Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
150V	3.7mΩ@10V	200A

合肥矽普半导体
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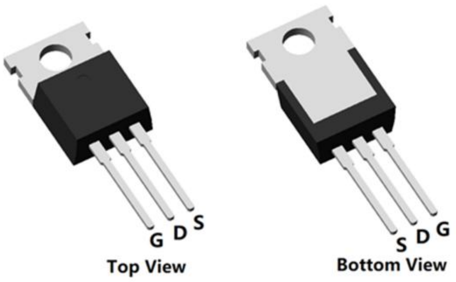
Feature

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

Applications

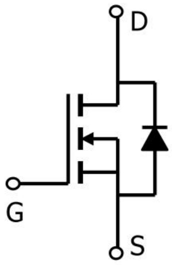
- Power switching application
- DC-DC Converter
- Power Management

Package

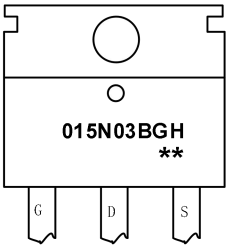


TO-220-3L(1:G 2:D 3:S)

Circuit diagram



Marking



015N03BGH : Product code
**** : Week code**

Order Information

Device	Package	Unit/Tube
SP015N03BGHTQ	TO-220-3L	50

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

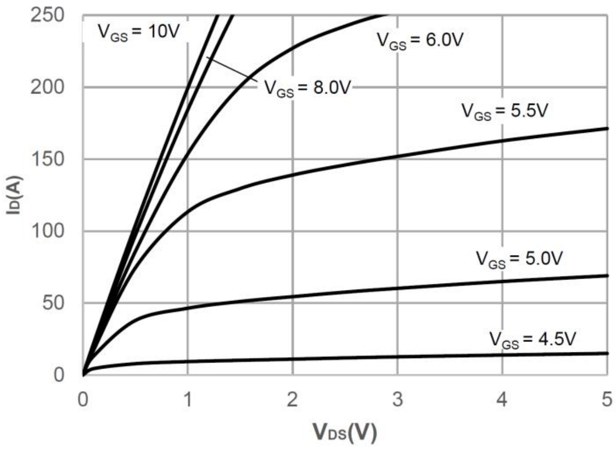
Parameter		Symbol	Rating	Unit
Drain source voltage		V_{DS}	150	V
Gate source voltage		V_{GS}	±20	V
Continuous drain current(Tc=25℃)	Silicon limited	I_D	260	A
Continuous drain current(Tc=25℃)	Package limited	I_D	200	A
Continuous drain current(Tc=100℃)		I_D	125	A
Pulsed drain current		I_{DM}	800	A
Single pulsed avalanche energy[1]		E_{AS}	1521	mJ
Power dissipation(Tc=25℃)		P_D	300	W
Thermal resistance, junction-case		$R_{θJC}$	0.42	℃/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)

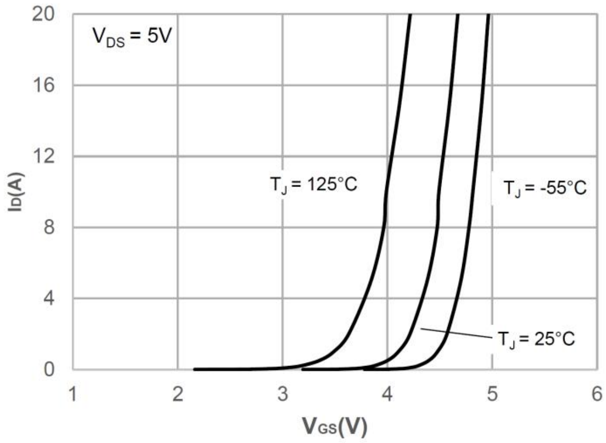
Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	ID = 250μA, VGS = 0V	150	-	-	V
Drain Cut-Off Current	I_{DSS}	VDS = 120V, VGS = 0V	-	-	1	uA
Gate Leakage Current	I_{GSS}	VGS = ±20V, VDS = 0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	VDS = VGS, ID = 250μA	2.5	3.0	3.5	V
Drain-Source ON Resistance	$R_{DS(ON)}$	VGS = 10V, ID = 20A	-	3.7	4.7	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	VDS =75V, VGS = 0V, f = 1.0MHz	-	8538	-	pF
Output Capacitance	C_{oss}		-	772	-	
Reverse Transfer Capacitance	C_{rss}		-	21	-	
Total Gate Charge	Q_g	VDS=75V , VGS=10V , ID=70A	-	122	-	nC
Gate-Source Charge	Q_{gs}		-	48	-	
Gate-Drain Charge	Q_{gd}		-	33	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	VGS = 10V, VDS =75V, RL=3Ω RG = 4.7Ω	-	33	-	nS
Rise Time	t_r		-	59	-	
Turn-Off Delay Time	$t_{d(off)}$		-	89	-	
Fall Time	t_f		-	48	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	VGS=0V , IS=1A , TJ=25℃	-	-	1.2	V
Maximum Body-Diode Continuous Current	I_S		-	-	200	A
Reverse Recovery Time	Trr	I_S=80A, di/dt=100A/us, TJ=25℃	-	96	-	nS
Reverse Recovery Charge	Qrr		-	310	-	nC

