

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
100V	6.4mΩ@10V	90A
	8.4mΩ@4.5V	



**合肥矽普半导体**

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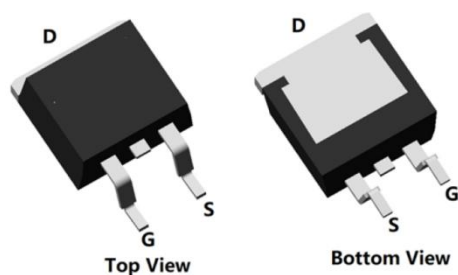
## Feature

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

## Applications

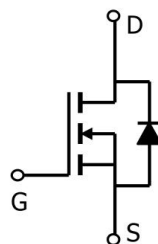
- Power switching application
- Battery management
- Uninterruptible power supply

## Package

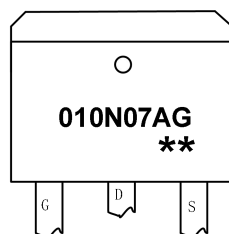


TO-263(1:G 2:D 3:S)

## Circuit diagram



## Marking



**010N07AG** : Product code  
**\*\*** : Week code

## Order Information

Device	Package	Unit/Tape
SP010N07AGTD	TO-263	800

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current (Tc=25°C)	$I_D$	90	A
Continuous Drain Current (Tc=100°C)	$I_D$	60	A
Pulsed Drain Current	$I_{DM}$	360	A
Single Pulse Avalanche Energy <sup>1</sup>	$E_{AS}$	306	mJ
Power Dissipation (Tc=25°C)	$P_D$	130	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.96	°C/W
Storage Temperature Range	$T_{STG}$	55 to 150	°C
Operating Junction Temperature Range	$T_J$	55 to 150	°C

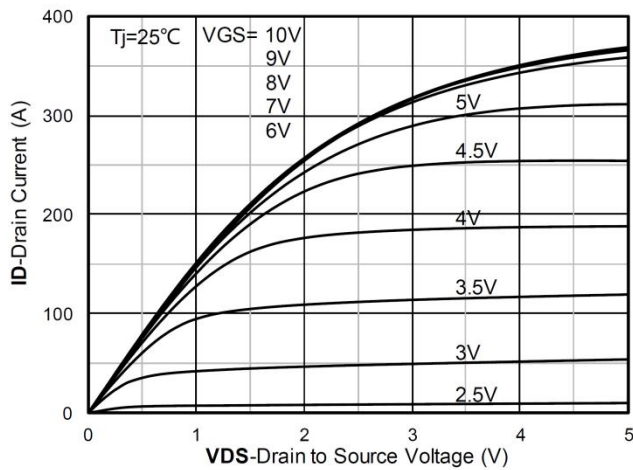
**Electrical characteristics (Ta=25°C, unless otherwise noted)**

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	B <sub>V</sub> DSS	I <sub>D</sub> = 250μA, V <sub>GS</sub> = 0V	100	-	-	V
Drain Cut-Off Current	I <sub>DSS</sub>	V <sub>DS</sub> = 80V, V <sub>GS</sub> = 0V	-	-	1	μA
Gate Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V	-	-	±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	1.0	1.7	2.5	V
Drain-Source ON Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 30A	-	6.4	8	mΩ
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 25A	-	8.4	11.5	
Dynamic Characteristics						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =50V, V <sub>GS</sub> = 0V, f = 1.0MHz	-	1942	-	pF
Output Capacitance	C <sub>oss</sub>		-	388	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	12	-	
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =50V , V <sub>GS</sub> =10V , I <sub>D</sub> =50A	-	67	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	12	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	21	-	
Switching Characteristics						
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>GS</sub> = 10V, V <sub>DS</sub> =50V, I <sub>D</sub> =50A R <sub>G</sub> = 4.7Ω	-	12	-	nS
Rise Time	t <sub>r</sub>		-	11	-	
Turn-Off Delay Time	t <sub>d(off)</sub>		-	42	-	
Fall Time	t <sub>f</sub>		-	6	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V , I <sub>S</sub> =1A , T <sub>J</sub> =25℃	-	-	1.2	V
Maximum Body-Diode Continuous Current	I <sub>S</sub>		-	-	90	A
Reverse Recovery Time	T <sub>rr</sub>	I <sub>S</sub> =20A, di/dt=100A/us, T <sub>J</sub> =25℃	-	59	-	nS
Reverse Recovery Charge	Q <sub>rr</sub>		-	88	-	nC

