

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	4.3mΩ@10V	70A
	5.5mΩ@4.5V	



合肥矽普半导体

Siliup Semiconductor Technology Co., Ltd

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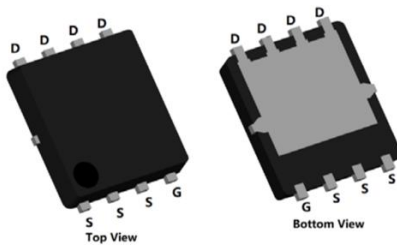
Feature

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

Applications

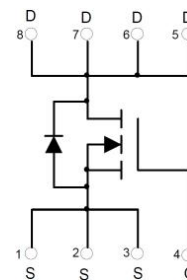
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package



PDFN5X6-8L

Circuit diagram



Marking



SP60N05GNK :Device Code
** :Week Code

Order Information

Device	Package	Unit/Tape
SP60N05GNK	PDFN5X6-8L	5000

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	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	47	A
Pulse Drain Current Tested	I_{DM}	280	A
Single Pulse Avalanche Energy ¹	E_{AS}	256	mJ
Power Dissipation (Tc=25°C)	P_D	70	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	1.79	°C/W
Maximum Junction Temperature	T_J	-55 to 150	°C
Storage Temperature Range	T_{STG}	-55 to 150	°C

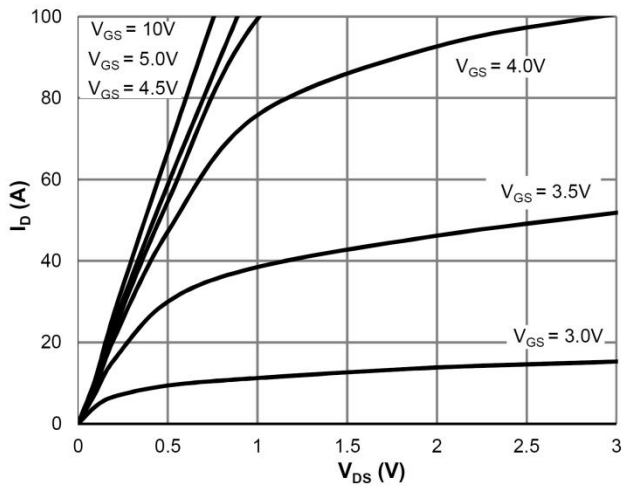
Electrical characteristics (Ta=25°C, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V, ID=250mA	60	-	-	V
Zero Gate Voltage Drain Current	IDSS	VDS=48V, VGS=0V	-	-	1	uA
Gate Leakage Current	IGSS	VGS=±20V, VDS=0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VDS=VGS, ID=250uA	1	2	3	V
Drain-Source On-state Resistance	RDS(ON)	VGS=10V, ID=20A	-	4.3	6.0	mΩ
		VGS=4.5V, ID=10A	-	5.5	7.3	
Dynamic Characteristics						
Input Capacitance	Ciss	VGS=0V, VDS=30V,F=1MHz	-	2304	-	pF
Output Capacitance	Coss		-	660	-	
Reverse Transfer Capacitance	Crss		-	19	-	
Total Gate Charge	Qg	VDS=30V, VGS=10V, ID=20A	-	37.5	-	nC
Gate-Source Charge	Qgs		-	6.5	-	
Gate-Drain Charge	Qgd		-	10	-	
Switching Characteristics						
Turn-On Delay Time	td(on)	VDD=30V, ID=20A, VGS=10V, RG=4.7Ω	-	9	-	nS
Rise Time	tr		-	35	-	
Turn-Off Delay Time	td(off)		-	32	-	
Fall Time	tf		-	58	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	VSD	VGS=0V , IS=1A , TJ=25℃	-	-	1.2	V
Maximum Body-Diode Continuous Current	IS		-	-	70	A
Reverse Recovery Time	Trr	IS=20 A,di/dt=100 A/μs, TJ=25℃	-	27	-	nS
Reverse Recovery Charge	Qrr		-	39	-	nC

