

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	1.5mΩ@10V	300A



合肥矽普半导体

Siliup Semiconductor Technology Co., Ltd

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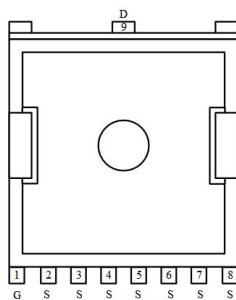
Feature

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

Applications

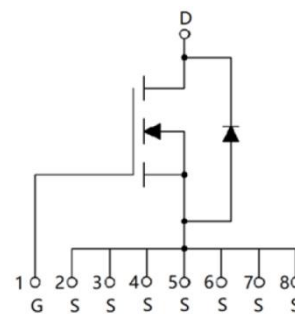
- PWM Application
- Hard switched and high frequency circuits
- Power Management

Package

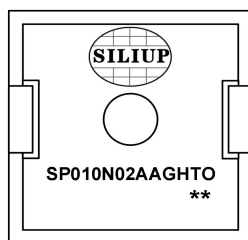


TOLL

Circuit diagram



Marking



SP010N02AAGHTO : Product code
** : Week code

Order Information

Device	Package	Unit/Tape
SP010N02AAGHTO	TOLL	2000

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current (Tc=25°C)	I_D	300	A
Continuous Drain Current (Tc=100°C)	I_D	200	A
Pulsed Drain Current	I_{DM}	1200	A
Single Pulse Avalanche Energy ¹	E_{AS}	1681	mJ
Power Dissipation (Tc=25°C)	P_D	295	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.42	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

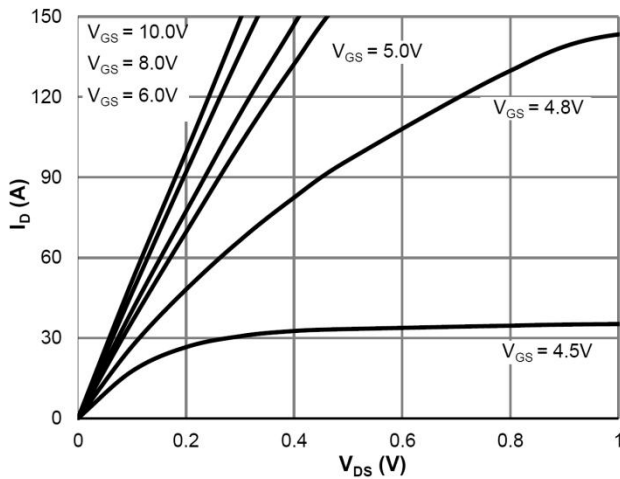
Electrical characteristics (Ta=25°C, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	B _V DSS	VGS=0V , ID=250uA	100	110	-	V
Drain Cut-Off Current	I _{DSS}	VDS=80V , VGS=0V , TJ=25℃	-	-	1	μA
Gate Leakage Current	I _{GSS}	VGS=±20V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	VGS=VDS , ID =250uA	2	3	4	V
Drain-Source ON Resistance	R _{DS(ON)}	VGS=10V , ID=20A	-	1.5	1.8	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	VDS=50V , VGS=0V , f=1MHz	-	9499	-	pF
Output Capacitance	C _{oss}		-	1465	-	
Reverse Transfer Capacitance	C _{rss}		-	52	-	
Total Gate Charge	Q _g	VDS=50V , VGS=10V , ID=125A	-	139	-	nC
Gate-Source Charge	Q _{gs}		-	35.7	-	
Gate-Drain Charge	Q _{gd}		-	25	-	
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	VDD=50V, VGS=10V , RG=1.6Ω, ID=125A	-	20	-	nS
Rise Time	t _r		-	59.5	-	
Turn-Off Delay Time	t _{d(off)}		-	70	-	
Fall Time	t _f		-	23	-	
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		-	-	300	A
Reverse Recovery Time	T _{rr}	I _S =50A, di/dt=100A/us, TJ=25℃	-	96	-	nS
Reverse Recovery Charge	Q _{rr}		-	248	-	nC

