

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
60V	1.6mΩ@10V	120A



**合肥矽普半导体**

Siliup Semiconductor Technology Co., Ltd

技术 品质 服务

www.siliup.com

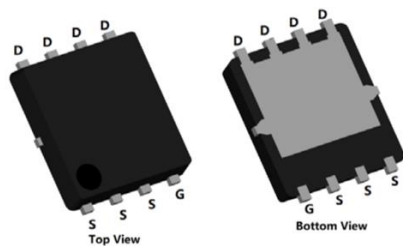
## Feature

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

## Applications

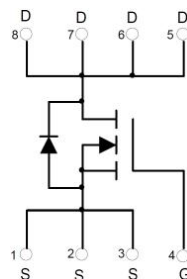
- Power switching application
- PWM Application
- DC-DC Converter

## Package



PDFN5X6-8L

## Circuit diagram



## Marking



**SP60N01BGH NK** :Device Code  
\*\* :Week Code

## Order Information

Device	Package	Unit/Tape
SP60N01BGH NK	PDFN5X6-8L	5000

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		$V_{DSS}$	60	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Continuous Drain Current (Tc=25°C)	Silicon Limit	$I_D$	180	A
Continuous Drain Current (Tc=25°C)	Package Limit	$I_D$	120	A
Continuous Drain Current (Tc=100°C)		$I_D$	80	A
Pulse Drain Current Tested		$I_{DM}$	480	A
Single pulsed avalanche energy <sup>1</sup>		$E_{AS}$	676	mJ
Power Dissipation (Tc=25°C)		$P_D$	124	W
Thermal Resistance Junction-to-Case		$R_{\theta JC}$	1.0	°C/W
Storage Temperature Range		$T_{STG}$	-55 to 150	°C
Operating Junction Temperature Range		$T_J$	-55 to 150	°C

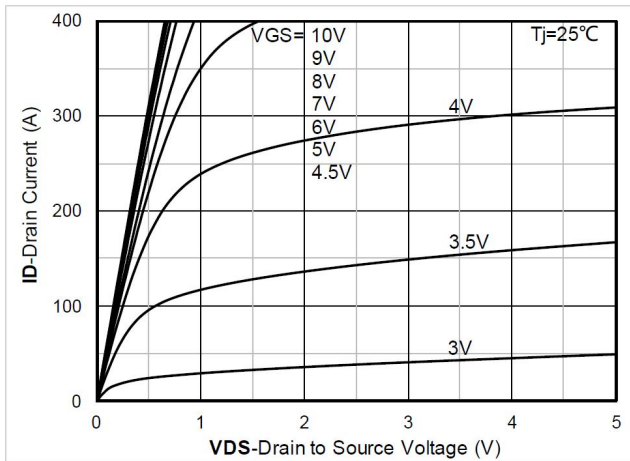
**Electrical characteristics (Ta=25°C, unless otherwise noted)**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	VGS=0V , ID=250uA	60	-	-	V
Drain-Source Leakage Current	IDSS	VDS=48V , VGS=0V , TJ=25℃	-	-	1	uA
Gate-Source Leakage Current	IGSS	VGS=±20V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VGS=VDS , ID =250uA	2	3	4	V
Static Drain-Source On-Resistance	RDS(ON)	VGS =10V, ID =50A	-	1.6	2.1	mΩ
Dynamic characteristics						
Input Capacitance	Ciss	VDS=30V , VGS=0V , f=1MHz	-	6970	-	pF
Output Capacitance	Coss		-	1398	-	
Reverse Transfer Capacitance	Crss		-	58	-	
Total Gate Charge	Qg	VDS=30V , VGS=10V , ID=50A	-	104.8	-	nC
Gate-Source Charge	Qgs		-	38.8	-	
Gate-Drain Charge	Qgd		-	14.4	-	
Switching Characteristics						
Turn-On Delay Time	Td(on)	VDD=30 VGS=10V , RG=2.7Ω, ID=50A	-	25	-	nS
Rise Time	Tr		-	63.9	-	
Turn-Off Delay Time	Td(off)		-	62.4	-	
Fall Time	Tf		-	28.2	-	
Diode Characteristics						
Diode Forward Voltage	VSD	VGS=0V , IS=50A , TJ=25℃	-	-	1.4	V
Diode Continuous Current	IS		-	-	120	A
Reverse recover time	Trr	Is=20A, di/dt=100A/us, Tj=25℃	-	73	-	nS
Reverse recovery charge	Qrr		-	113.9	-	nC

