Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
200V	8.3mΩ@10V	140A

合肥矽普半导体
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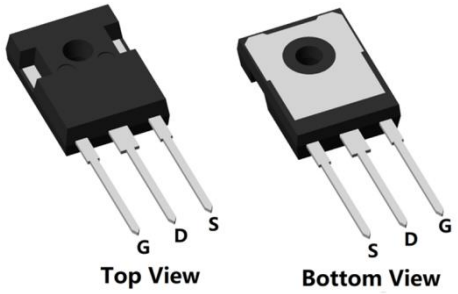
Feature

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

Applications

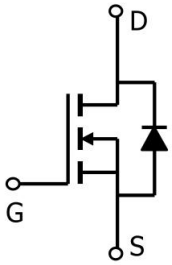
- High Speed Power switching
- DC-DC Converter
- Power Management

Package

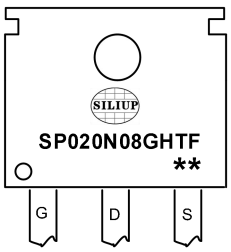


TO-247(1:G 2:D 3:S)

Circuit diagram



Marking



SP020N08GHTF :Device Code
** :Week Code

Order Information

Device	Package	Unit/Tube
SP020N08GHTF	TO-247	30

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	200	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (Tc=25℃)	I_D	140	A
Continuous Drain Current (Tc=100℃)	I_D	95	A
Pulsed Drain Current	I_{DM}	560	A
Single Pulse Avalanche Energy[1]	E_{AS}	1156	mJ
Power Dissipation (Tc=25℃)	P_D	310	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.4	℃/W
Storage Temperature Range	T_{STG}	-55 to 150	℃
Operating Junction Temperature Range	T_J	-55 to 150	℃

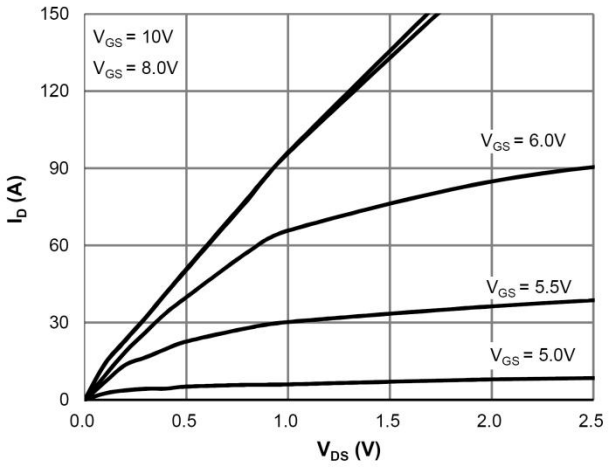
Electrical characteristics (Ta=25℃, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	ID = 250μA, VGS = 0V	200	-	-	V
Drain Cut-Off Current	I_{DSS}	VDS = 160V, VGS = 0V	-	-	1	μA
Gate Leakage Current	I_{GSS}	VGS = ±20V, VDS = 0V	-	-	±0.1	
Gate Threshold Voltage	$V_{GS(th)}$	VDS = VGS, ID = 250μA	2.0	3.0	4.0	V
Drain-Source ON Resistance	$R_{DS(ON)}$	VGS = 10V, ID = 20A	-	8.3	10	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	VDS =100V, VGS = 0V, f = 1.0MHz	-	5300	-	pF
Output Capacitance	C_{oss}		-	410	-	
Reverse Transfer Capacitance	C_{rss}		-	27	-	
Total Gate Charge	Q_g	VDS=100V , VGS=10V , ID=20A	-	78	-	nC
Gate-Source Charge	Q_{gs}		-	28	-	
Gate-Drain Charge	Q_{gd}		-	17	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	VGS = 10V, VDS =100V, RL=3.5Ω , RG = 6.0Ω	-	23	-	nS
Rise Time	t_r		-	48	-	
Turn-Off Delay Time	$t_{d(off)}$		-	63	-	
Fall Time	t_f		-	19	-	
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		-	-	140	A
Body Diode Reverse Recovery Time	Trr	I_S = 50A, dI_F/dt = 100A/us	-	128	-	nS
Body Diode Reverse Recovery Charge	Qrr		-	643	-	nC