Note:
The EAS test condition is VDD=50V,VGS=10V,L=0.5mH,RG=25Ω

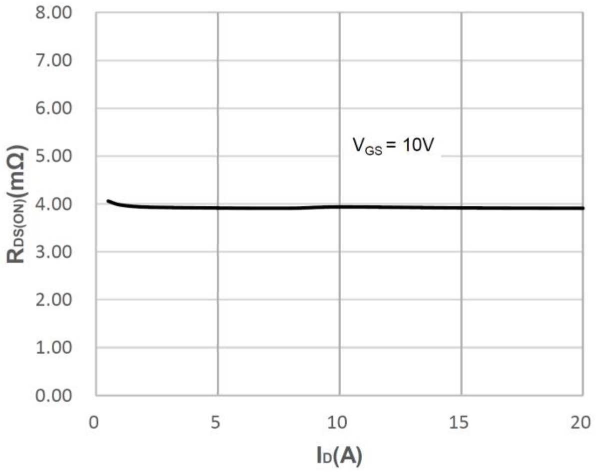
Typical Characteristics



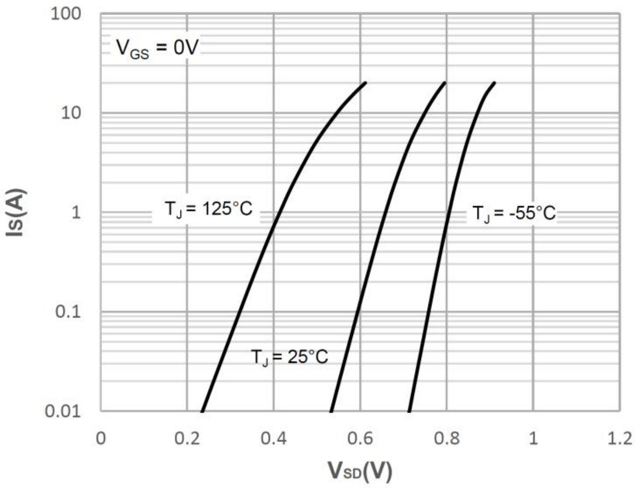
Output Characteristics



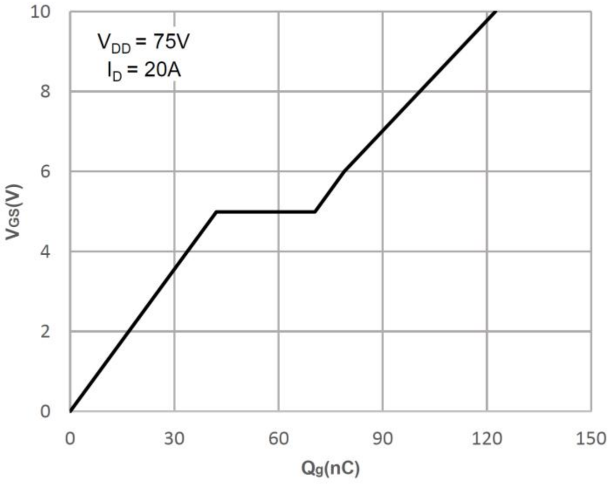
Typical Transfer Characteristics



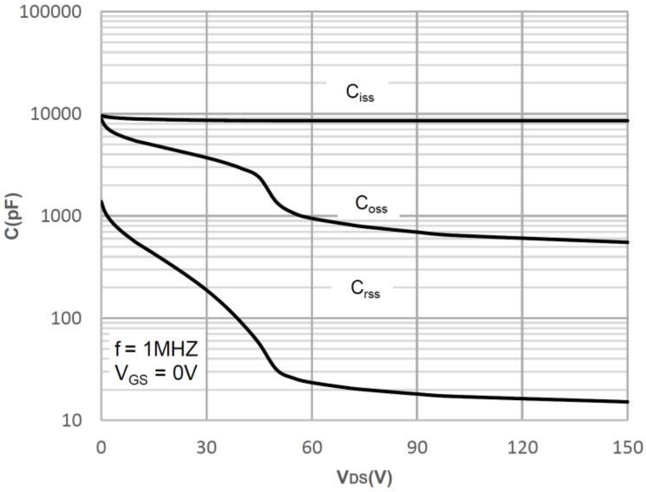