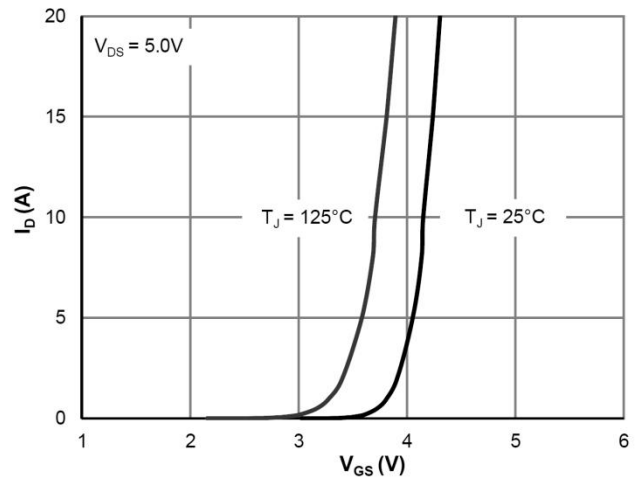
Note :

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

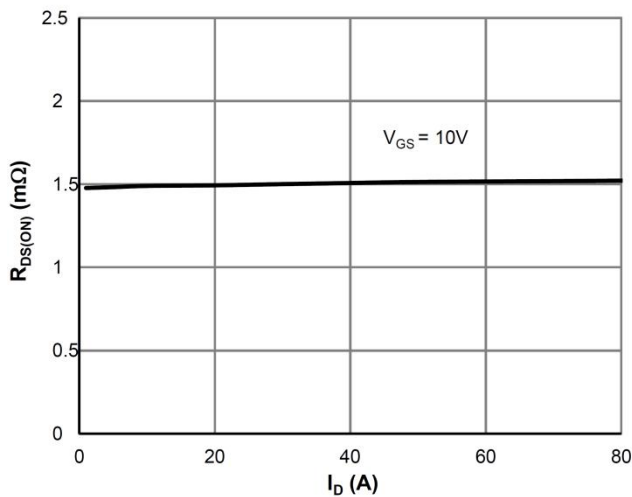
Typical Characteristics



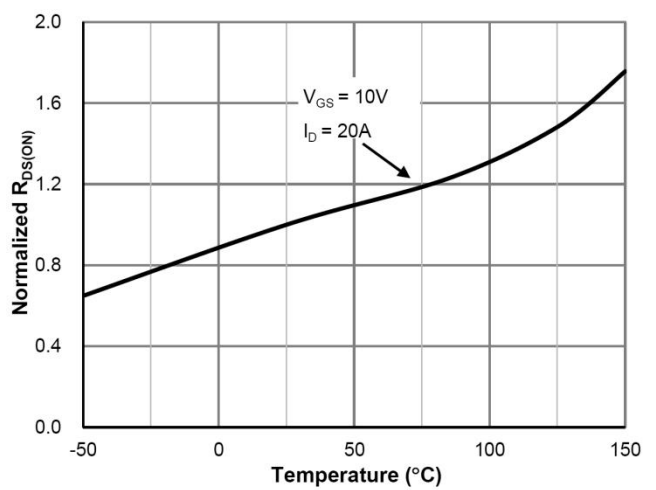
Saturation Characteristics



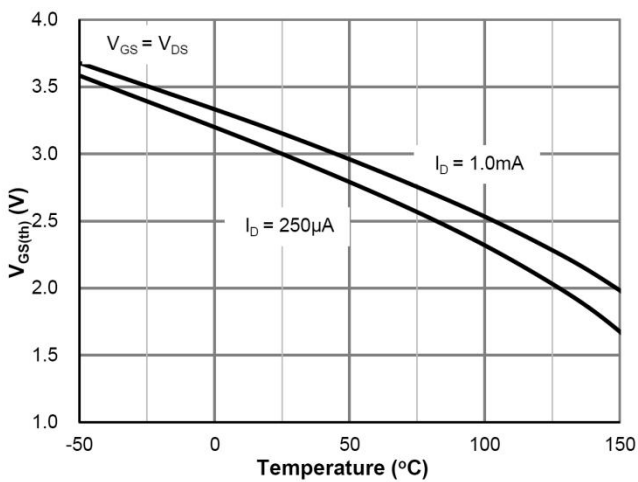