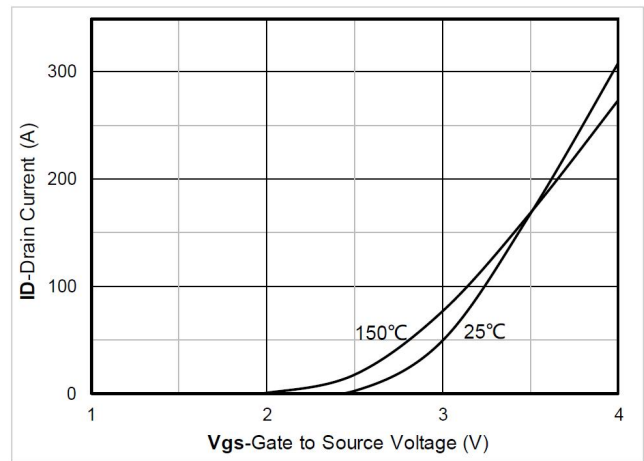
**Note:**

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

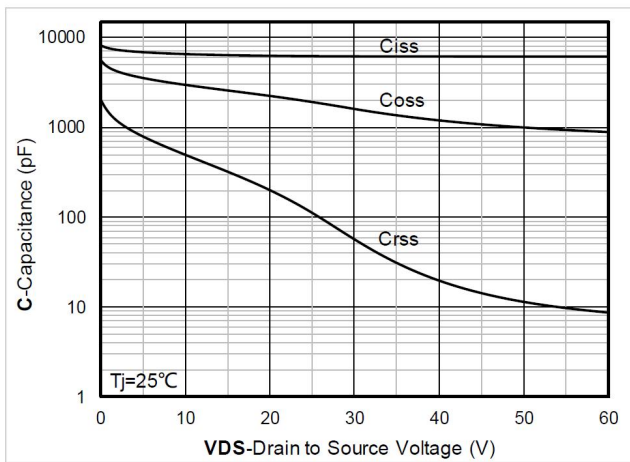
## Typical Characteristics



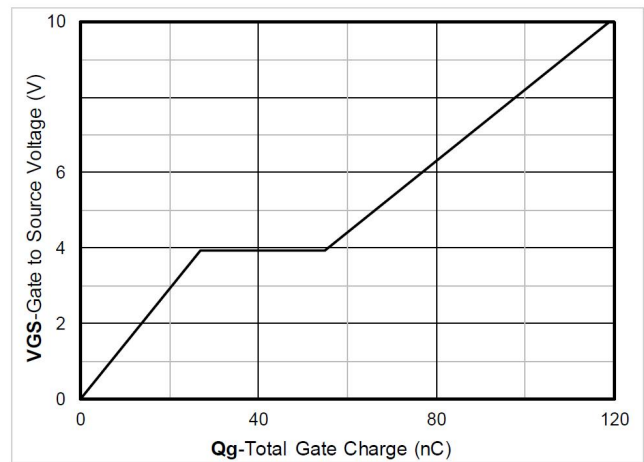
Output Characteristics



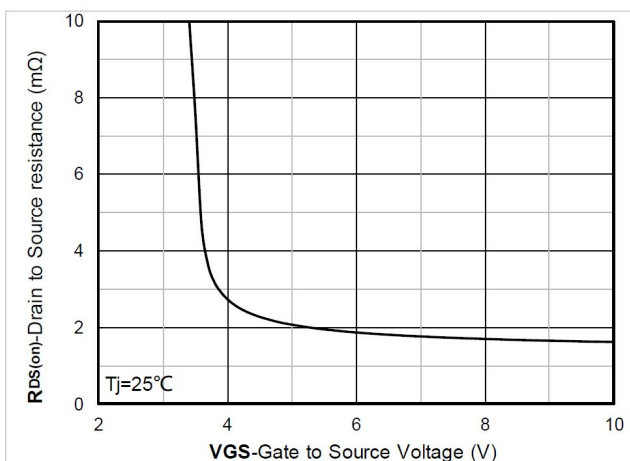
Transfer Characteristics



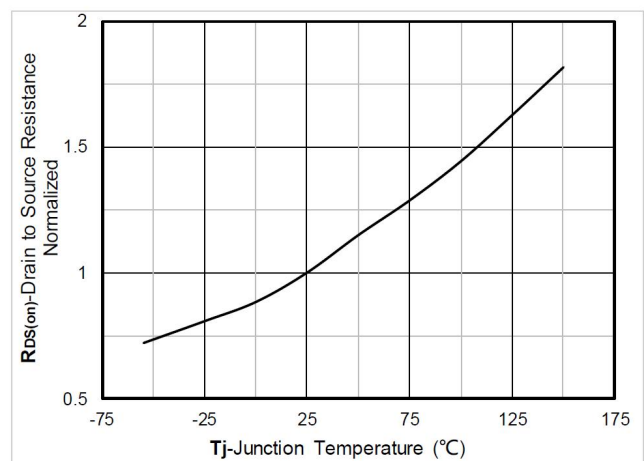
Capacitance Characteristics