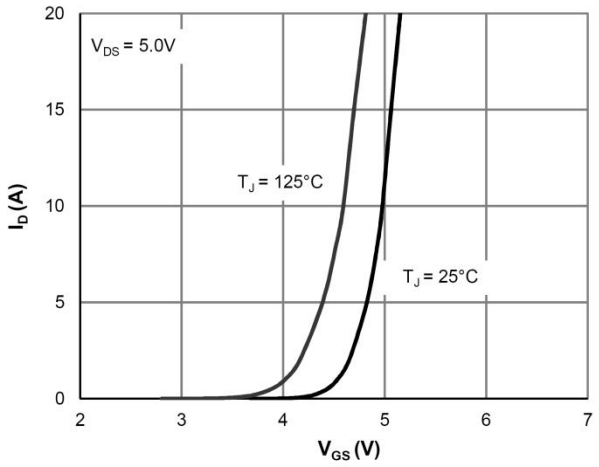
Note :

1. The test condition is VDD=50V,VGS=10V,L=0.5mH,RG=25Ω;

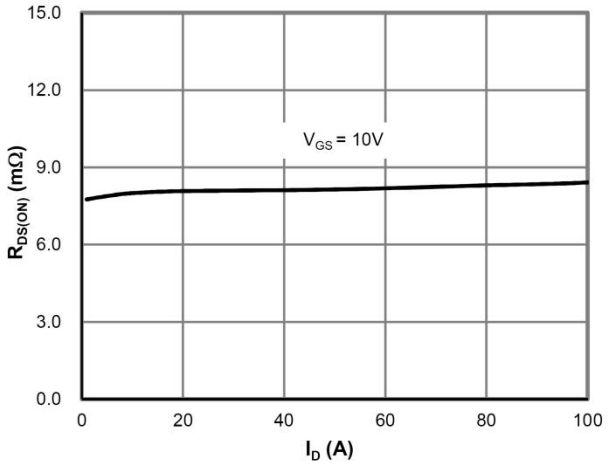
Typical Characteristics



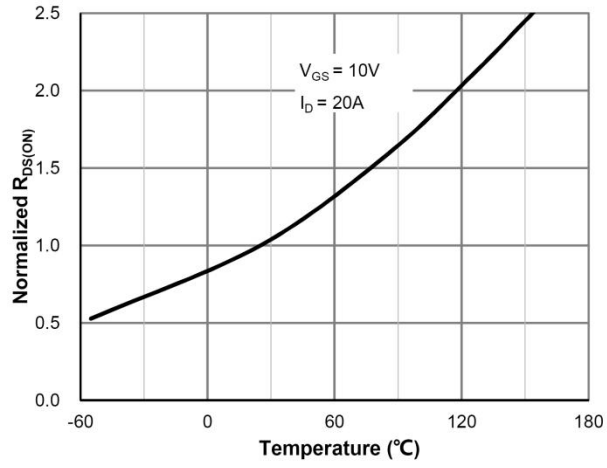
Saturation Characteristics



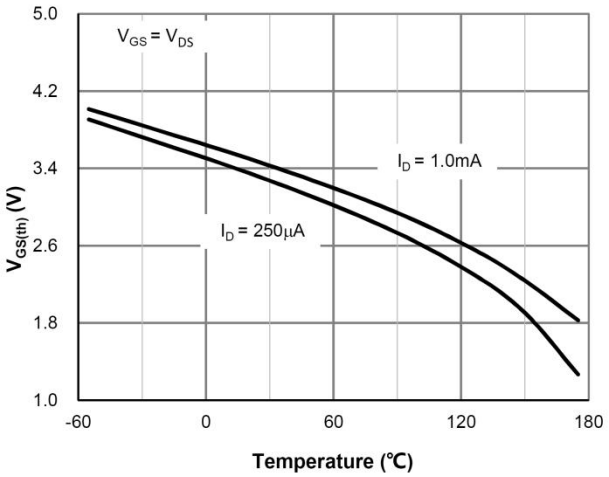
Transfer Characteristics



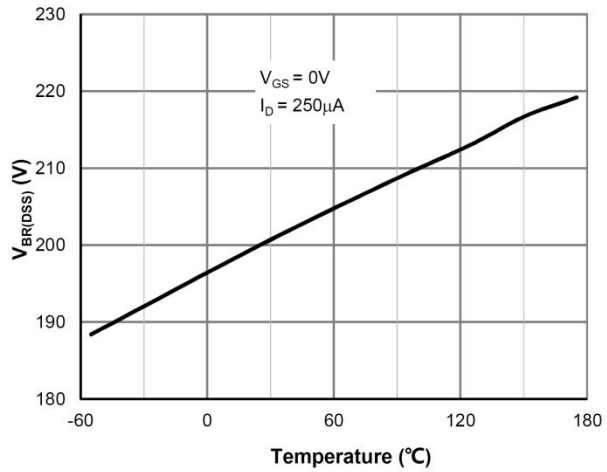
$R_{DS(ON)}$ vs. Drain Current