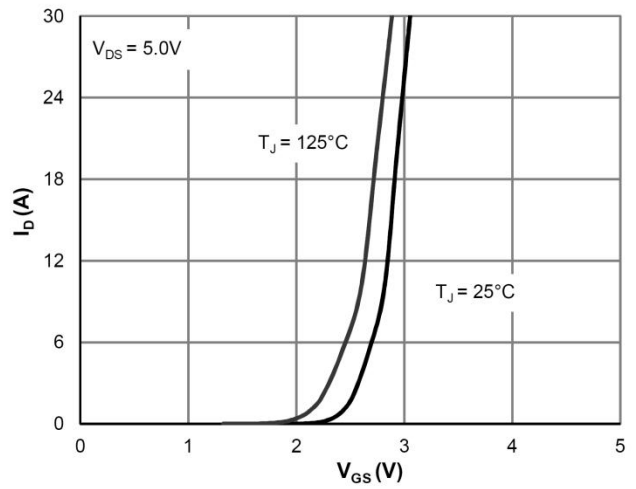
Note :

The test condition is $V_{DD}=30V, V_{GS}=10V, L=0.5mH, R_G=25\Omega$

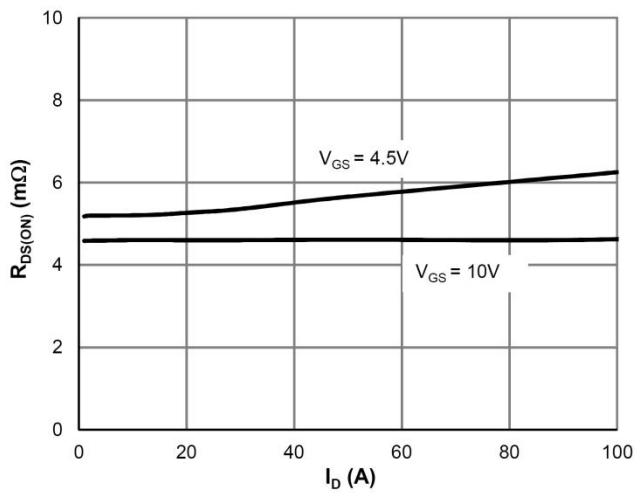
Typical Characteristics



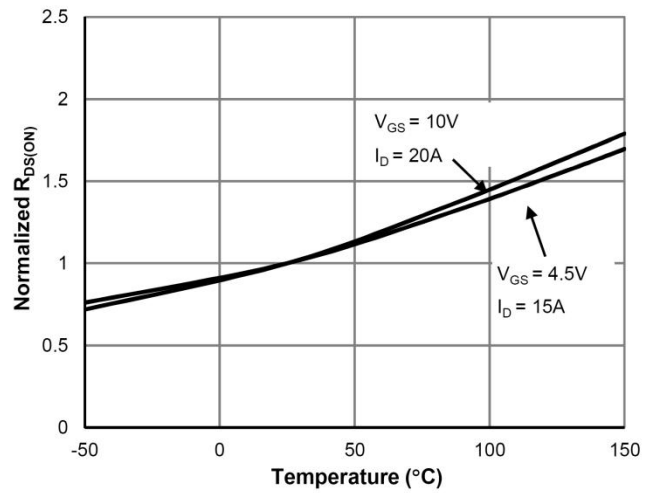
Saturation Characteristics



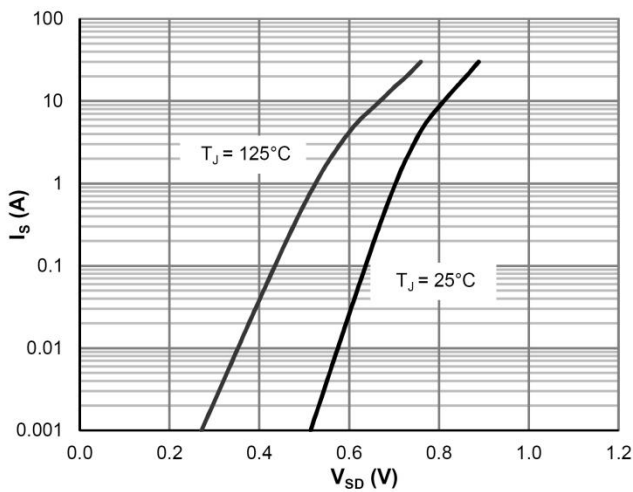
Transfer Characteristics



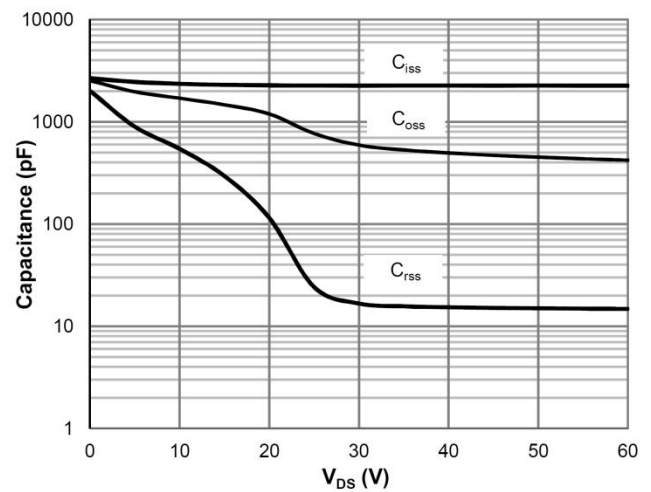