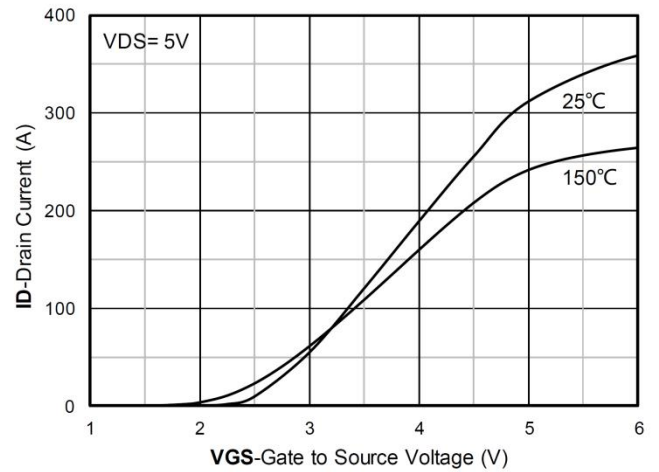
**Note:**

- The EAS test condition is  $V_{DD} = 50V, V_{GS} = 10V, L = 0.5mH, R_G = 25\Omega$

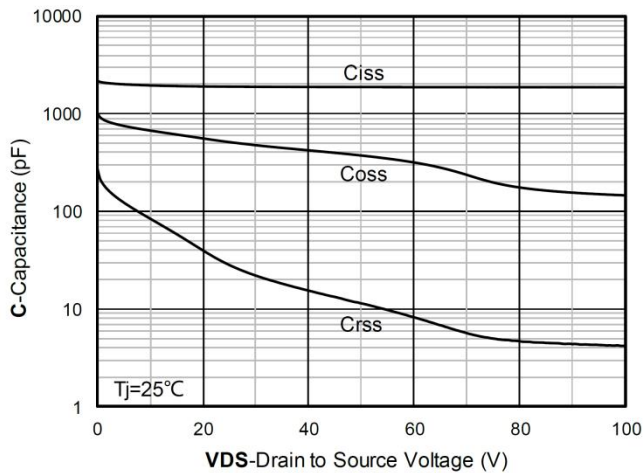
## Typical Characteristics



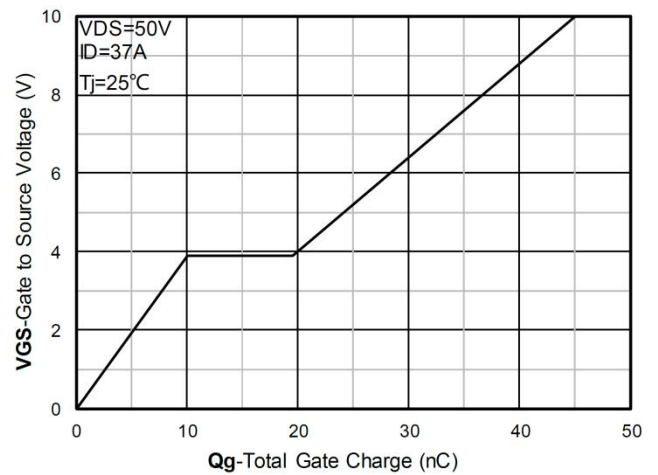
