

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
150V	6.9mΩ@10V	120A



**合肥矽普半导体**

*Siliup Semiconductor Technology Co., Ltd*

技术 品质 服务

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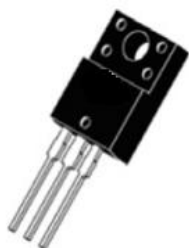
## Feature

- Fast Switching
- Low Gate Charge and  $R_{DS(on)}$
- Advanced Split Gate Trench Technology
- 100% Single Pulse avalanche energy Test

## Applications

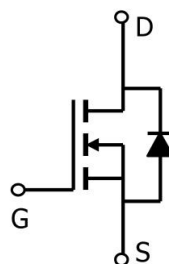
- Power switching application
- DC-DC Converter
- Power Management

## Package

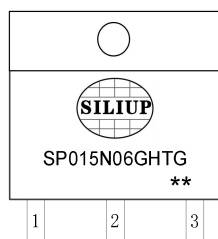


TO-220F(1:G 2:D 3:S)

## Circuit diagram



## Marking



015N06GH  
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:Product code  
:Week code

## Order Information

Device	Package	Unit/Tube
SP015N06GHTG	TO-220F	50

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	150	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current (Tc=25°C)	$I_D$	120	A
Continuous Drain Current (Tc=100°C)	$I_D$	80	A
Pulsed Drain Current	$I_{DM}$	480	A
Single Pulse Avalanche Energy <sup>1</sup>	$E_{AS}$	812	mJ
Power Dissipation (Tc=25°C)	$P_D$	230	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.54	°C/W
Storage Temperature Range	$T_{STG}$	-55 to 150	°C
Operating Junction Temperature Range	$T_J$	-55 to 150	°C

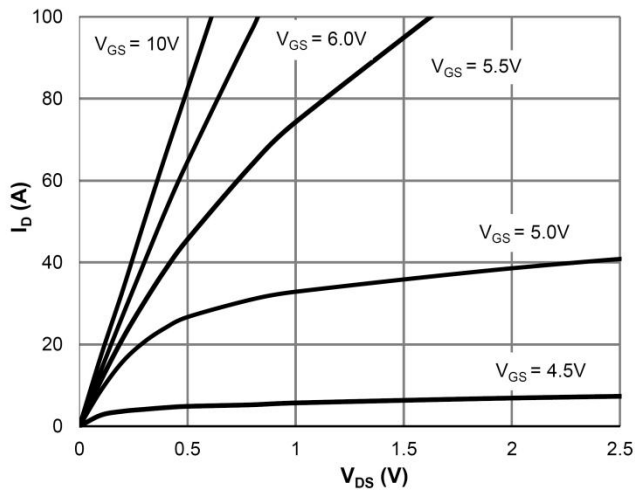
**Electrical characteristics (Ta=25°C, unless otherwise noted)**

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$ID = 250\mu A, VGS = 0V$	150	-	-	V
Drain Cut-Off Current	$IDSS$	$VDS = 120V, VGS = 0V$	-	-	1	$\mu A$
Gate Leakage Current	$IGSS$	$VGS = \pm 20V, VDS = 0V$	-	-	$\pm 0.1$	
Gate Threshold Voltage	$V_{GS(th)}$	$VDS = VGS, ID = 250\mu A$	2.0	3.0	4.0	V
Drain-Source ON Resistance	$R_{DS(ON)}$	$VGS = 10V, ID = 20A$	-	6.9	8.7	m $\Omega$
Dynamic Characteristics						
Input Capacitance	$C_{iss}$	$VDS = 75V, VGS = 0V, f = 1.0MHz$	-	5240	-	pF
Output Capacitance	$C_{oss}$		-	430	-	
Reverse Transfer Capacitance	$C_{rss}$		-	14	-	
Total Gate Charge	$Q_g$	$VDS=75V, VGS=10V, ID=70A$	-	70	-	nC
Gate-Source Charge	$Q_{gs}$		-	31	-	
Gate-Drain Charge	$Q_{gd}$		-	20	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	$VGS = 10V, VDS = 50V, ID = 70A$ $RG = 6\Omega$	-	24	-	nS
Rise Time	$t_r$		-	35	-	
Turn-Off Delay Time	$t_{d(off)}$		-	46	-	
Fall Time	$t_f$		-	15	-	
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	$I_S$		-	-	120	A
Body Diode Reverse Recovery Time	$T_{rr}$	$I_S=50A, di/dt=100A/us, T_J=25^{\circ}C$	-	98	-	nS
Body Diode Reverse Recovery Charge	$Q_{rr}$		-	217	-	nC