$R_{DS(ON)}$ vs. Drain Current



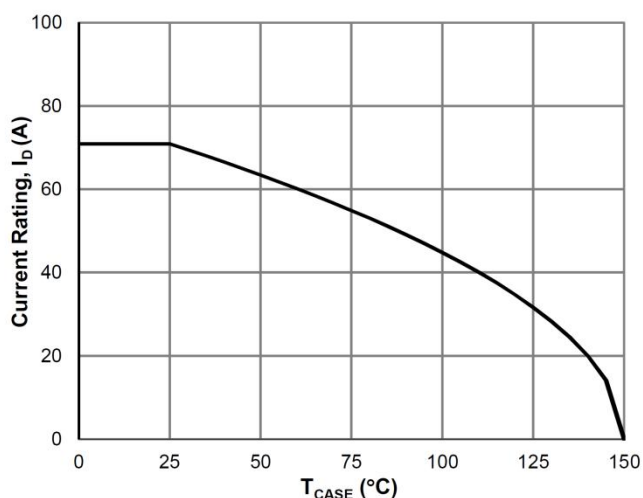
$R_{DS(ON)}$ vs. Junction Temperature



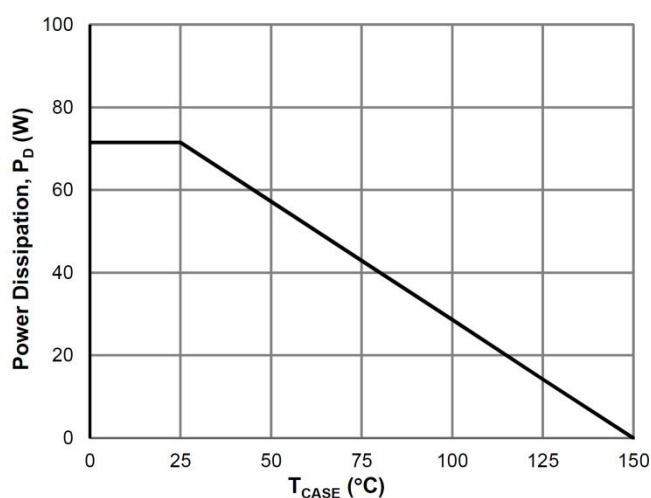
Body-Diode Characteristics



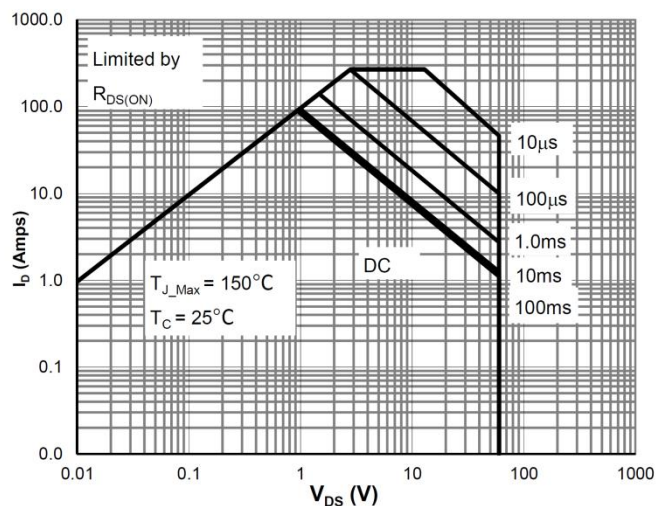
Capacitance Characteristics



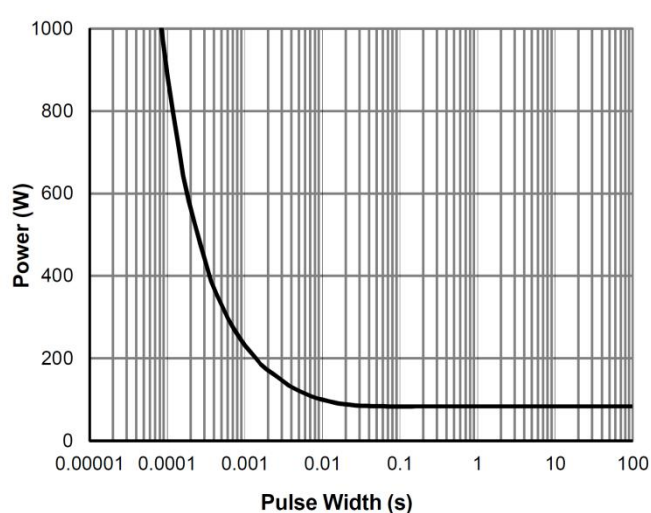
Current De-rating



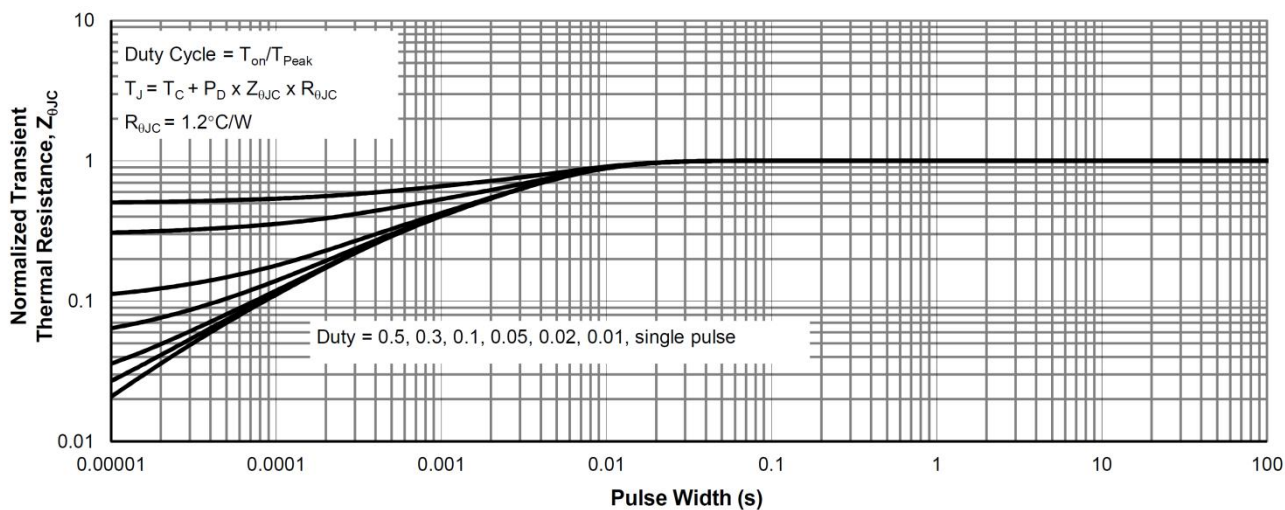
