

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
150V	$9.2m\Omega@10V$	70A



合肥矽普半导体

Siliup Semiconductor Technology Co., Ltd

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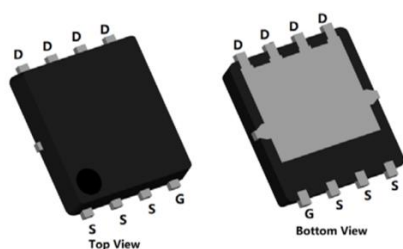
Feature

- Fast Switching
- Low Gate Charge and $R_{DS(on)}$
- Advanced Split Gate Trench Technology
- 100% Single Pulse avalanche energy Test

Applications

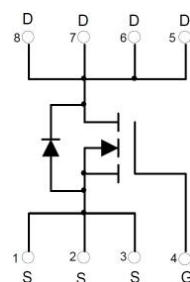
- Power switching application
- DC-DC Converter
- Power Management

Package



PDFN5X6-8L

Circuit diagram



Marking



SP015N09GHNK : Product code
** : Week code

Order Information

Device	Package	Unit/Tape
SP015N09GHNK	PDFN5X6-8L	5000

Absolute maximum ratings (Ta=25°C, 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°C)	I_D	70	A
Continuous Drain Current (Tc=100°C)	I_D	45	A
Pulsed Drain Current	I_{DM}	280	A
Single Pulse Avalanche Energy ¹	E_{AS}	506	mJ
Power Dissipation (Tc=25°C)	P_D	135	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.93	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

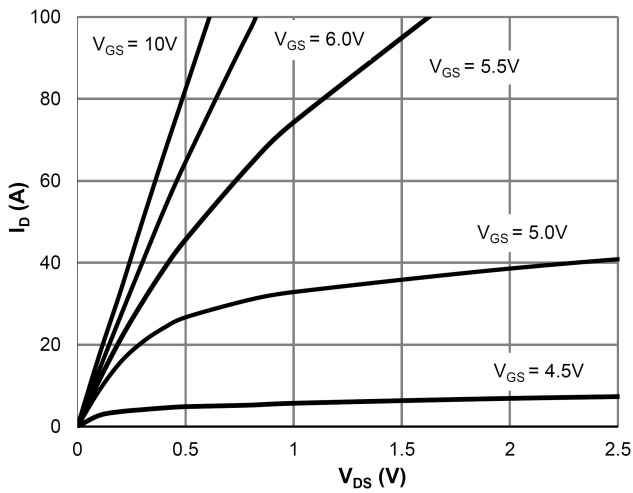
Electrical characteristics (Ta=25°C, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	ID = 250μA, VGS = 0V	150	-	-	V
Drain Cut-Off Current	IDSS	VDS = 120V, VGS = 0V	-	-	1	μA
Gate Leakage Current	IGSS	VGS = ±20V, VDS = 0V	-	-	±0.1	
Gate Threshold Voltage	VGS(th)	VDS = VGS, ID = 250μA	2.0	3.0	4.0	V
Drain-Source ON Resistance	RDS(ON)	VGS = 10V, ID = 20A	-	9.2	11.5	mΩ
Dynamic Characteristics						
Input Capacitance	Ciss	VDS = 75V, VGS = 0V, f = 1.0MHz	-	3310	-	pF
Output Capacitance	Coss		-	268	-	
Reverse Transfer Capacitance	Crss		-	9	-	
Total Gate Charge	Qg	VDS=75V , VGS=10V , ID=30A	-	30	-	nC
Gate-Source Charge	Qgs		-	17.8	-	
Gate-Drain Charge	Qgd		-	7	-	
Switching Characteristics						
Turn-On Delay Time	td(on)	VGS = 10V, VDS = 50V, ID = 30A RG = 6Ω	-	13	-	nS
Rise Time	tr		-	25	-	
Turn-Off Delay Time	td(off)		-	31	-	
Fall Time	tf		-	25	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	VSD	Is = 1A, VGS = 0V	-	-	1.2	V
Maximum Body-Diode Continuous Current	Is		-	-	70	A
Body Diode Reverse Recovery Time	Trr	Is=20A, di/dt=100A/us, TJ=25℃	-	76	-	nS
Body Diode Reverse Recovery Charge	Qrr		-	175	-	nC

