

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
150V	3.3mΩ@10V	260A



合肥矽普半导体

Siliup Semiconductor Technology Co., Ltd

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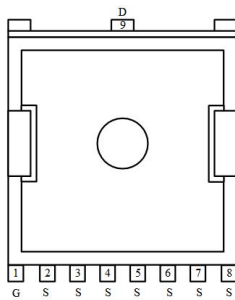
## Feature

- Fast Switching
- Low Gate Charge and R<sub>ds(on)</sub>
- Advanced Split Gate Trench Technology
- 100% Single Pulse avalanche energy Test

## Applications

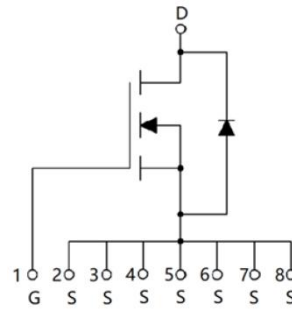
- PWM Application
- Hard switched and high frequency circuits
- Power Management

## Package

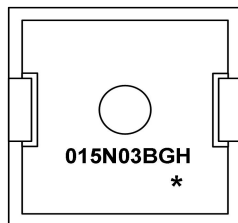


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## Circuit diagram



## Marking



015N03BGH : Product code  
\* : Month code

## Order Information

Device	Package	Unit/Tape
SP015N03BGHTO	TOLL	2000

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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	$V_{DS}$	150	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current(Tc=25°C)	$I_D$	260	A
Continuous Drain Current(Tc=100°C)	$I_D$	173	A
Pulsed Drain Current	$I_{DM}$	1040	A
Single Pulse Avalanche Energy <sup>1</sup>	$E_{AS}$	1681	mJ
Power Dissipation(Tc=25°C)	$P_D$	625	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.2	°C/W
Storage Temperature Range	$T_{STG}$	-55 to 150	°C
Operating Junction Temperature Range	$T_J$	-55 to 150	°C

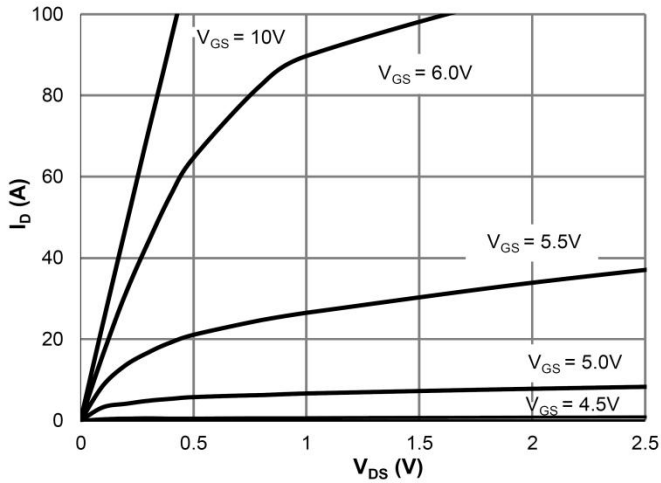
**Electrical characteristics (Ta=25°C, unless otherwise noted)**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D = 250\mu A, V_{GS} = 0V$	150	170	-	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS} = 80V, V_{GS} = 0V$	-	-	1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	3	4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 20A$	-	3.3	3.8	m $\Omega$
<b>Dynamic characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=75V, V_{GS}=0V, f=1MHz$	-	8538	-	pF
Output Capacitance	$C_{oss}$		-	772	-	
Reverse Transfer Capacitance	$C_{rss}$		-	21	-	
Total Gate Charge	$Q_g$	$V_{DS}=75V, V_{GS}=10V, I_D=20A$	-	122	-	nC
Gate-Source Charge	$Q_{gs}$		-	48	-	
Gate-Drain Charge	$Q_{gd}$		-	33	-	
<b>Switching Characteristics</b>						
Turn-On Delay Time	$T_{d(on)}$	$V_{DD}=75V, V_{GS}=10V, R_G=3.0\Omega, I_D=20A$	-	33	-	nS
Rise Time	$T_r$		-	59	-	
Turn-Off Delay Time	$T_{d(off)}$		-	89	-	
Fall Time	$T_f$		-	48	-	
<b>Diode Characteristics</b>						
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=1A, T_J=25^\circ C$	-	-	1.2	V
Maximum Body-Diode Continuous Current	$I_S$		-	-	260	A
Reverse Recovery Time	$T_{rr}$	$I_S=15A, di/dt=100A/\mu s, T_J=25^\circ C$	-	112	-	nS
Reverse Recovery Charge	$Q_{rr}$		-	426	-	nC

