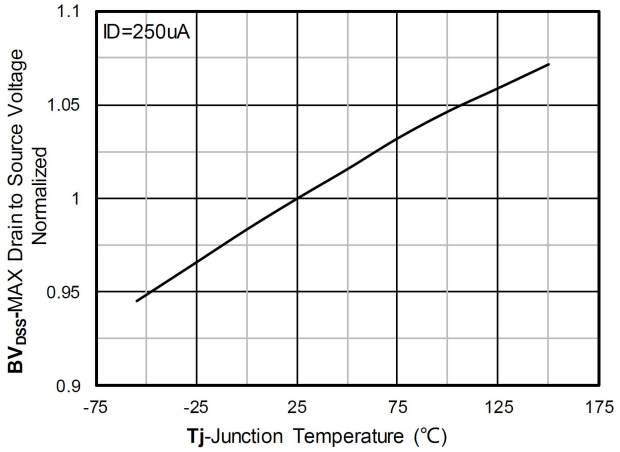
Normalized On-Resistance



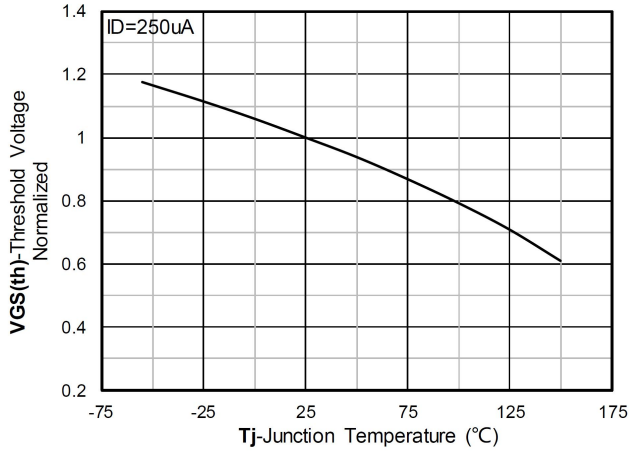
RDS(on) VS Drain Current



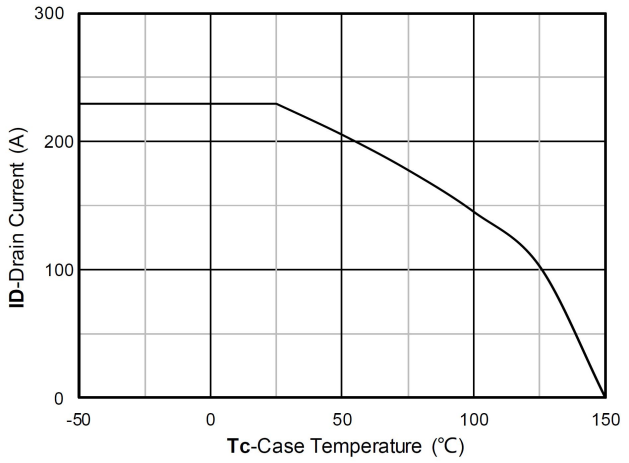
Forward characteristics of reverse diode