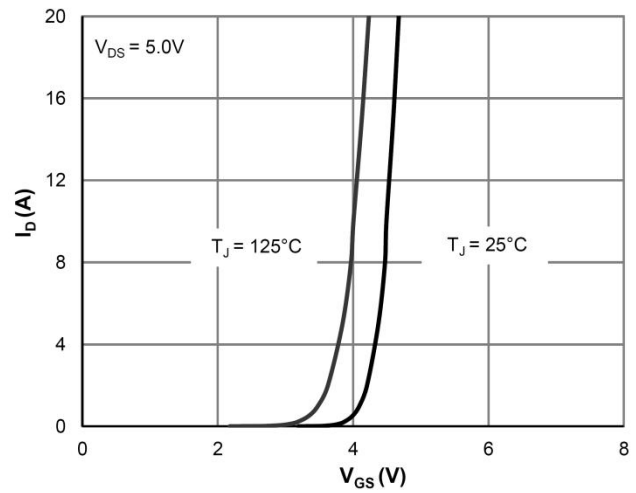
**Note :**

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

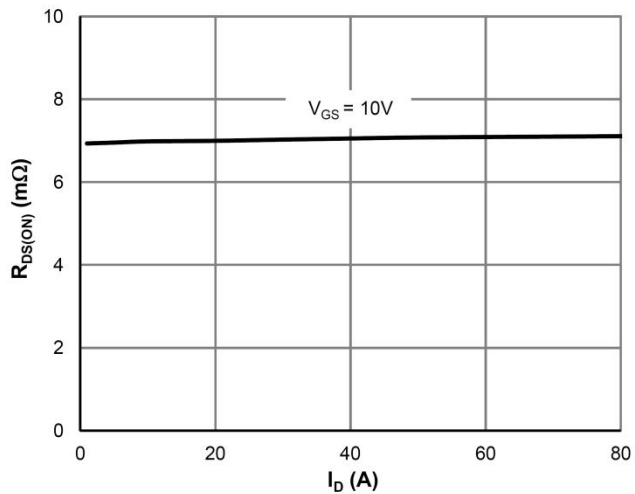
## Typical Characteristics



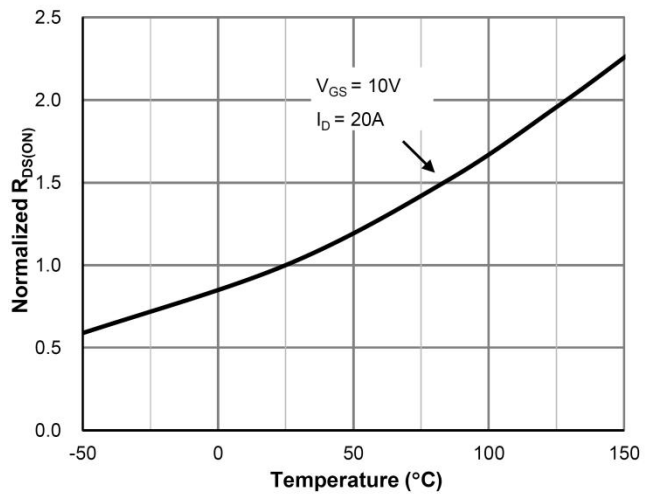
Saturation Characteristics



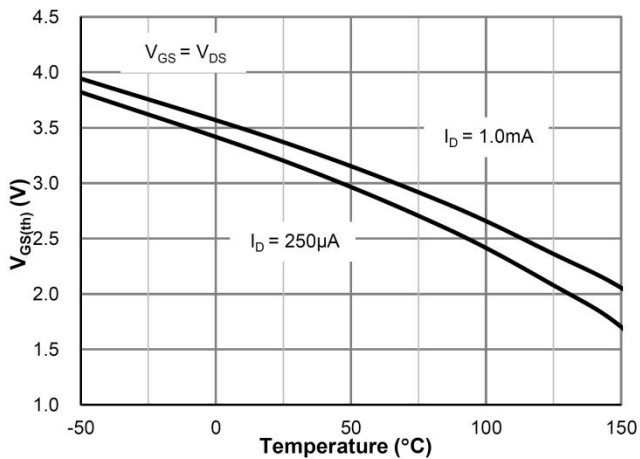
Transfer Characteristics



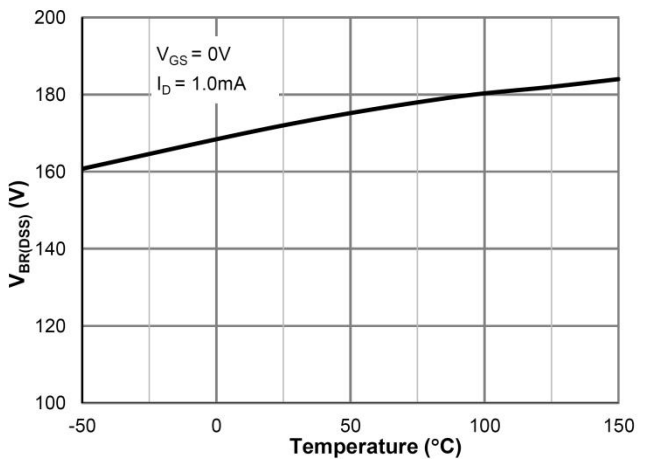
