

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	3.3mΩ@10V	170A



合肥矽普半导体

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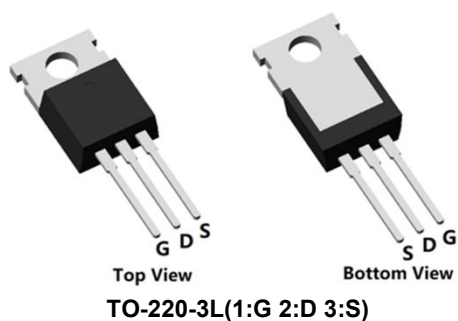
Feature

- Fast Switching
- Low Gate Charge and Rdson
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

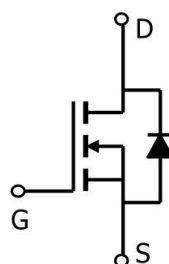
Applications

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

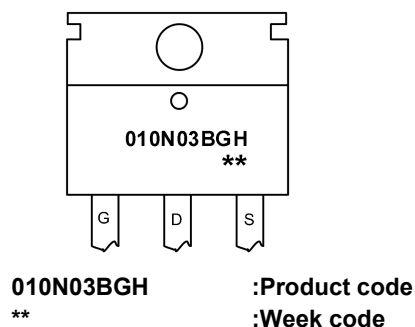
Package



Circuit diagram



Marking



Order Information

Device	Package	Unit/Tube
SP010N03BGHTQ	TO-220-3L	50

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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current (Tc=25°C)	I_D	170	A
Continuous Drain Current (Tc=100°C)	I_D	115	A
Pulsed Drain Current	I_{DM}	680	A
Single Pulse Avalanche Energy ¹	E_{AS}	3136	mJ
Power Dissipation (Tc=25°C)	P_D	205	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.61	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

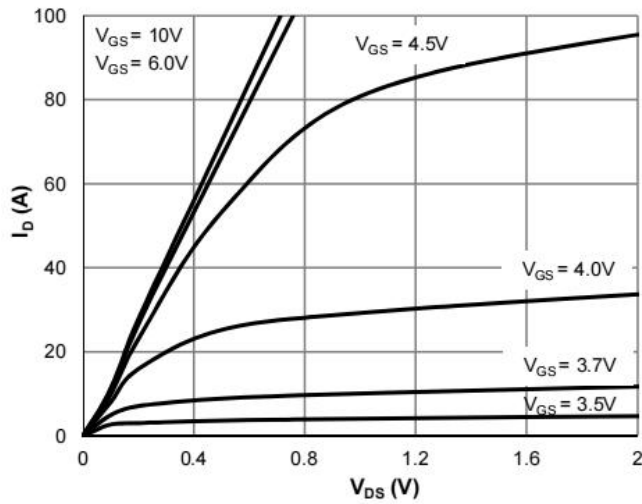
Electrical characteristics (Ta=25°C, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V , ID=250uA	100	-	-	V
Drain Cut-Off Current	IDSS	VDS=80V , VGS=0V , TJ=25℃	-	-	1	μA
Gate Leakage Current	IGSS	VGS=±20V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VGS=VDS , ID =250uA	2.0	2.7	4.0	V
Drain-Source ON Resistance	RDS(ON)	VGS=10V , ID=20A	-	3.3	4.2	mΩ
Dynamic Characteristics						
Input Capacitance	Ciss	VDS=50V , VGS=0V , f=1MHz	-	4398	-	pF
Output Capacitance	Coss		-	1361	-	
Reverse Transfer Capacitance	Crss		-	8.5	-	
Total Gate Charge	Qg	VDS=50V , VGS=10V , ID=125A	-	90	-	nC
Gate-Source Charge	Qgs		-	13	-	
Gate-Drain Charge	Qgd		-	19	-	
Switching Characteristics						
Turn-On Delay Time	td(on)	VDD=50V, VGS=10V , RG=1.6Ω, ID=125A	-	20	-	nS
Rise Time	tr		-	70	-	
Turn-Off Delay Time	td(off)		-	50	-	
Fall Time	tf		-	16	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	VSD	Is = 1A, VGS = 0V	-	-	1.2	V
Maximum Body-Diode Continuous Current	Is		-	-	170	A
Reverse Recovery Time	Trr	Is=50A, di/dt=100A/us, TJ=25℃	-	86	-	nS
Reverse Recovery Charge	Qrr		-	206	-	nC