Power De-rating



Maximum Safe Operating Area

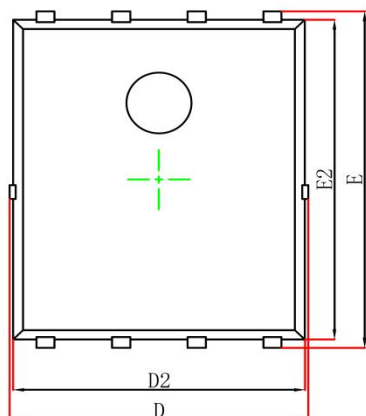


Single Pulse Power Rating, Junction-to-Case

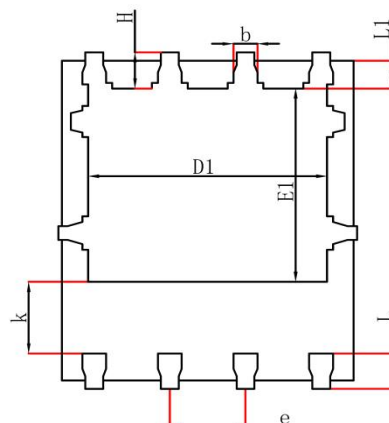


Normalized Maximum Transient Thermal Impedance

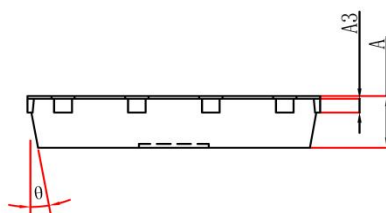
PDFN5X6-8L Package Information



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°