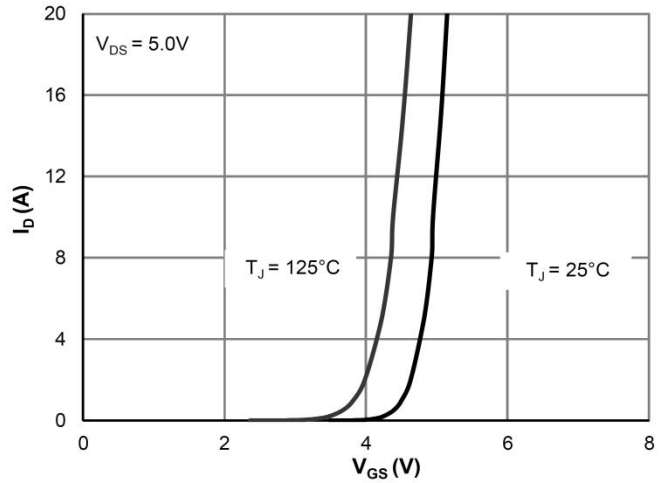
**Note :**

 1. The test condition is  $V_{DD}=20V, V_{GS}=10V, L=0.5mH, R_G=25\Omega$

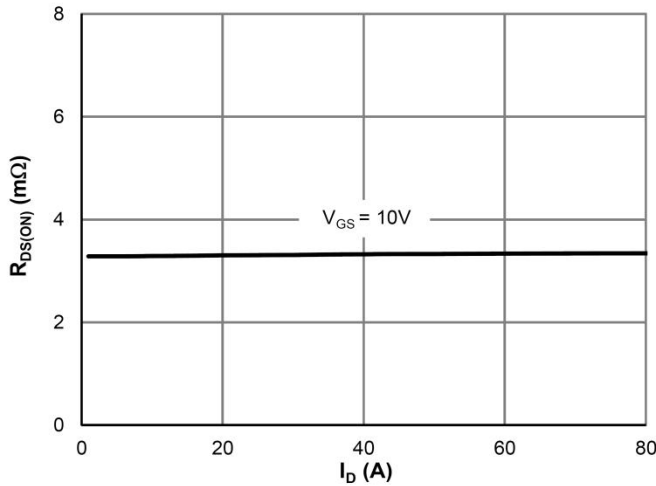
### Typical Characteristics



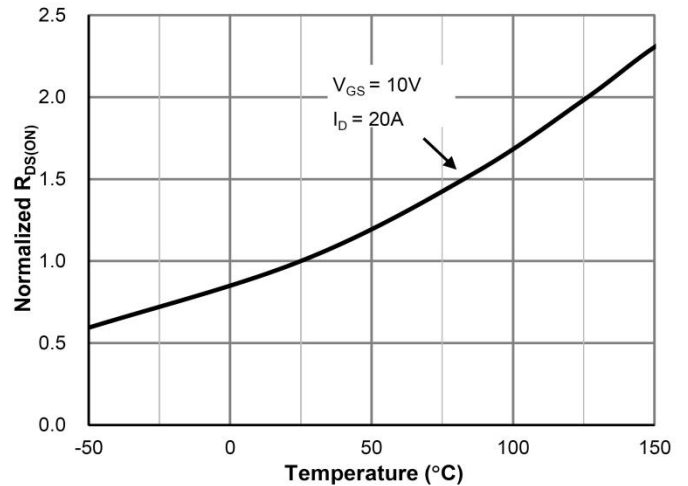
Saturation Characteristics



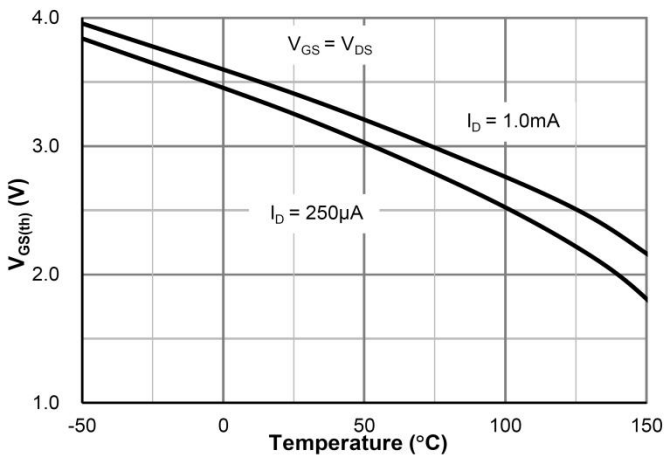