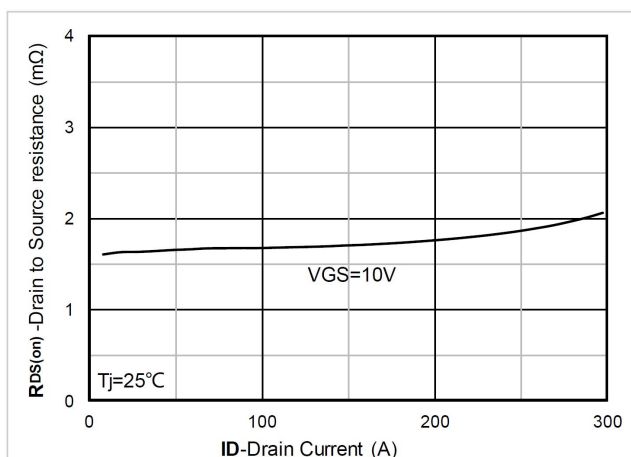
Gate Charge



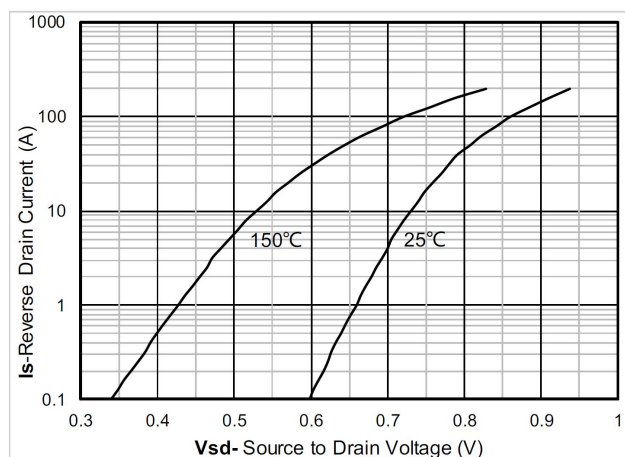
On-Resistance vs Gate to Source Voltage



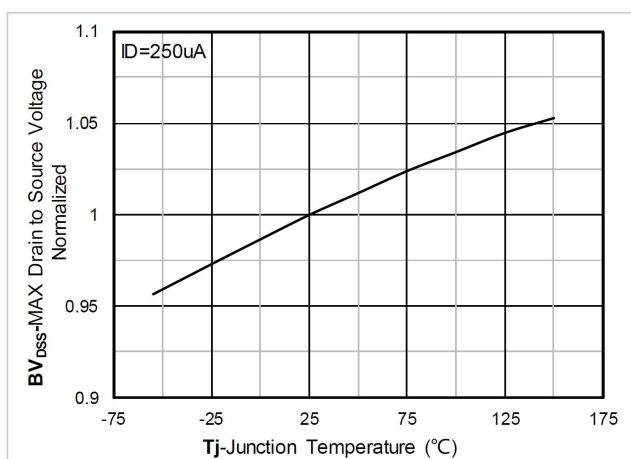
Normalized On-Resistance



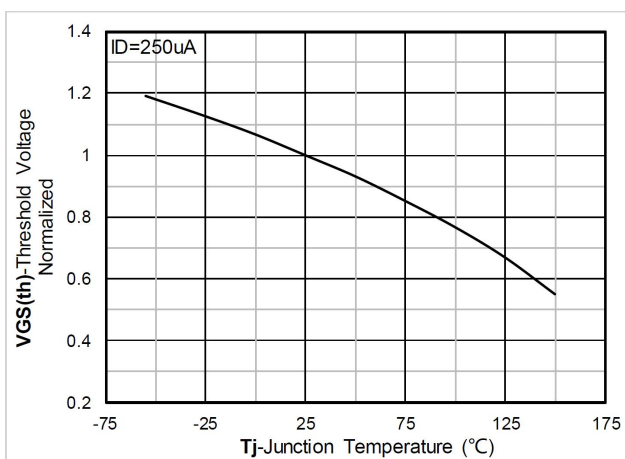
$R_{DS(on)}$  VS Drain Current



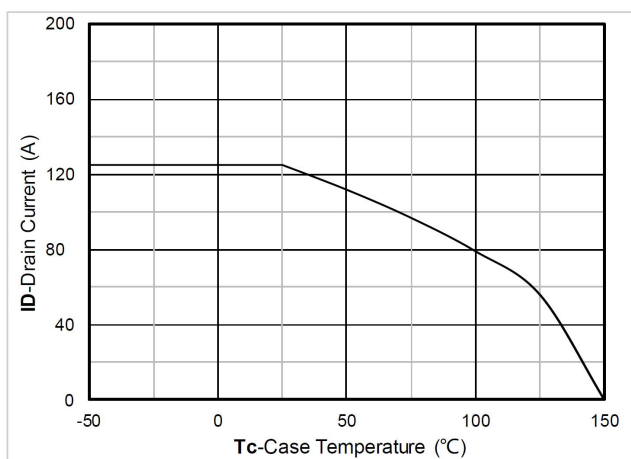
Forward characteristics of reverse diode