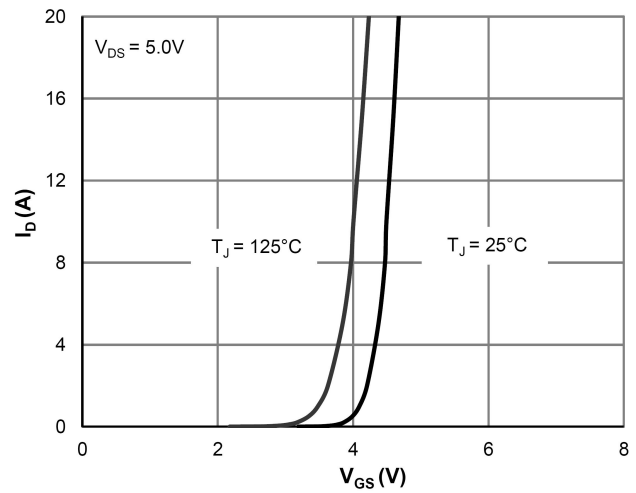
Note :

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

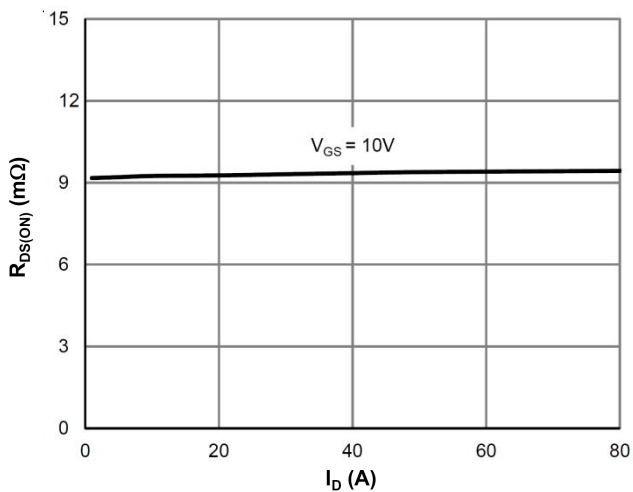
Typical Characteristic



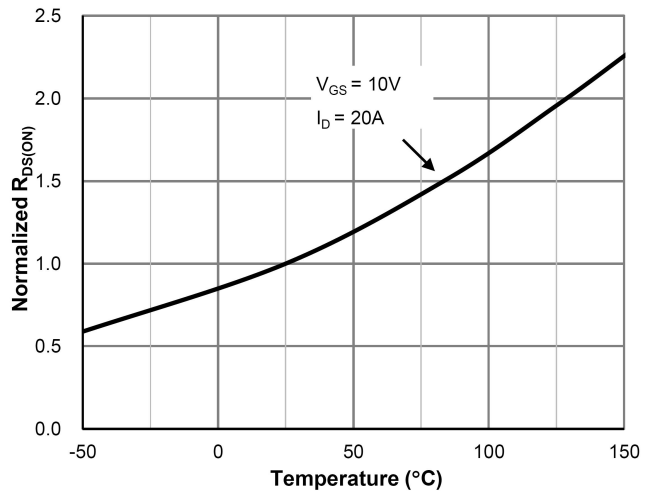
Saturation Characteristics



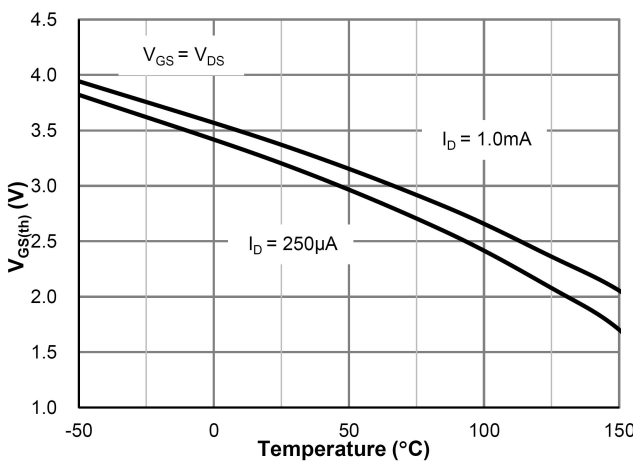
Transfer Characteristics