Transfer Characteristics



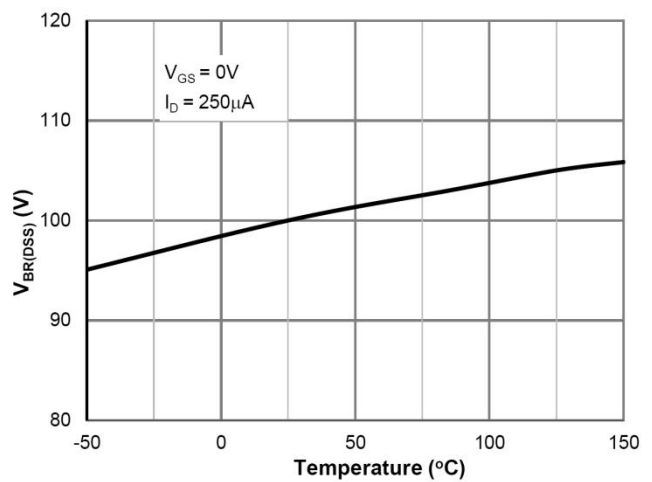
$R_{DS(ON)}$ vs. Drain Current



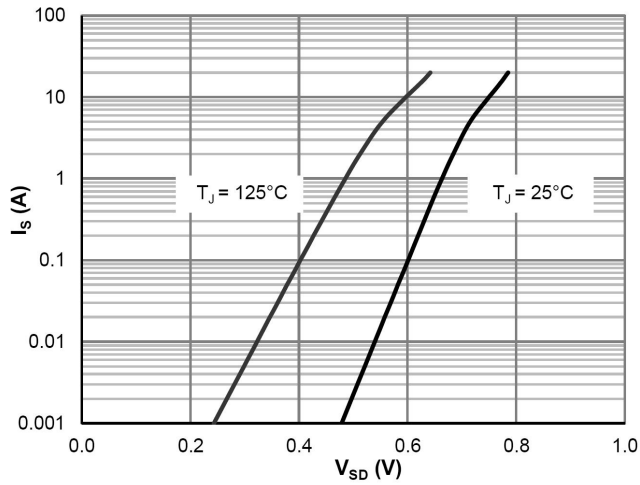
$R_{DS(ON)}$ vs. Junction Temperature



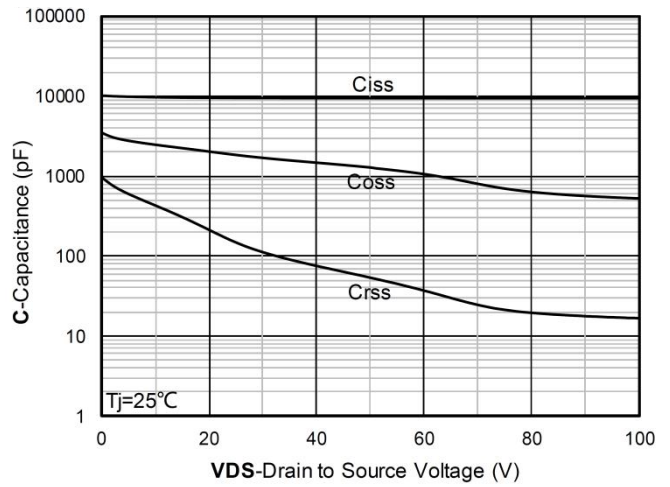
$V_{GS(th)}$ vs. Junction Temperature