$R_{DS(on)}$  vs. Drain Current



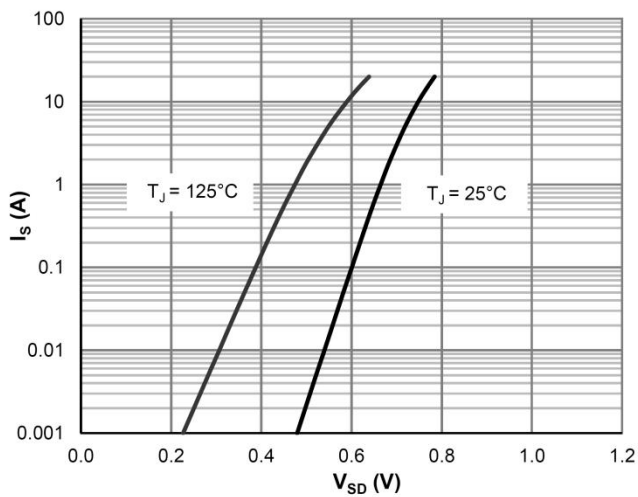
$R_{DS(on)}$  vs. Junction Temperature



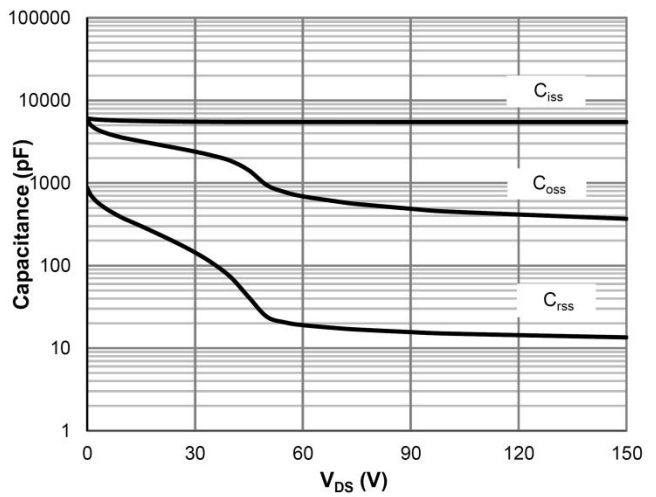
$V_{GS(th)}$  vs. Junction Temperature



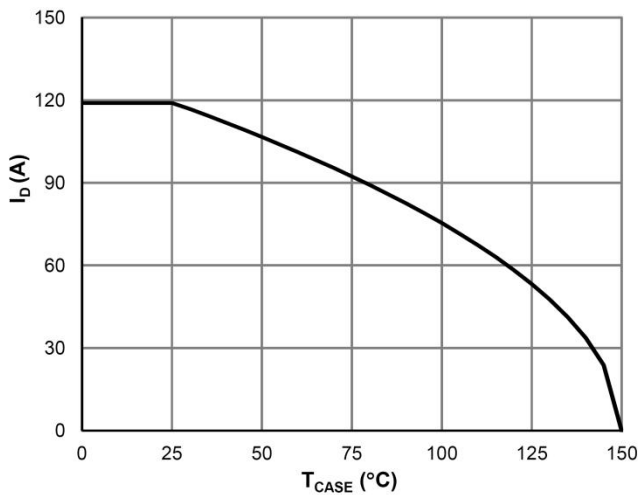
$V_{BR(DSS)}$  vs. Junction Temperature



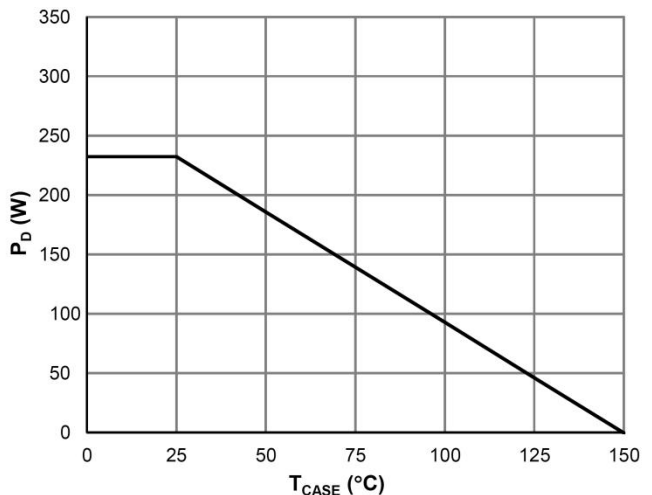
