

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	2.1m Ω @10V	220A



合肥矽普半导体

Siliup Semiconductor Technology Co., Ltd

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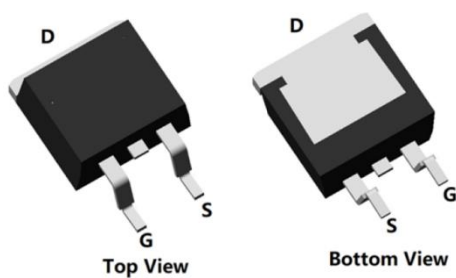
Feature

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

Applications

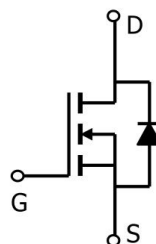
- Power switching application
- DC-DC Converter
- Power Management

Package

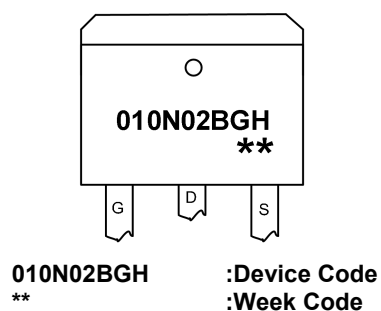


TO-263(1:G 2:D 3:S)

Circuit diagram



Marking



Order Information

Device	Package	Unit/Tape
SP010N02BGHTD	TO-263	800

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	220	A
Continuous Drain Current (Tc=100°C)	I_D	150	A
Pulsed Drain Current	I_{DM}	880	A
Single Pulse Avalanche Energy ¹	E_{AS}	1458	mJ
Power Dissipation (Tc=25°C)	P_D	240	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.52	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

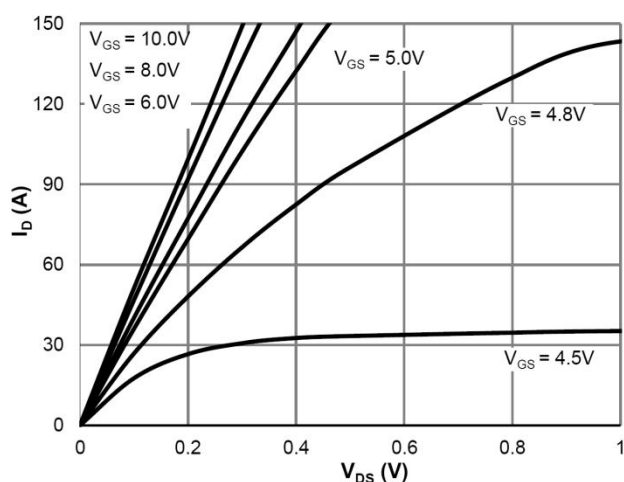
Electrical characteristics (Ta=25°C, unless otherwise noted)

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	2.7	3.2	4.3	V
Drain-Source ON Resistance	RDS(ON)	VGS=10V , ID=20A	-	2.1	2.7	mΩ
Dynamic Characteristics						
Input Capacitance	Ciss	VDS=50V , VGS=0V , f=1MHz	-	10256	-	pF
Output Capacitance	Coss		-	1876	-	
Reverse Transfer Capacitance	Crss		-	35	-	
Total Gate Charge	Qg	VDS=50V , VGS=10V , ID=125A	-	158	-	nC
Gate-Source Charge	Qgs		-	51	-	
Gate-Drain Charge	Qgd		-	27	-	
Switching Characteristics						
Turn-On Delay Time	td(on)	VDD=50V, VGS=10V , RG=1.6Ω, ID=125A	-	35	-	nS
Rise Time	tr		-	68	-	
Turn-Off Delay Time	td(off)		-	150	-	
Fall Time	tf		-	105	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	VSD	Is = 1A, VGS = 0V	-	-	1.2	V
Maximum Body-Diode Continuous Current	Is		-	-	220	A
Reverse Recovery Time	Trr	Is=50A, di/dt=100A/us, TJ=25℃	-	86	-	nS
Reverse Recovery Charge	Qrr		-	256	-	nC

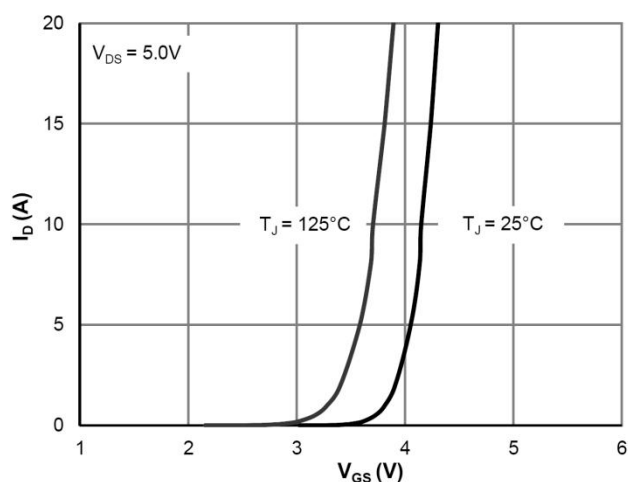
Note :