On-resistance vs. Drain Current



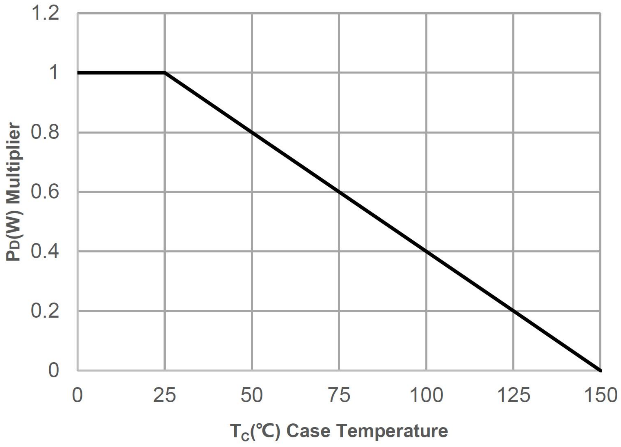
Body Diode Characteristics



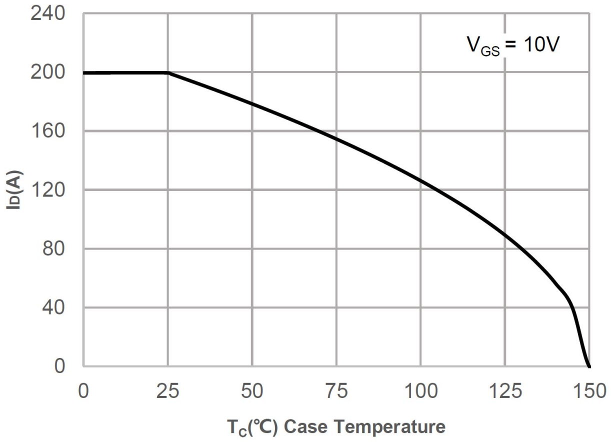
Gate Charge Characteristics



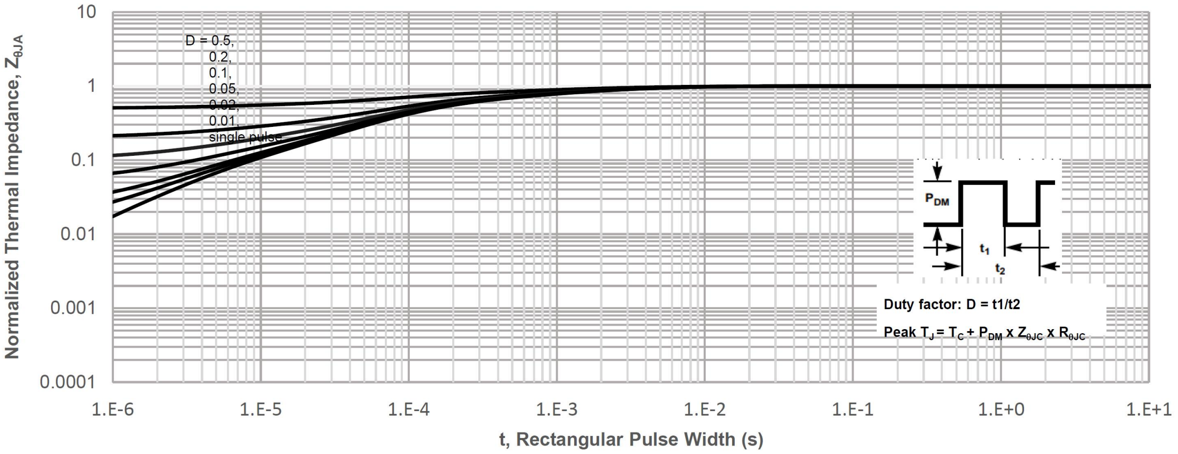
Capacitance Characteristics



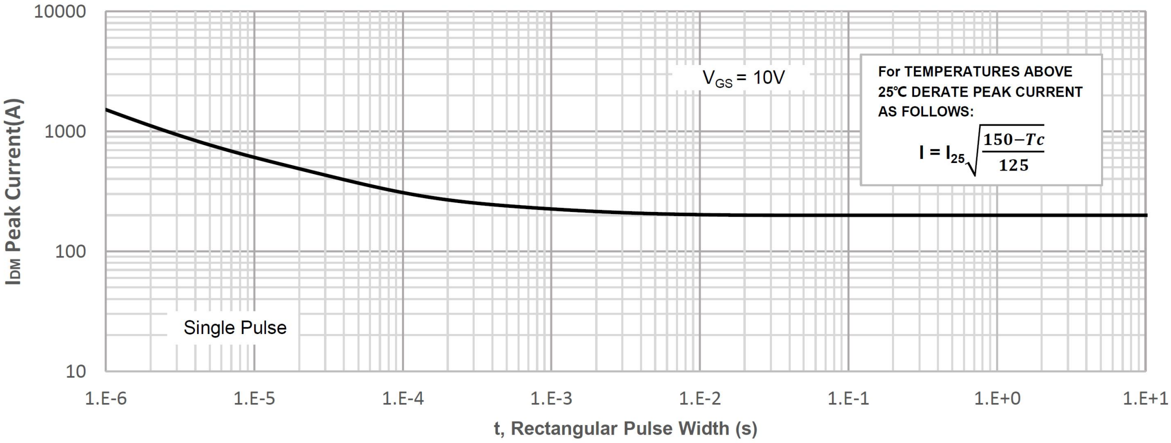
Power De-rating



Current De-rating