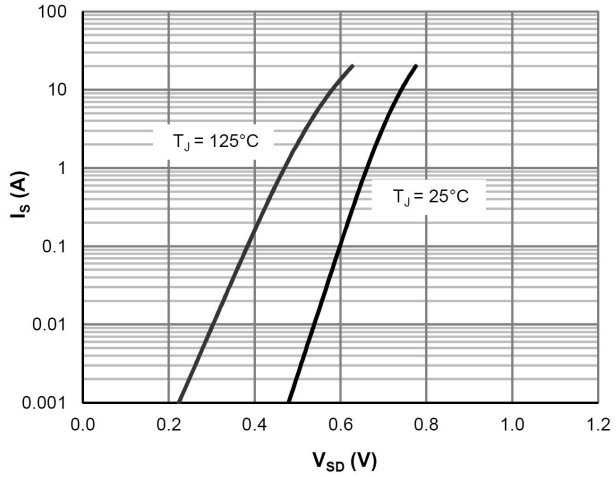
$R_{DS(ON)}$ vs. Junction Temperature



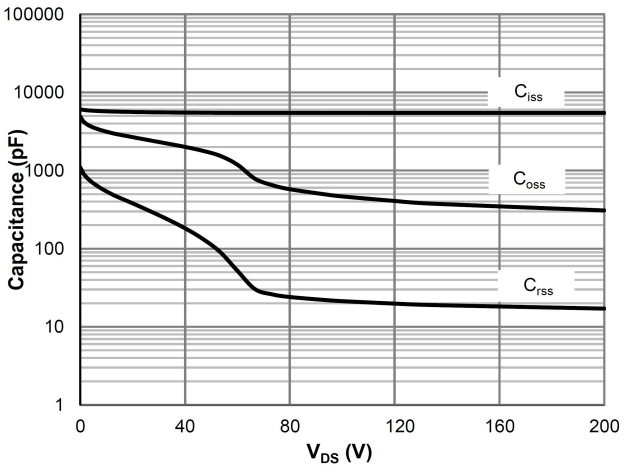
$V_{GS(th)}$ vs. Junction Temperature



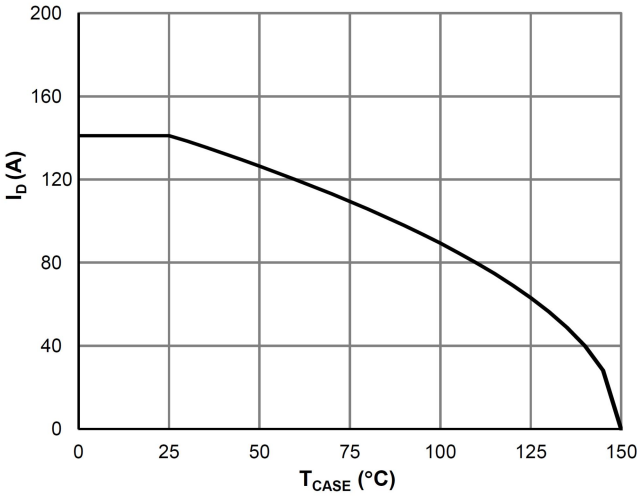
$V_{BR(DSS)}$ vs. Junction Temperature



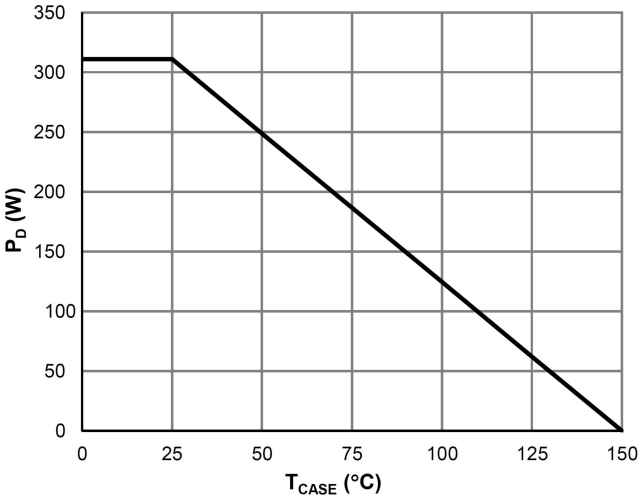
Body-Diode Characteristics



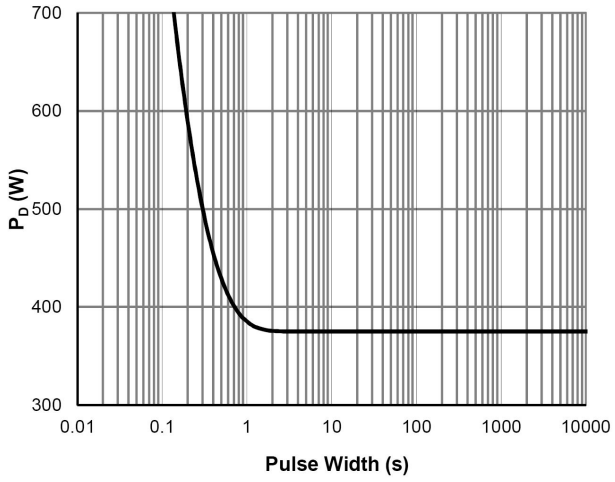
Capacitance Characteristics