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

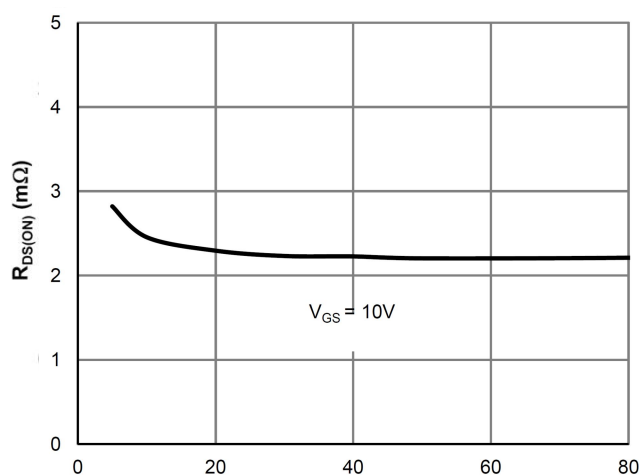
Typical Characteristics



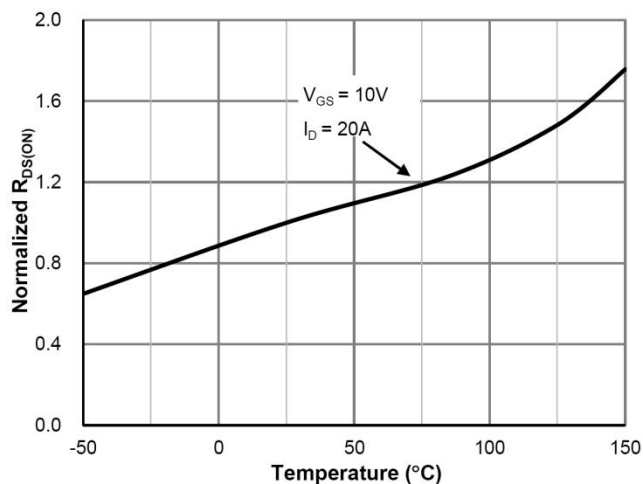
Saturation Characteristics



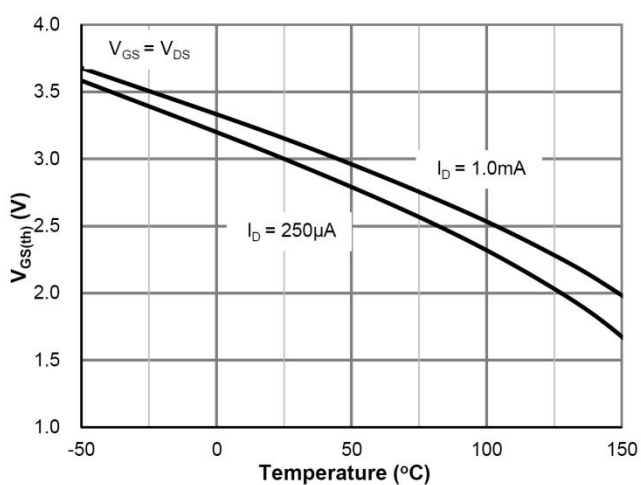
Transfer Characteristics



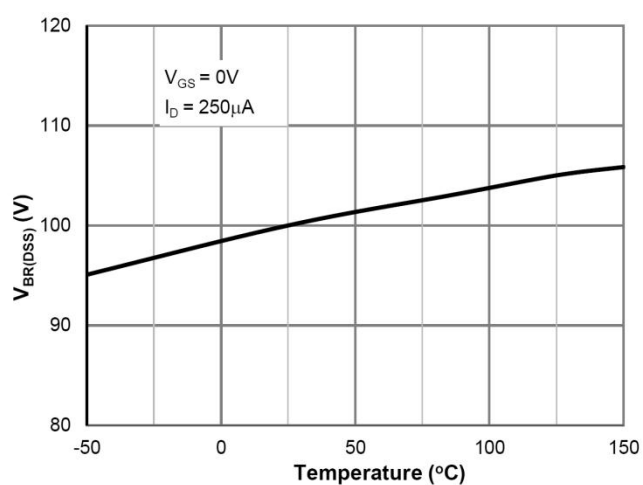
$R_{DS(ON)}$ vs. Drain Current