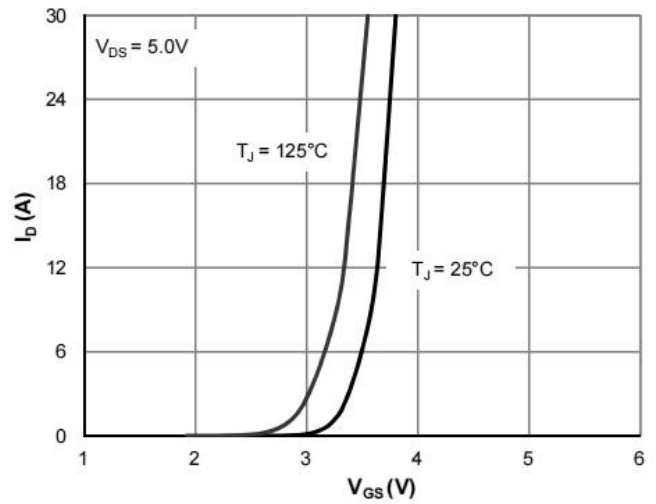
Note :

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

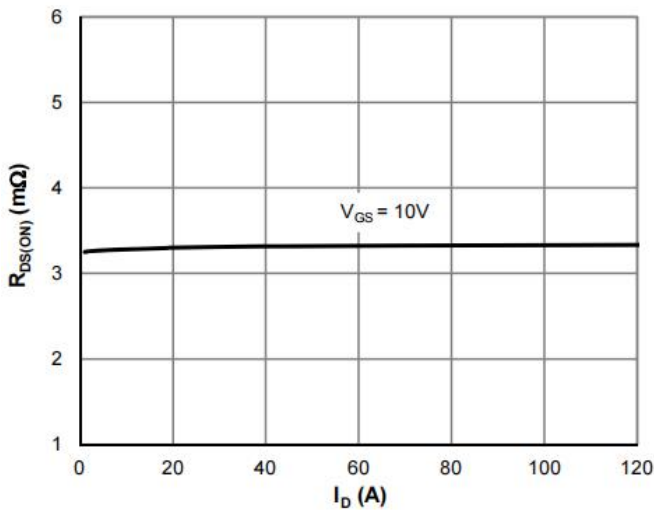
Typical Characteristics



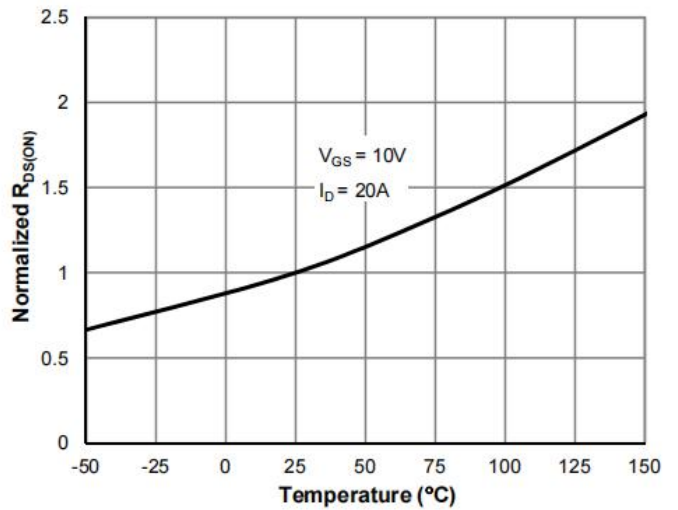
Typical Output Characteristics



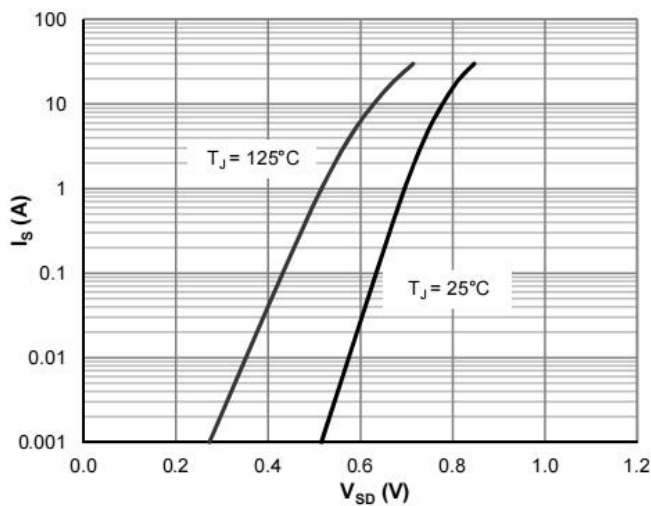