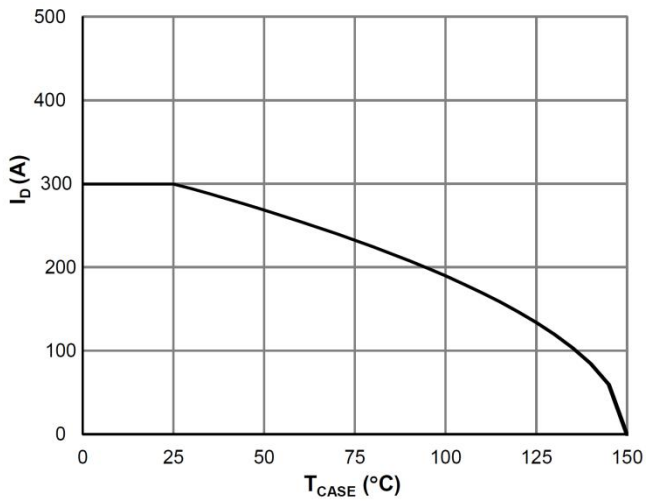
$V_{BR(DSS)}$ vs. Junction Temperature



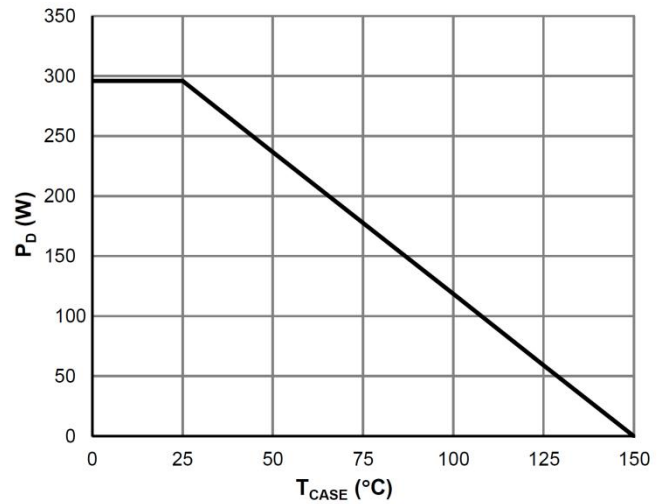
Body-Diode Characteristics



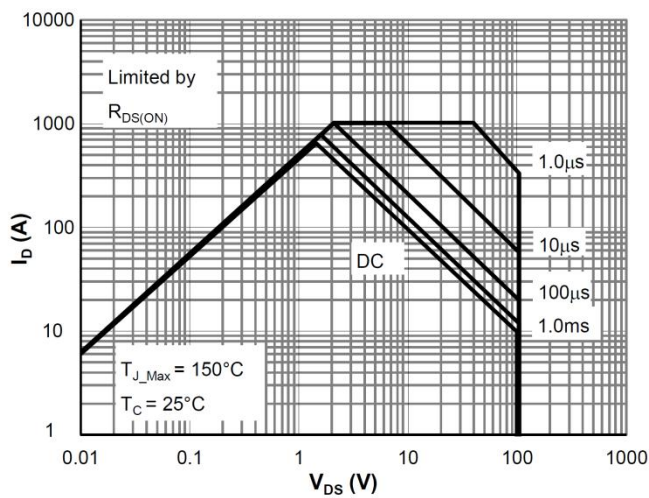
Capacitance Characteristics



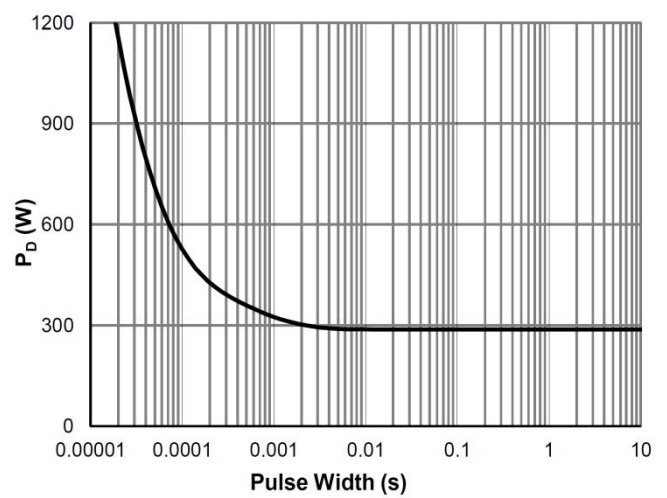