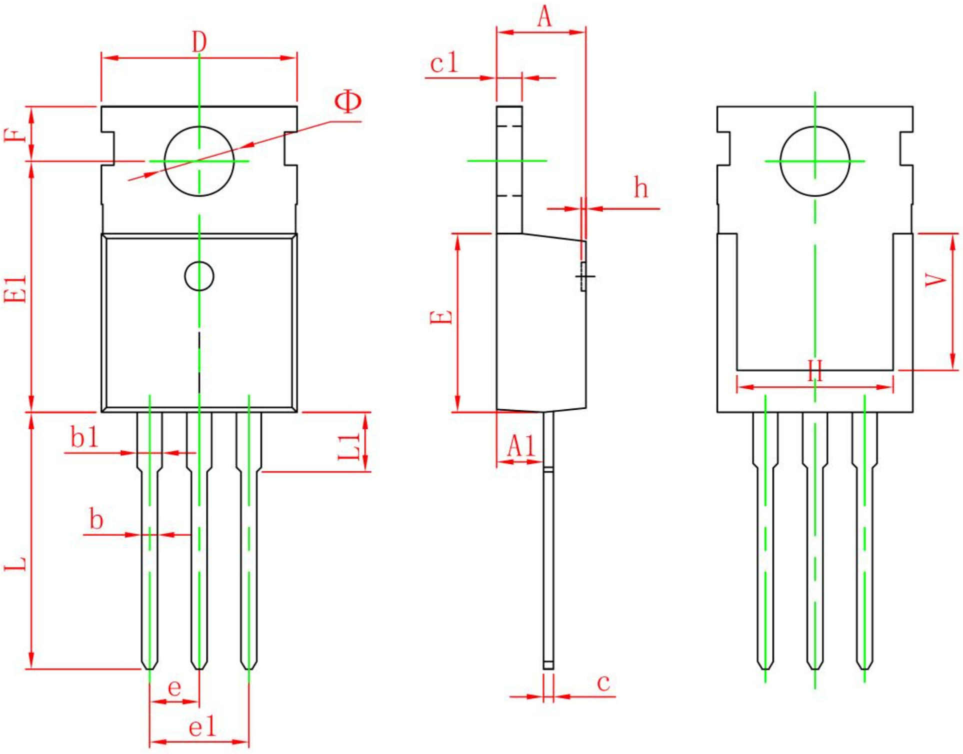


Normalized Maximum Transient Thermal Impedance



Peak Current Capacity

TO-220-3L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.950	9.750	0.352	0.384
E1	12.650	13.050	0.498	0.514
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	6.900 REF.		0.276 REF.	
Φ	3.400	3.800	0.134	0.150