Output Characteristics



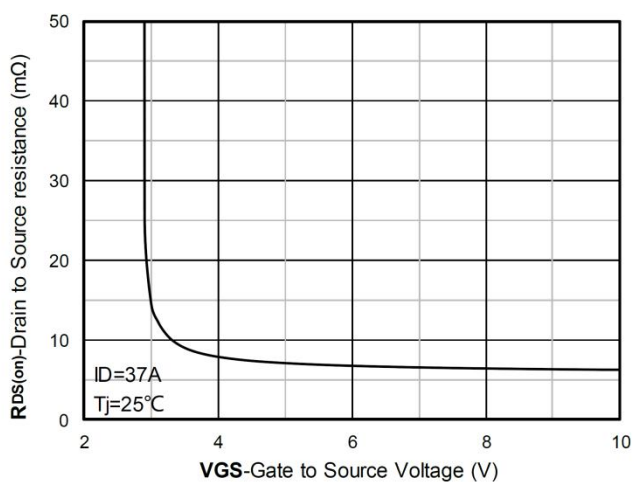
Transfer Characteristics



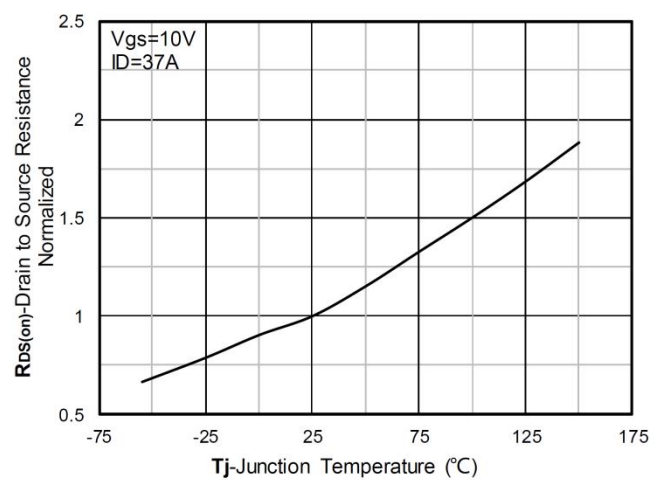
Capacitance Characteristics



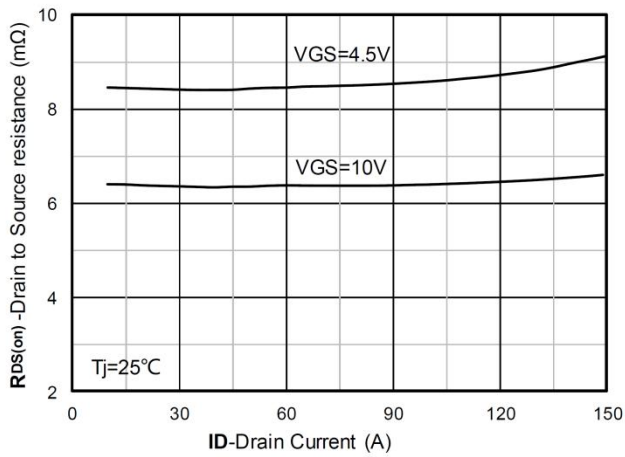
Gate Charge



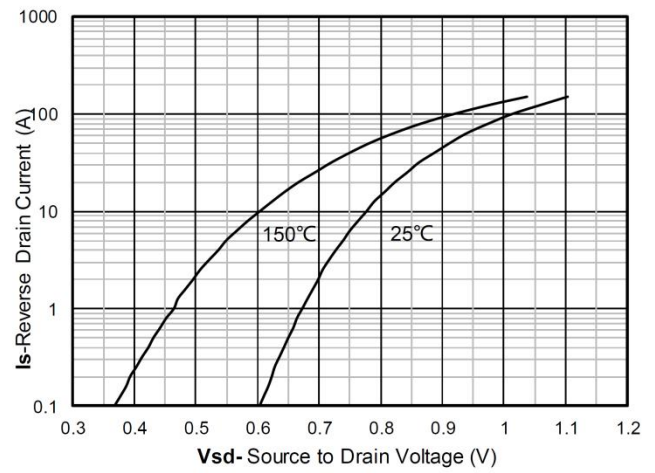