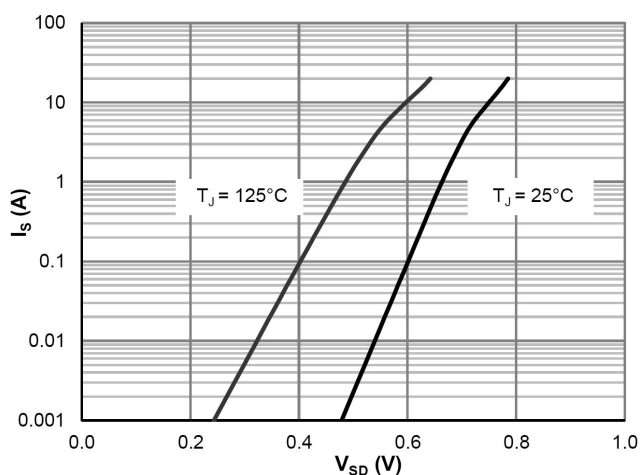
$R_{DS(ON)}$ vs. Junction Temperature



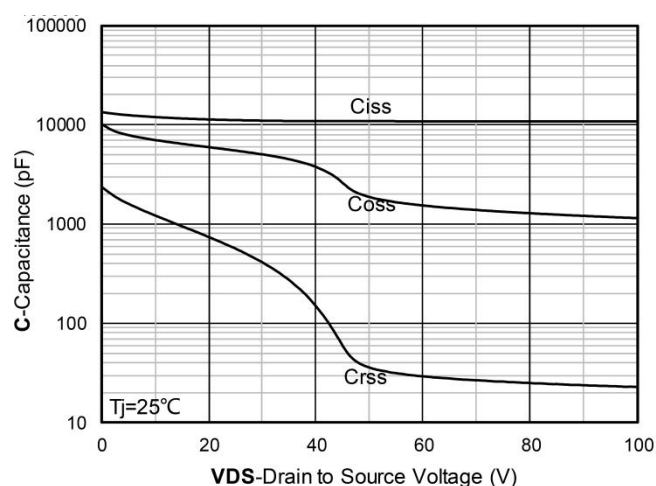
$V_{GS(th)}$ vs. Junction Temperature



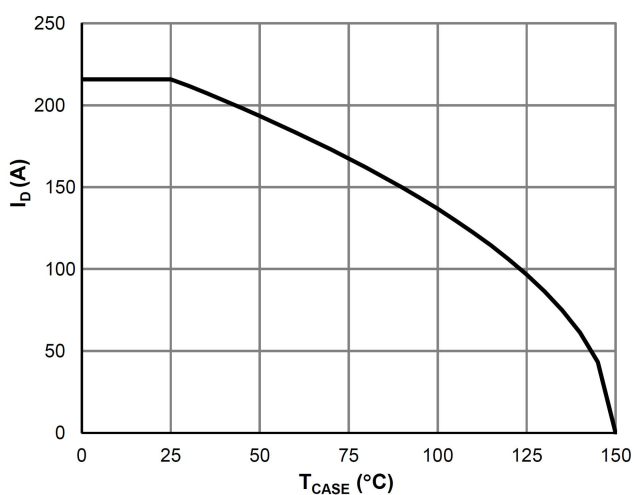
$V_{BR(DSS)}$ vs. Junction Temperature



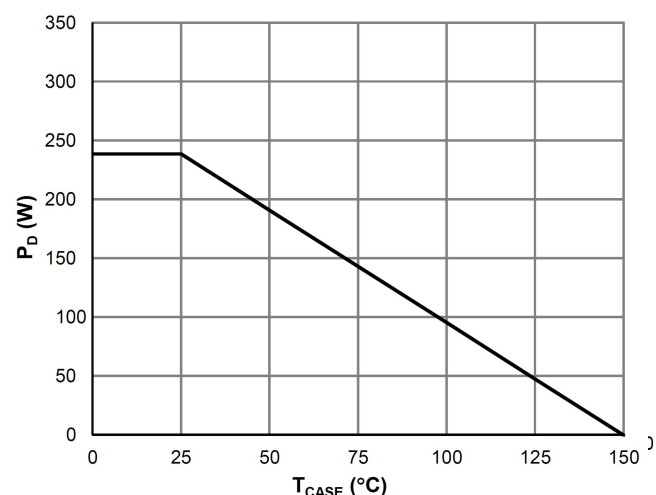
Body-Diode Characteristics