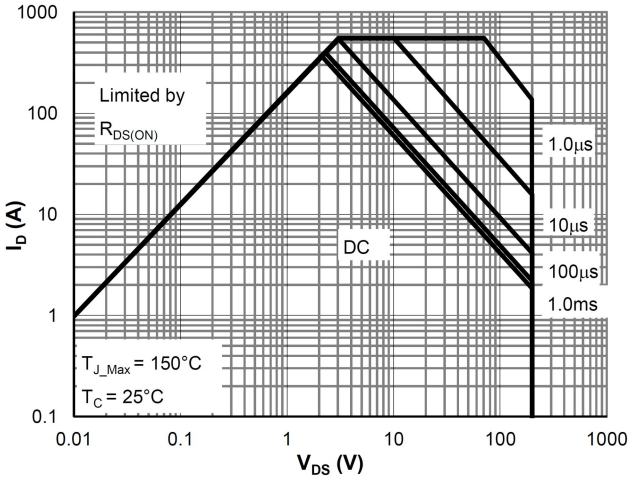
Current De-rating



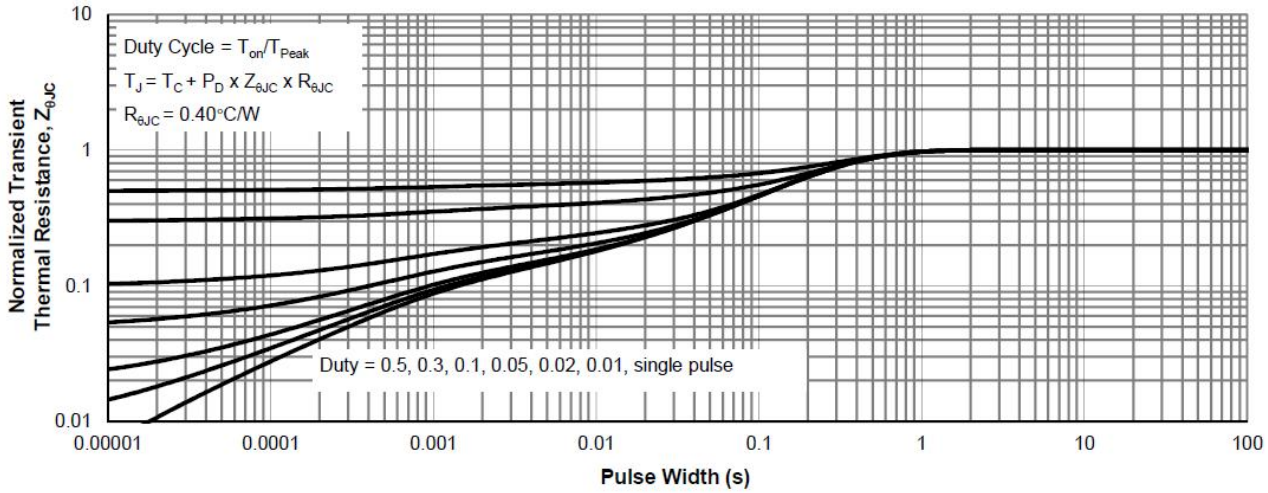
Power De-rating



Single Pulse Power Rating, Junction-to-Case

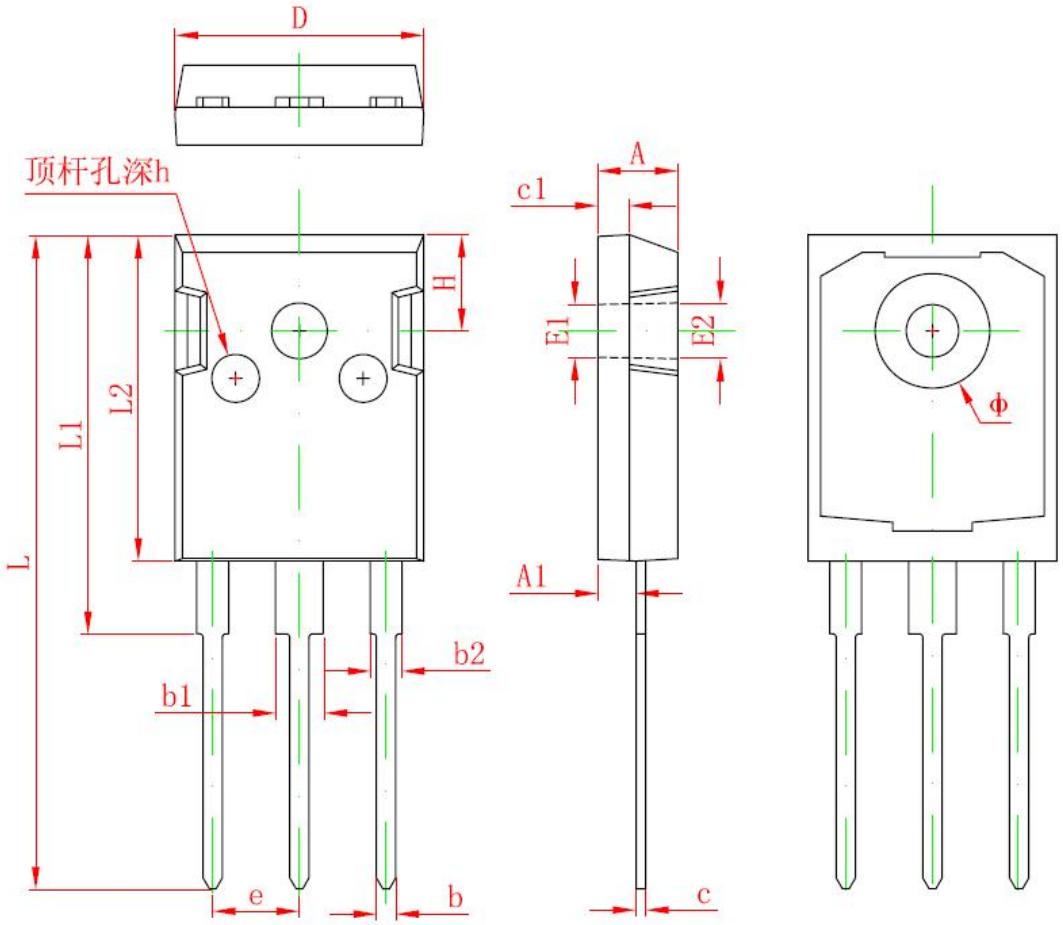


Maximum Safe Operating Area



Normalized Maximum Transient Thermal Impedance

TO-247 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.850	5.150	0.191	0.200
A1	2.200	2.600	0.087	0.102
b2	1.800	2.200	0.071	0.087
b	1.000	1.400	0.039	0.055
b1	2.800	3.200	0.110	0.126
c	0.500	0.700	0.020	0.028
c1	1.900	2.100	0.075	0.083
D	15.450	15.750	0.608	0.620
E1	3.500 REF.		0.138 REF.	
E2	3.600 REF.		0.142 REF.	
L	40.900	41.300	1.610	1.626
L1	24.800	25.100	0.976	0.988
L2	20.300	20.600	0.799	0.811
Φ	7.100	7.300	0.280	0.287
e	5.450 TYP.		0.215 TYP.	
H1	5.980 REF.		0.235 REF.	
h	0.000	0.300	0.000	0.012