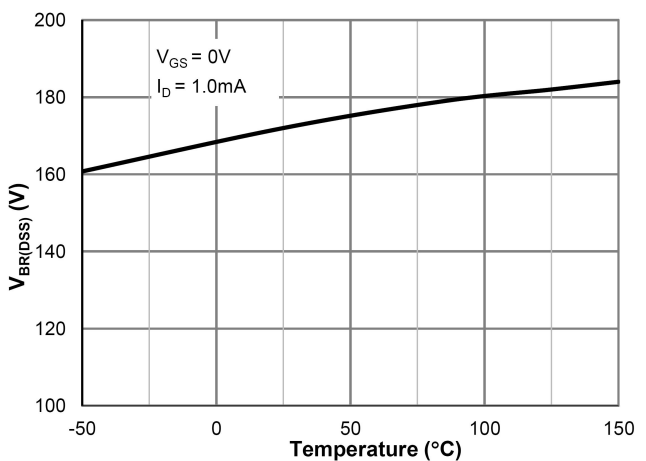
$R_{DS(ON)}$ vs. Drain Current



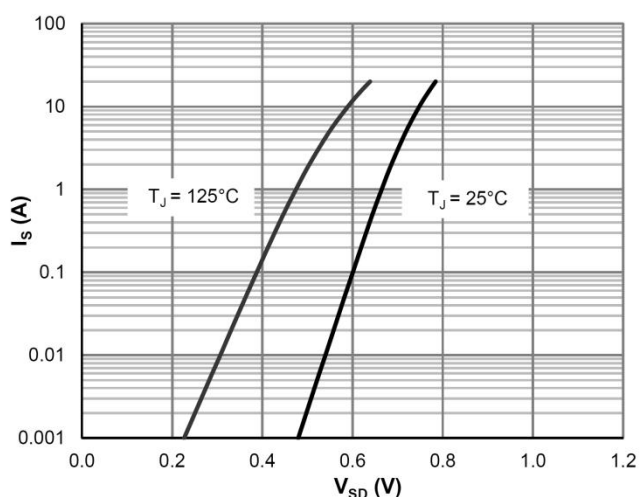
$R_{DS(ON)}$ vs. Junction Temperature



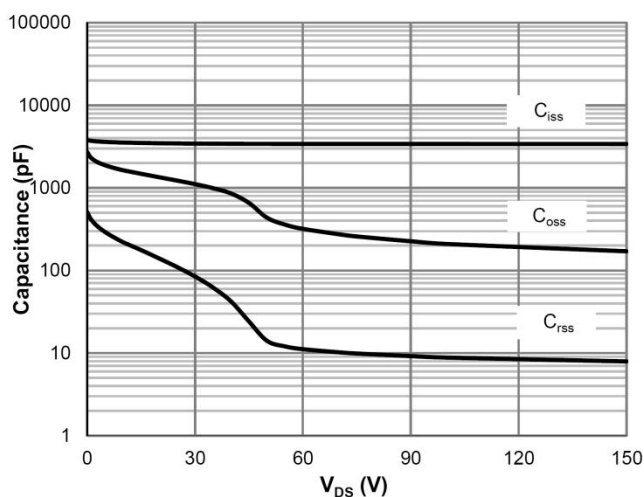
$V_{GS(th)}$ vs. Junction Temperature



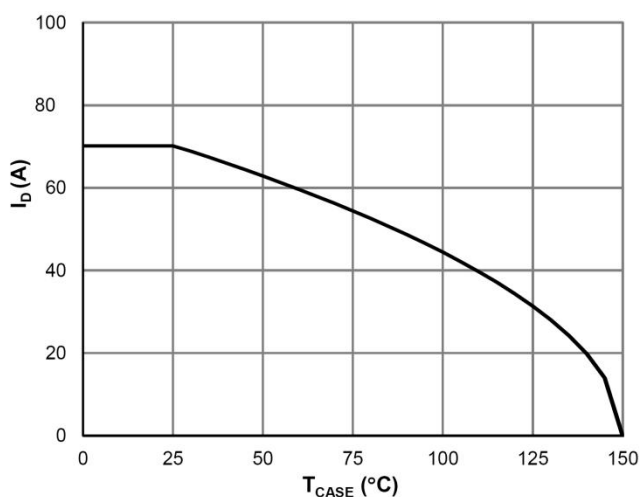
$V_{BR(DSS)}$ vs. Junction Temperature