Transfer Characteristics



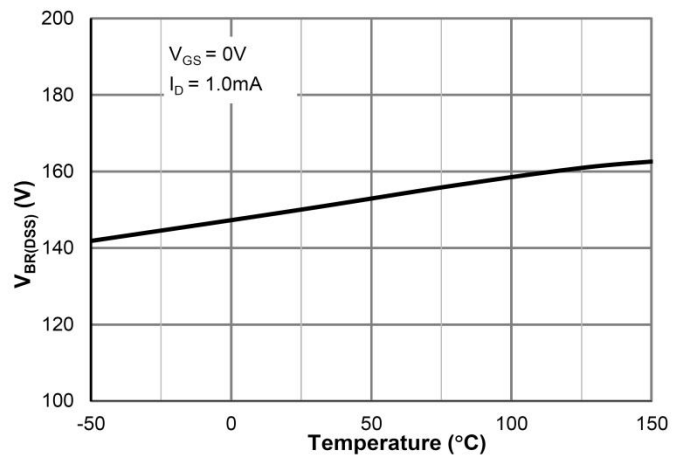
$R_{DS(ON)}$  vs. Drain Current



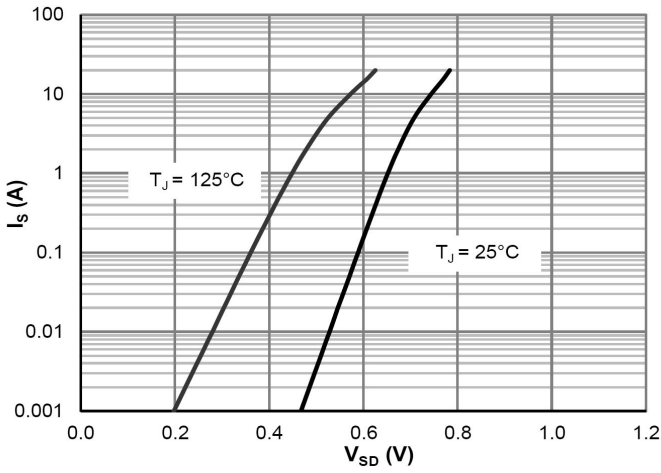
$R_{DS(ON)}$  vs. Junction Temperature



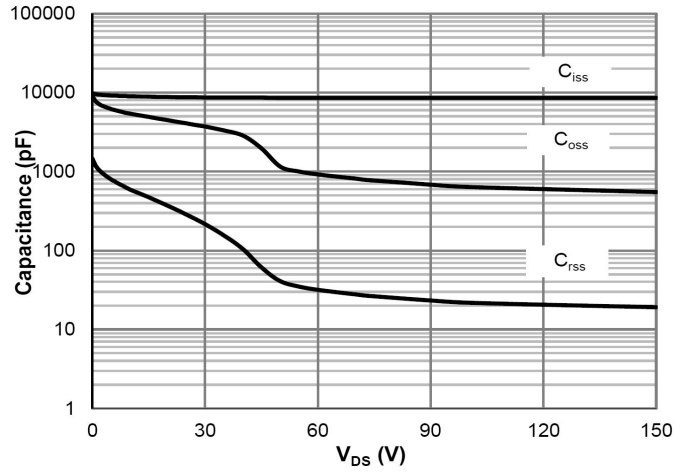
$V_{GS(th)}$  vs. Junction Temperature