Transfer Characteristics



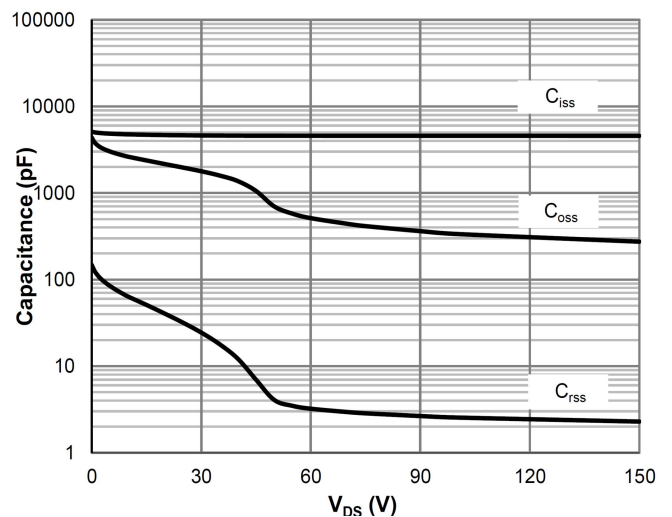
On-Resistance vs. Drain Current



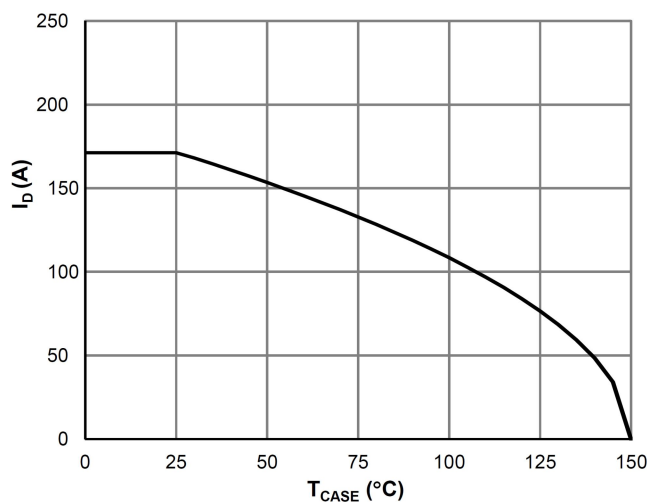
On-Resistance vs. Junction Temperature



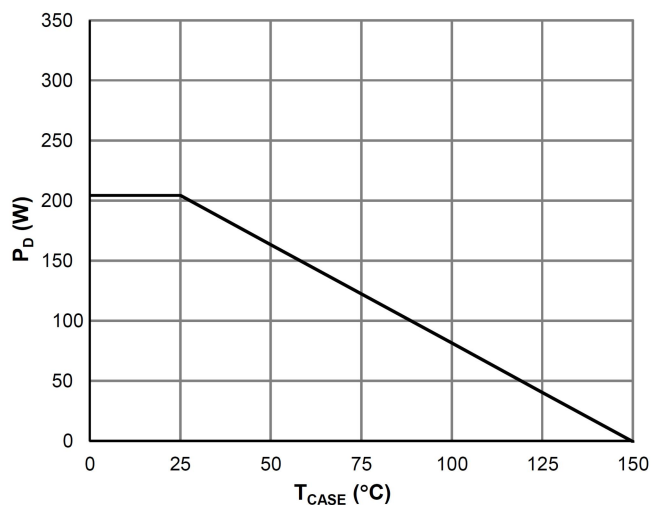
Body-Diode Characteristics



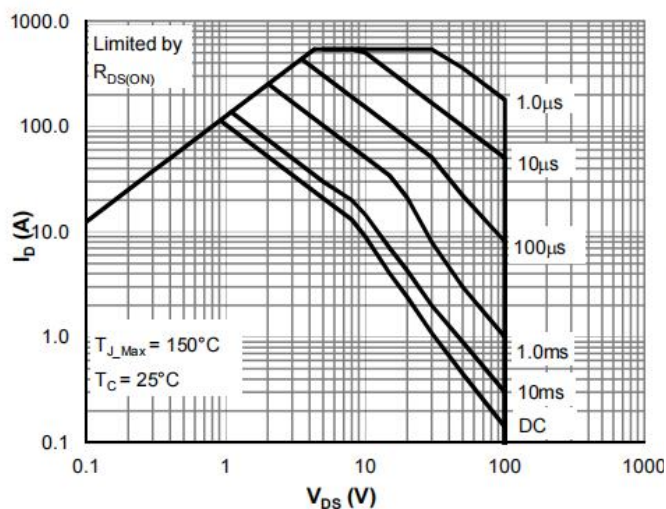