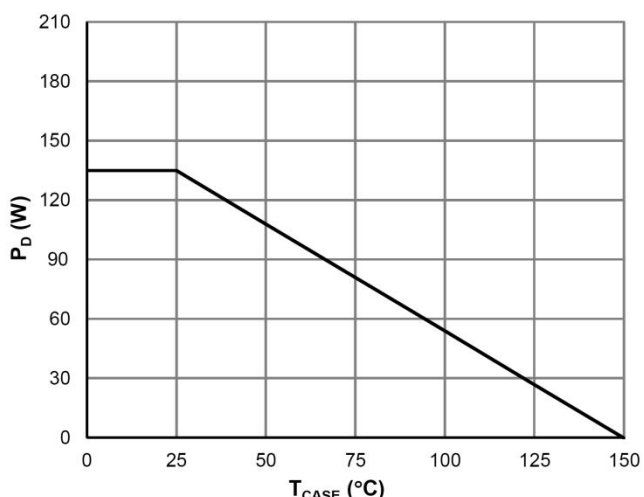
Body-Diode Characteristics



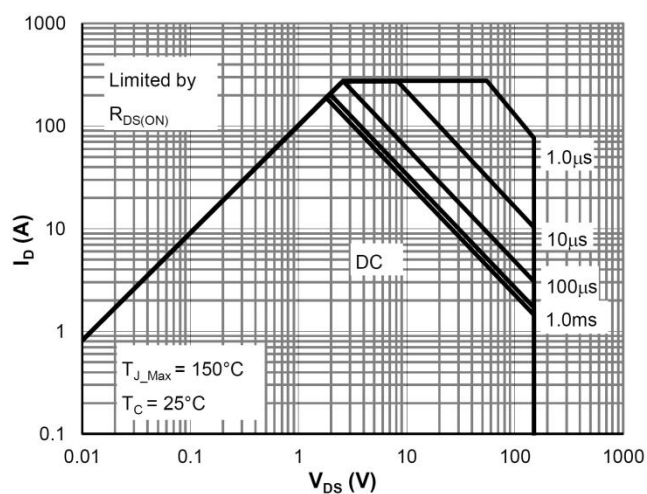
Capacitance Characteristics



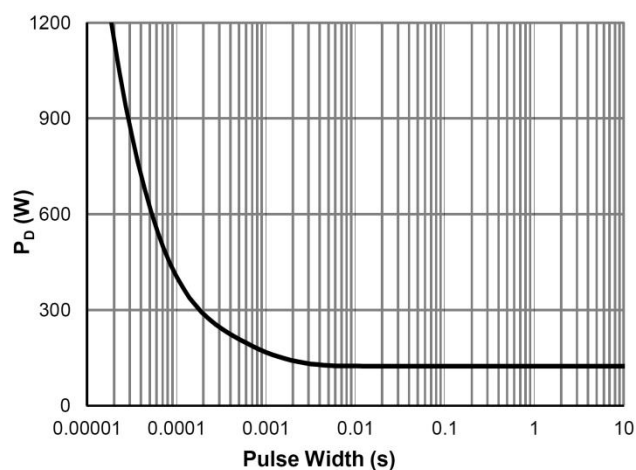
Current De-rating



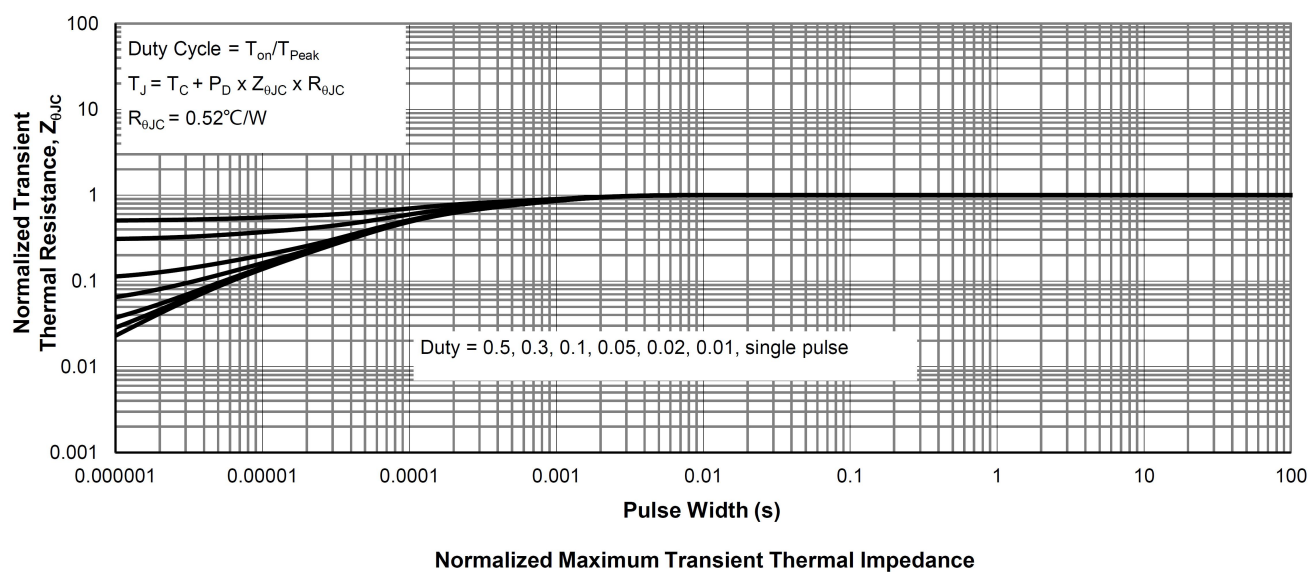
Power De-rating

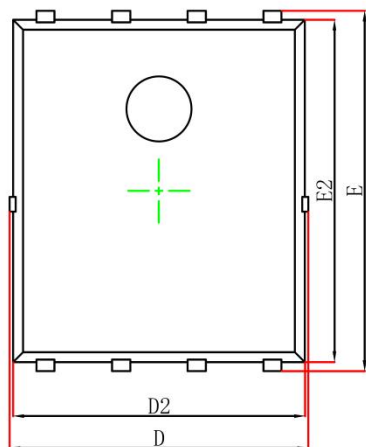


Maximum Safe Operating Area

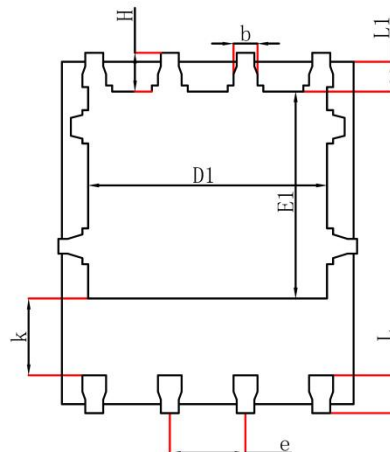


Single Pulse Power Rating, Junction-to-Case

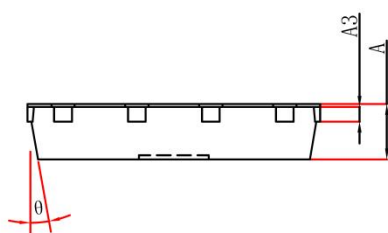


PDFN5X6-8L Package Information


Top View
[顶视图]



Bottom View
[背视图]



Side View
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°