On-Resistance vs Gate to Source Voltage



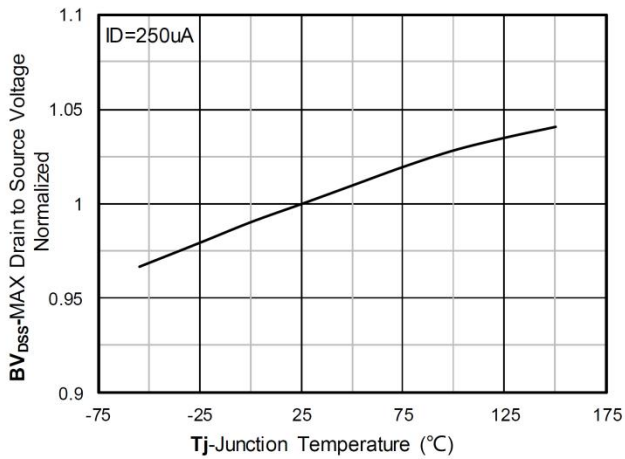
Normalized On-Resistance



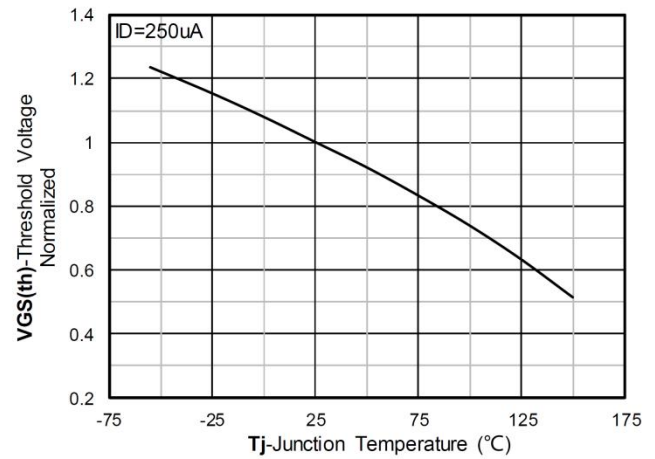
$R_{DS(on)}$  VS Drain Current



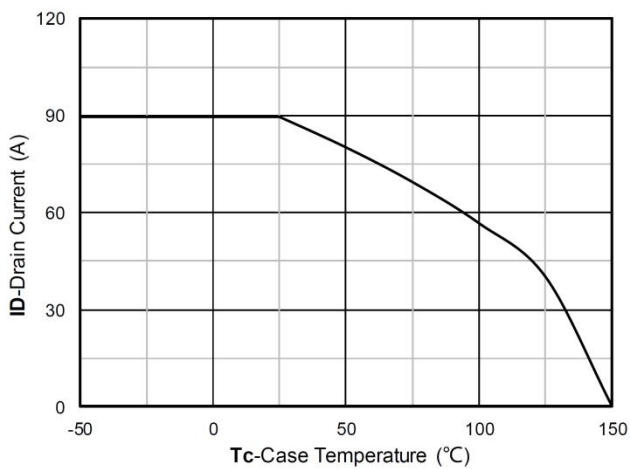
Forward characteristics of reverse diode