Capacitance Characteristics



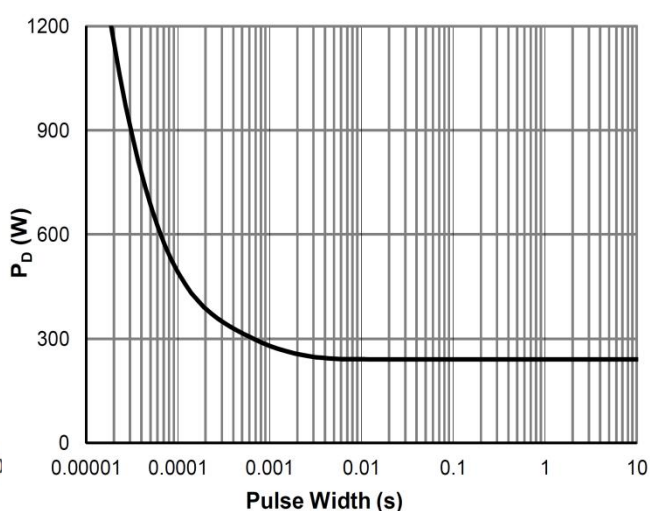
Current De-rating



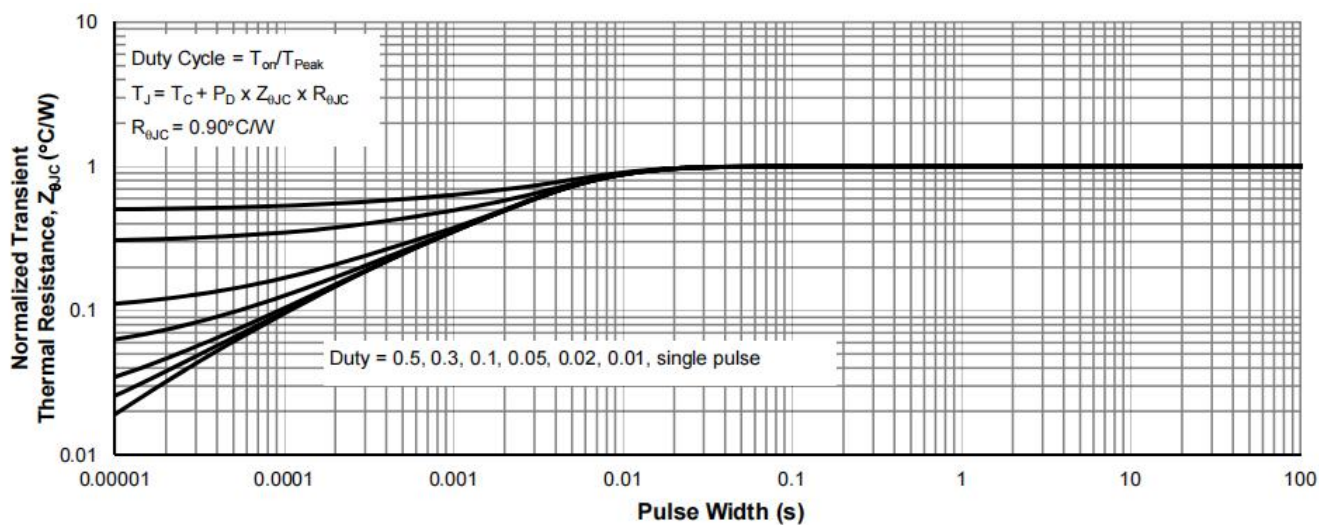
Power De-rating



Maximum Safe Operating Area



Single Pulse Power Rating, Junction-to-Case



Normalized Maximum Transient Thermal Impedance