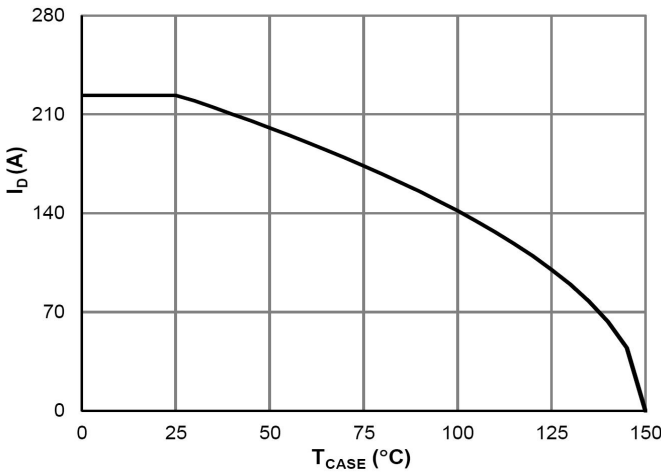
$V_{BR(DSS)}$  vs. Junction Temperature



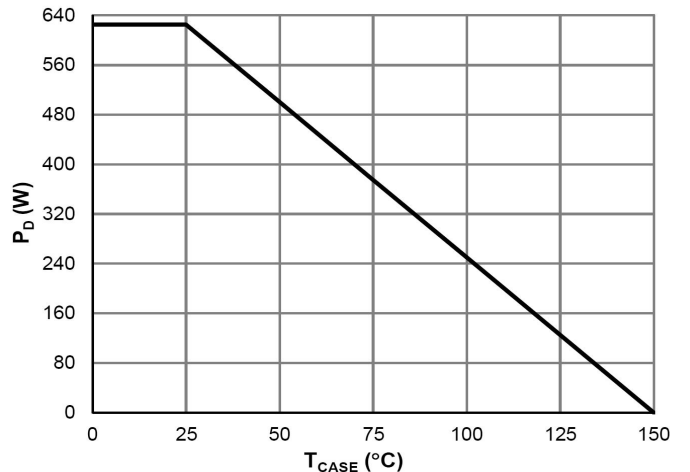
Body-Diode Characteristics



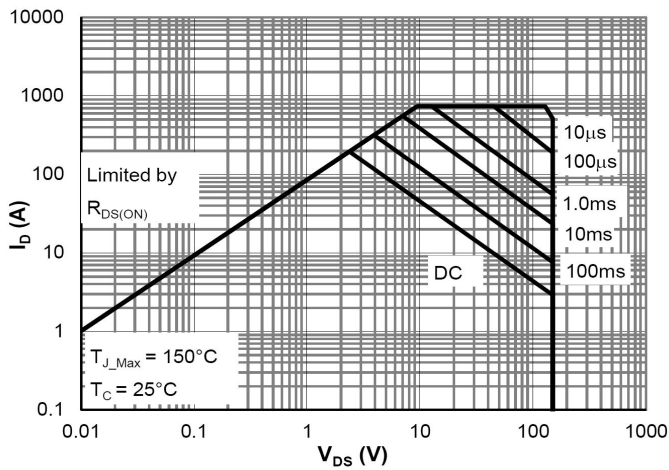
Capacitance Characteristics



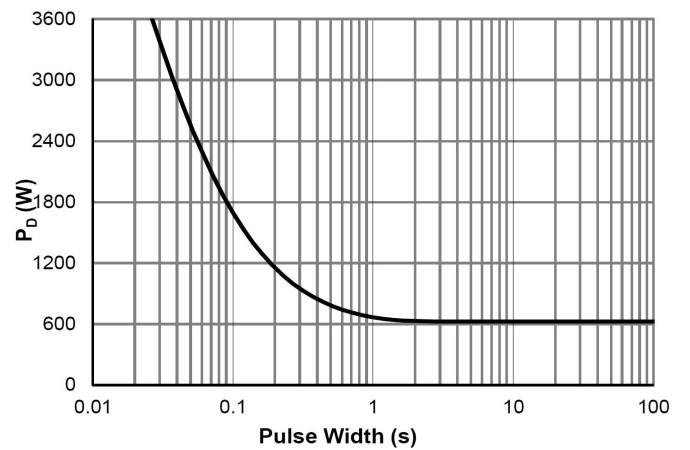
Current De-rating



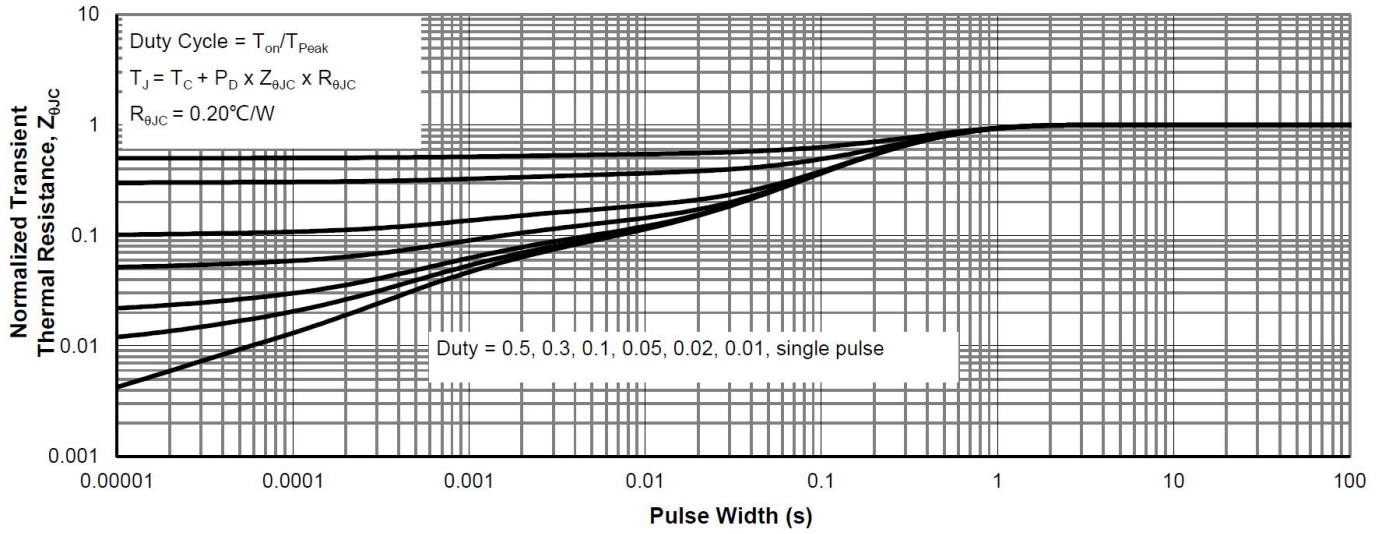