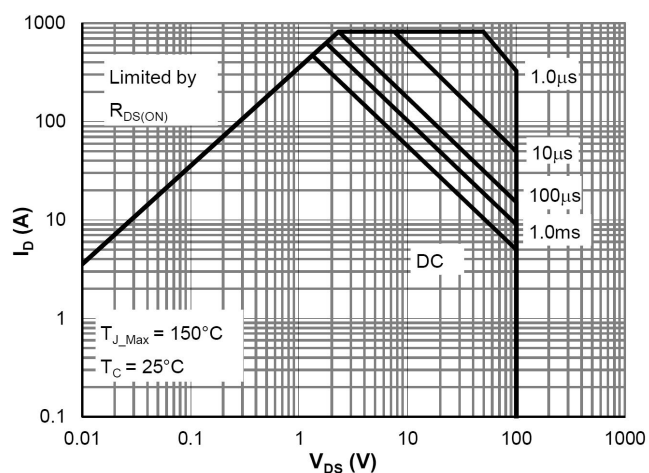
Capacitance Characteristics



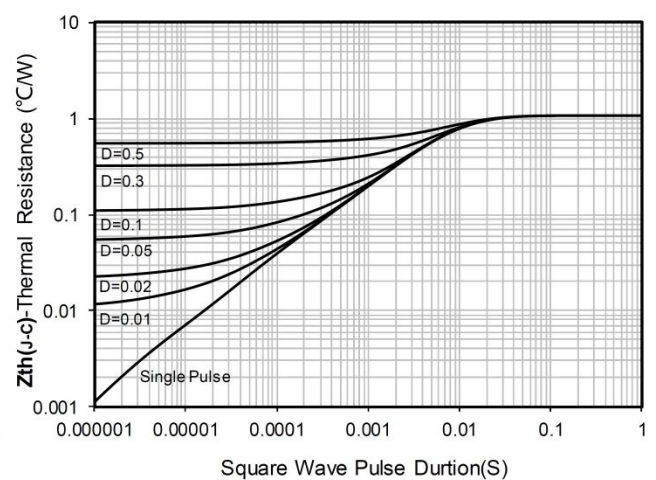
Current De-rating



Power De-rating

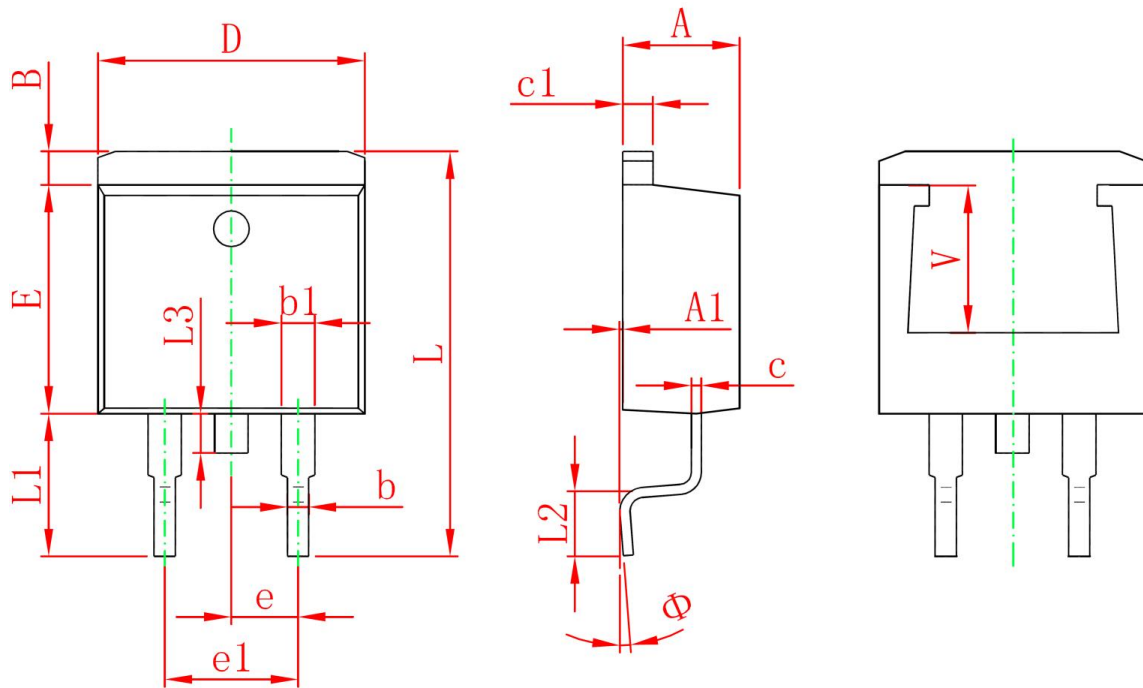


Maximum Safe Operating Area



Maximum Transient Thermal Impedance

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.	