Current De-rating



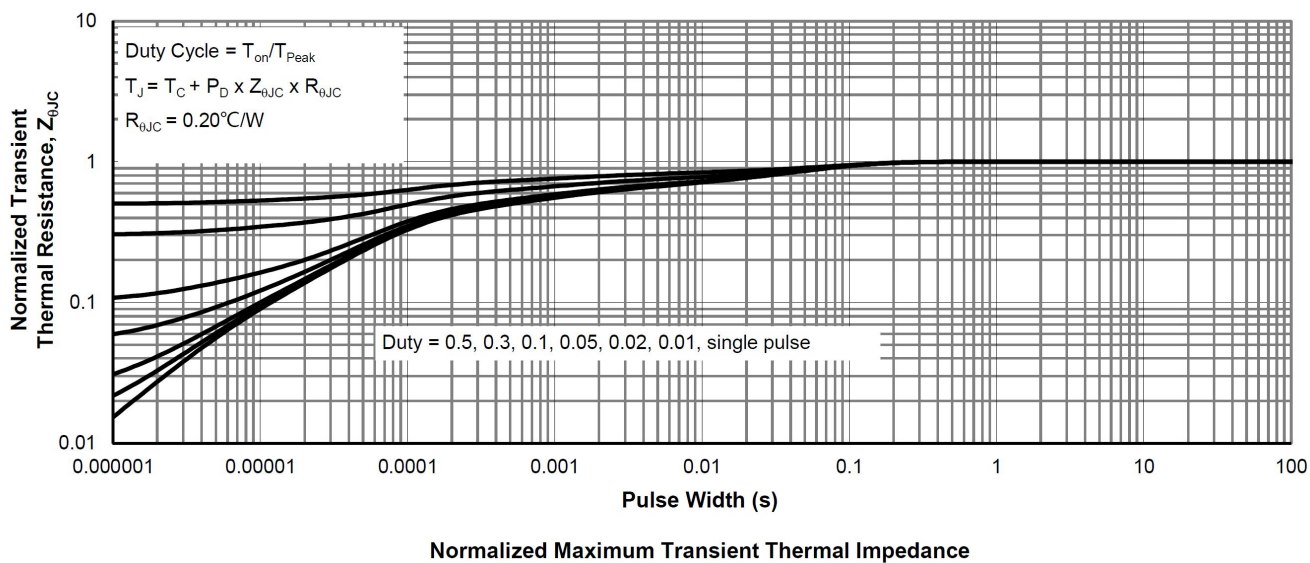
Power De-rating

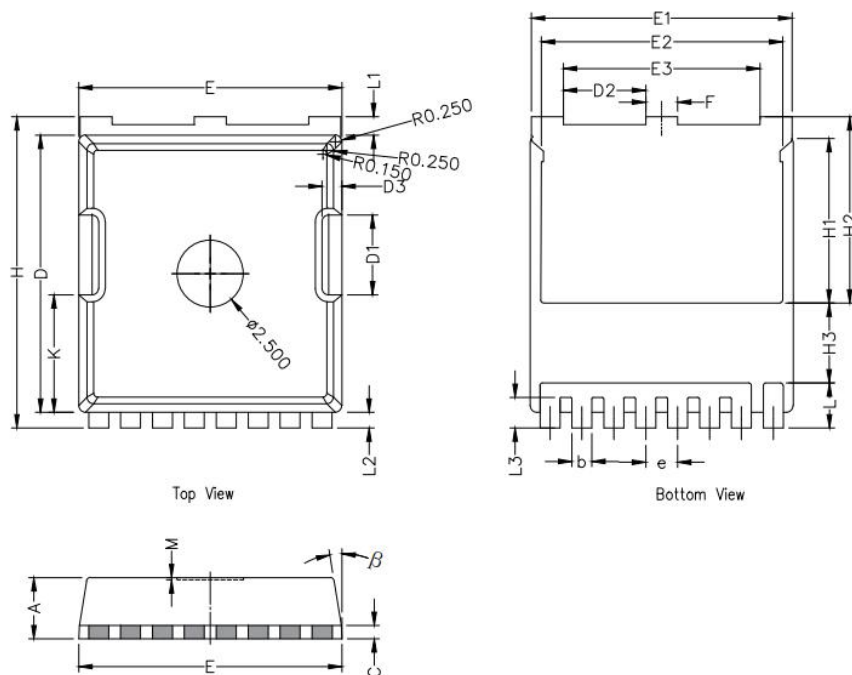


Maximum Safe Operating Area



Single Pulse Power Rating, Junction-to-Case



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.		
β	8°	10°	12°
K	4.25	4.40	4.55