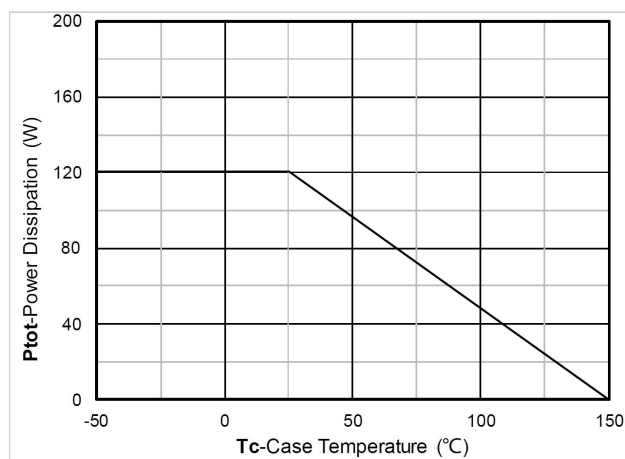
Normalized breakdown voltage



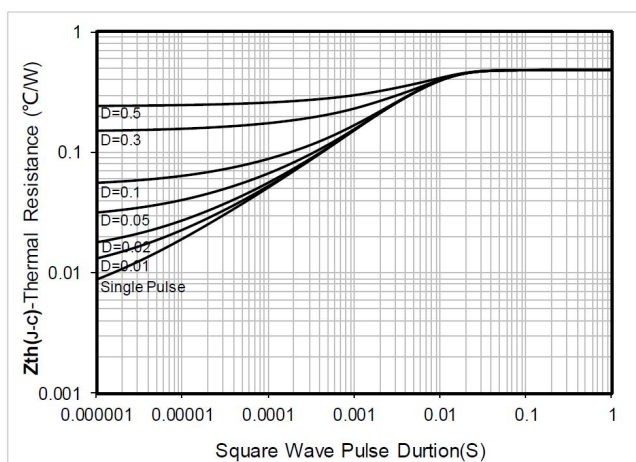
Normalized Threshold voltage



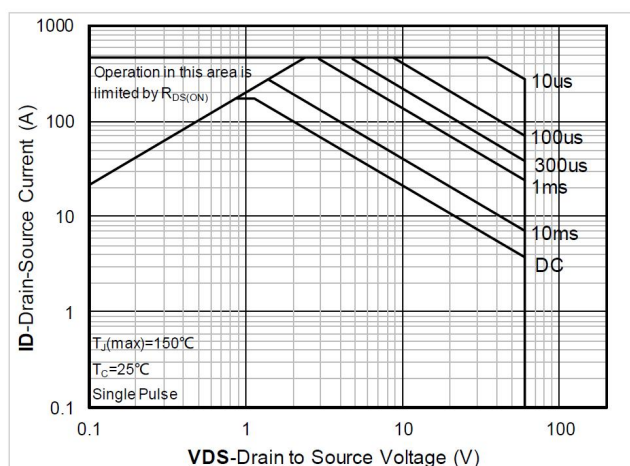
Current dissipation



Power dissipation

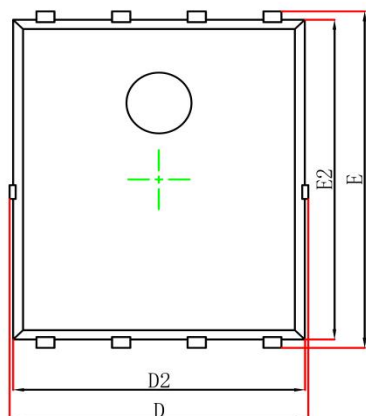


Maximum Transient Thermal Impedance

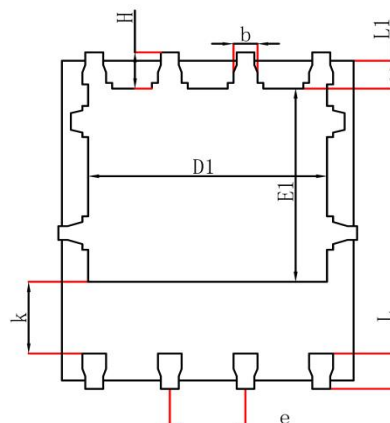


Safe Operation Area

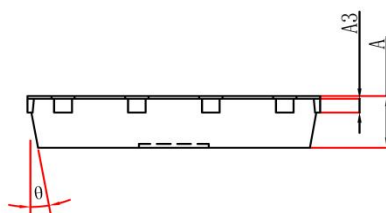
## PDFN5X6-8L Package Information



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°