Body-Diode Characteristics



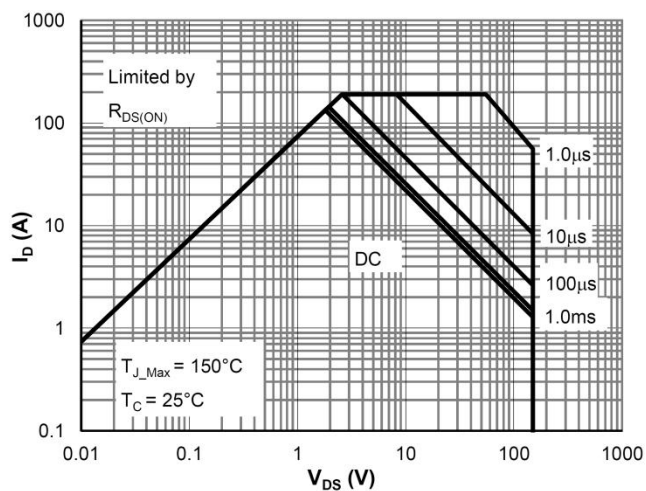
Capacitance Characteristics



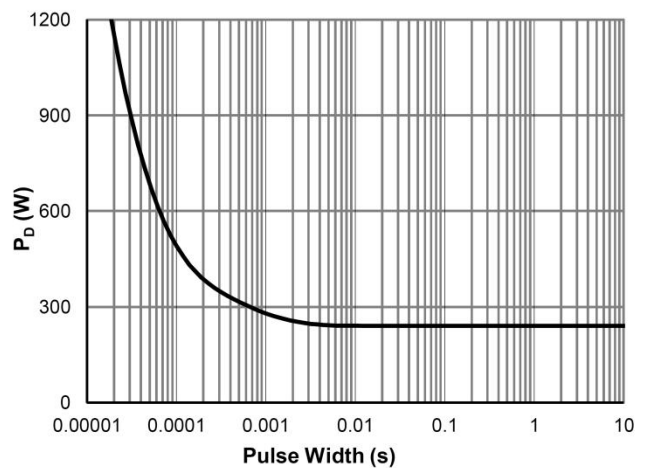
Current De-rating



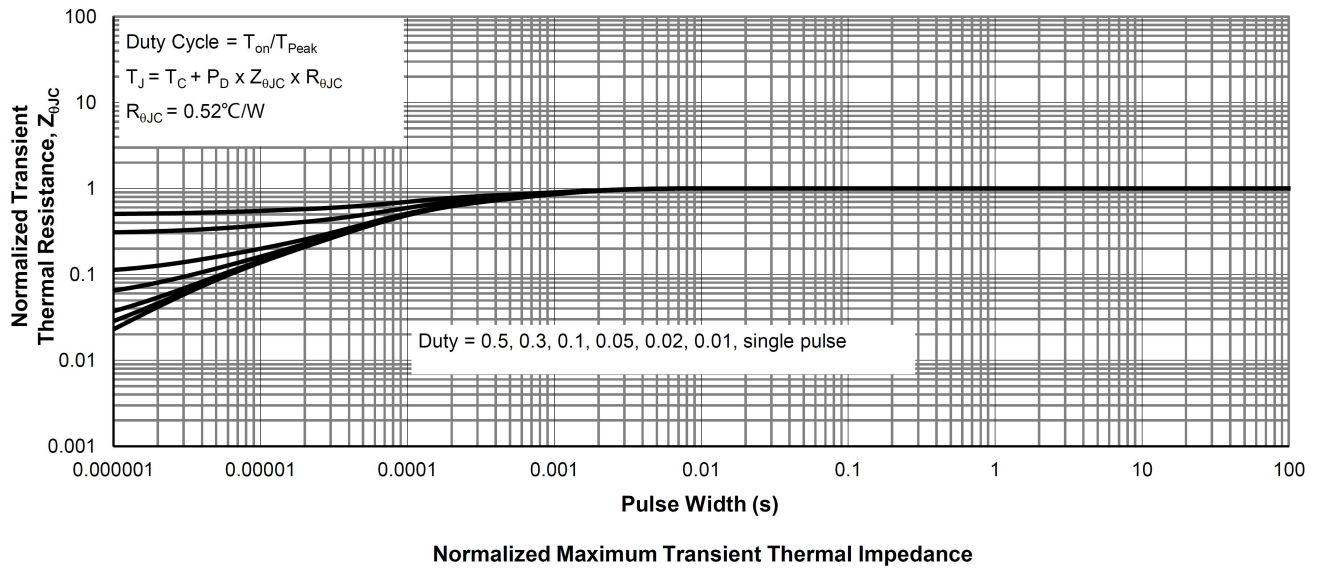
Power De-rating

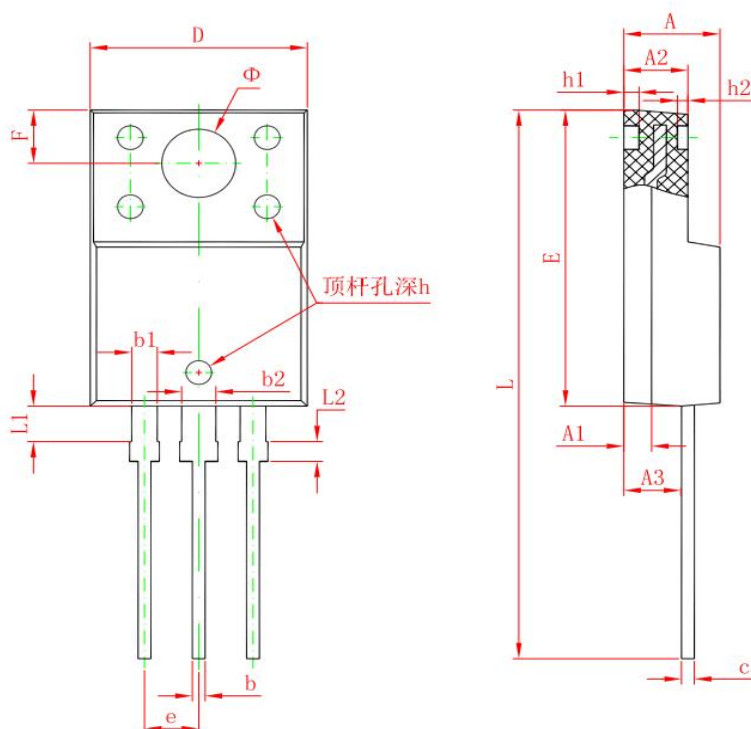


Maximum Safe Operating Area



Single Pulse Power Rating, Junction-to-Case



**TO-220F Package Information**


Symbol	Dimensions In Millimeters	
	Min.	Max.
A	4.300	4.700
A1	1.300 REF.	
A2	2.800	3.200
A3	2.500	2.900
b	0.500	0.750
b1	1.100	1.350
b2	1.500	1.750
c	0.500	0.750
D	9.960	10.360
E	14.800	15.200
e	2.540 TYP.	
F	2.700 REF.	
$\Phi$	3.500 REF.	
h	0.000	0.300
h1	0.800 REF.	
h2	0.500 REF.	
L	28.000	28.400
L1	1.700	1.900
L2	0.900	1.100