Power De-rating



Maximum Safe Operating Area

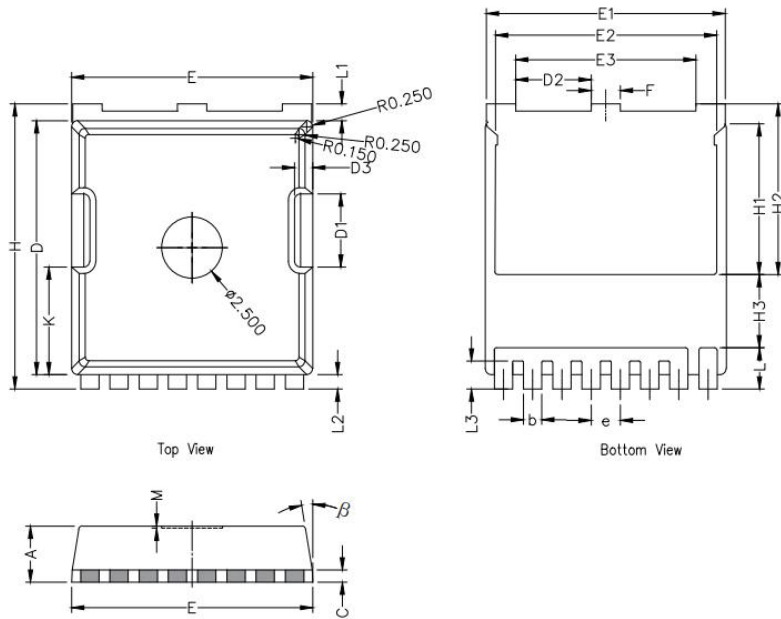


Single Pulse Power Rating, Junction-to-Case



Normalized Maximum Transient Thermal Impedance

**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.		
$\beta$	8°	10°	12°
K	4.25	4.40	4.55