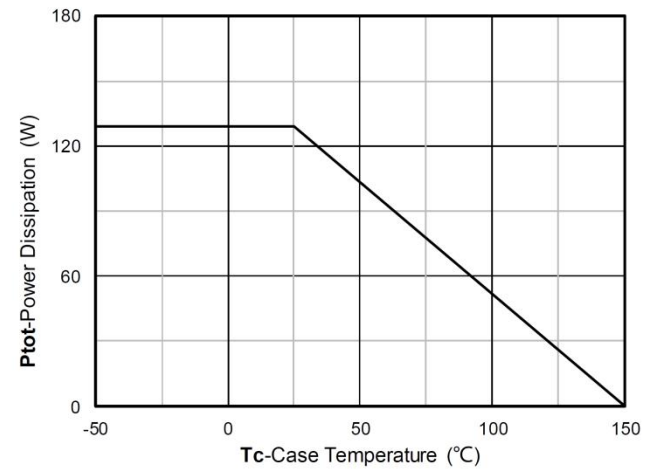
Normalized breakdown voltage



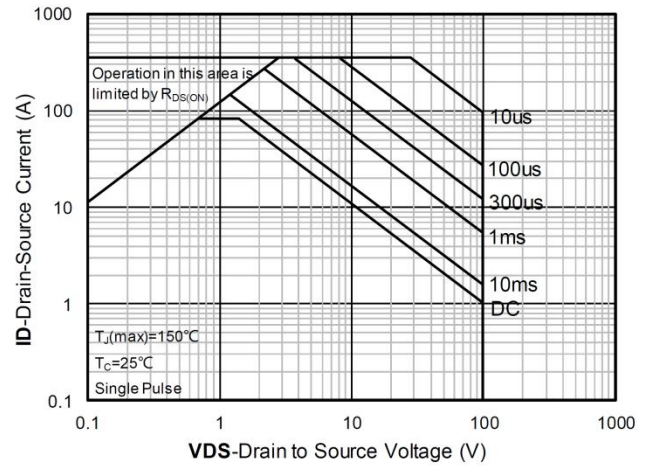
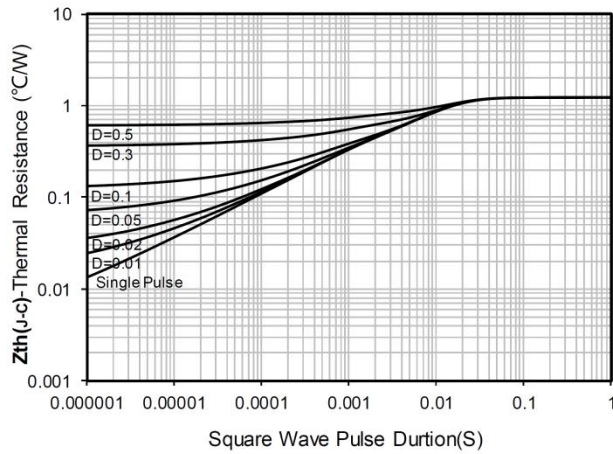
Normalized Threshold voltage

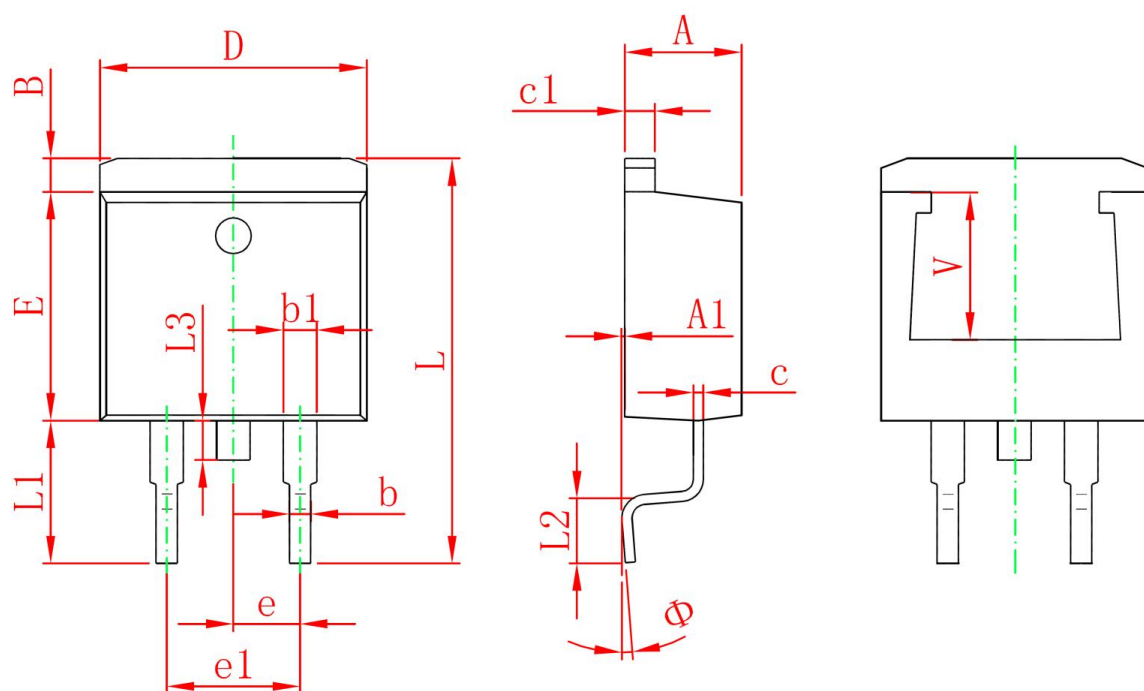


Current dissipation



Power dissipation



**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.	