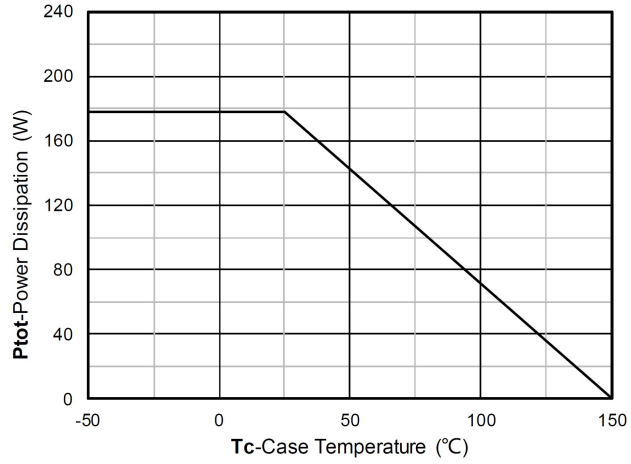
Normalized breakdown voltage



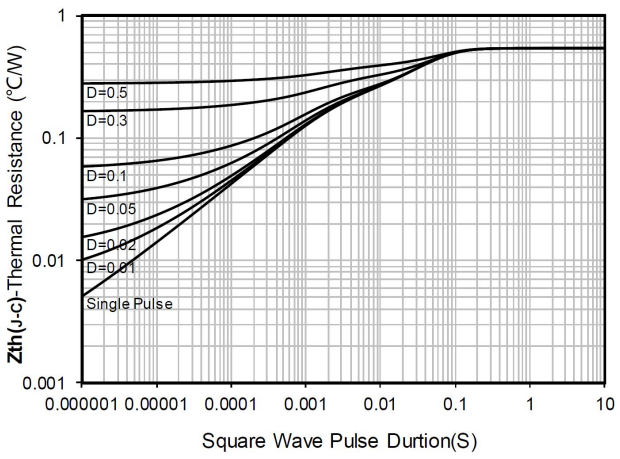
Normalized Threshold voltage



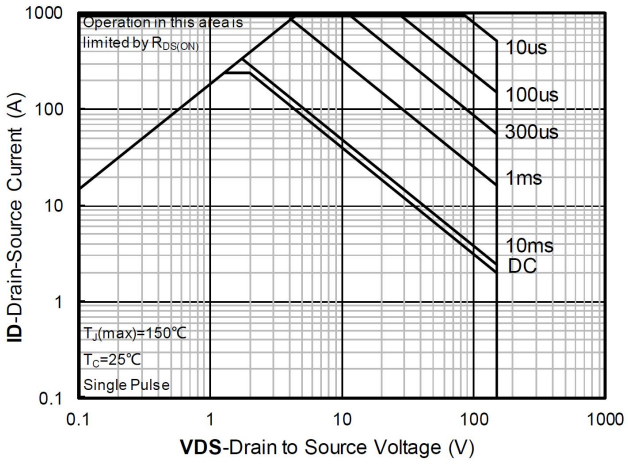
Current dissipation



Power dissipation

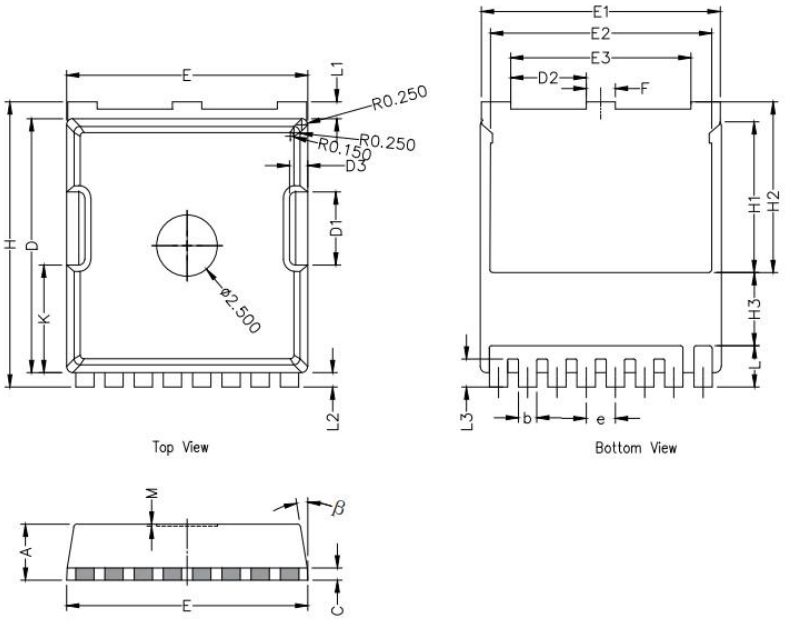


Maximum Transient Thermal Impedance



Safe Operation Area

TOLL Package Information



Symbol	Dimensions In Millimeters		
	Min.	Nom.	Max.
A	2.20	2.30	2.40
b	0.65	0.75	0.85
C	0.508 REF		
D	10.25	10.40	10.55
D1	2.85	3.00	3.15
E	9.75	9.90	10.05
E1	9.65	9.80	9.95
E2	8.95	9.10	9.25
E3	7.25	7.40	7.55
e	1.20 BSC		
F	1.05	1.20	1.35
H	11.55	11.70	11.85
H1	6.03	6.18	6.33
H2	6.85	7.00	7.15
H3	3.00 BSC		
L	1.55	1.70	1.85
L1	0.55	0.7	0.85
L2	0.45	0.6	0.75
M	0.08 REF.		
β	8°	10°	12°
K	4.25	4.40	4.55