

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-60V	5.5mΩ@-10V	-110A
	7.5mΩ@-4.5V	



合肥矽普半导体

Siliup Semiconductor Technology Co., Ltd

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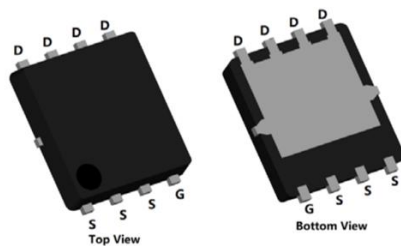
Feature

- Fast switching speed
- Surface mount package
- ROHS Compliant & Halogen-Free
- Advanced Split Gate Trench Technology
- 100% Single Pulse avalanche energy Test

Applications

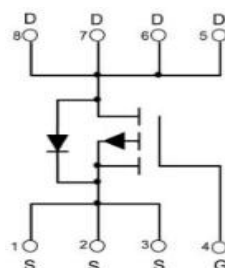
- DC-DC Converters.
- Motor Control.

Package



PDFN5×6-8L

Circuit diagram



Marking



SP60P05GNK :Device Code
** :Week Code

Order Information

Device	Package	Unit/Tape
SP60P05GNK	PDFN5×6-8L	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	-110	A
Continuous Drain Current (Tc=100°C)	I_D	-73	A
Pulse Drain Current Tested	I_{DM}	-440	A
Maximum Power Dissipation (Tc=25°C)	P_D	118	W
Single pulsed avalanche energy ¹	EAS	1092	mJ
Thermal Resistance-Junction to Case	$R_{\theta JC}$	1.06	°C/W
Maximum Junction Temperature	T_J	-55 to 150	°C
Storage Temperature Range	T_{STG}	-55 to 150	°C

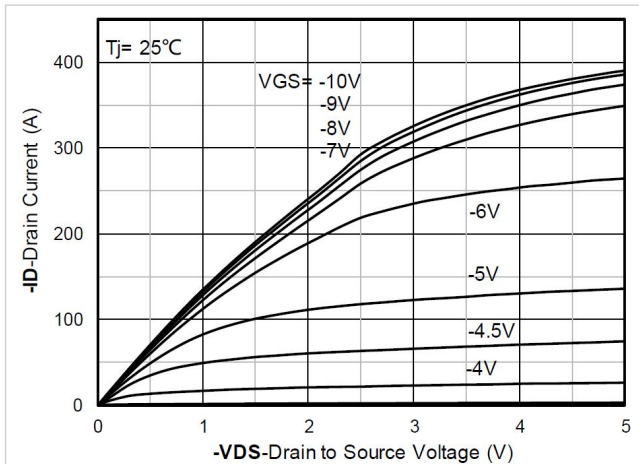
Electrical characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	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	-1.0	-2.0	-3.0	V
Static Drain-Source On-Resistance	RDS(ON)	VGS=-10V , ID=-30A	-	5.5	7.4	mΩ
Static Drain-Source On-Resistance	RDS(ON)	VGS=-4.5V , ID=-30A	-	7.5	10	mΩ
Dynamic characteristics						
Input Capacitance	Ciss	VDS=-30V , VGS=0V , f=1MHz	-	6185	-	pF
Output Capacitance	Coss		-	1132	-	
Reverse Transfer Capacitance	Crss		-	81	-	
Switching Characteristics						
Total Gate Charge	Qg	VDS=-30V , VGS=-10V , ID=-40A	-	82	-	nC
Gate-Source Charge	Qgs		-	26	-	
Gate-Drain Charge	Qgd		-	18	-	
Turn-On Delay Time	Td(on)	VDD=-30V, VGS=-10V , RG=2.6Ω, ID=-40A	-	15	-	ns
Rise Time	Tr		-	52	-	
Turn-Off Delay Time	Td(off)		-	135	-	
Fall Time	Tf		-	168	-	
Diode Characteristics						
Diode Forward Voltage	VSD	VGS=0V , IS=-1A , TJ=25℃	-	-	-1.2	V
Reverse recover time	Trr	IS=-40A, di/dt=200A/us, TJ=25℃	-	65	-	ns
Reverse recovery charge	Qrr		-	238	-	nC
Diode Continuous Current	IS		-	-	-110	A

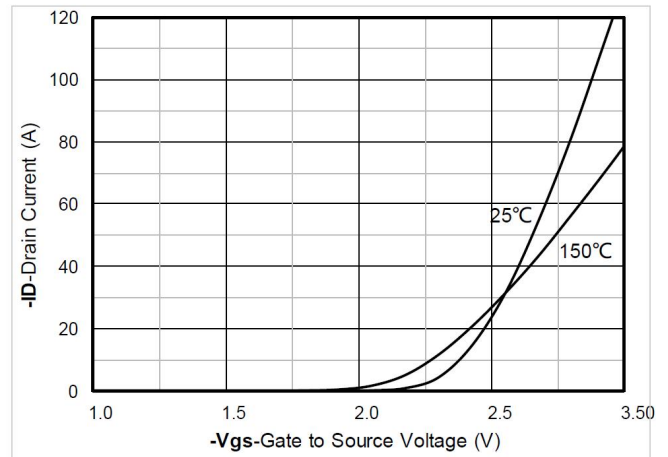
Note:

1. EAS is tested at starting $T_J = 25^\circ C$, $V_{DD}=50V, V_{GS} = 10V, L = 0.5mH, R_G=25m\Omega$;

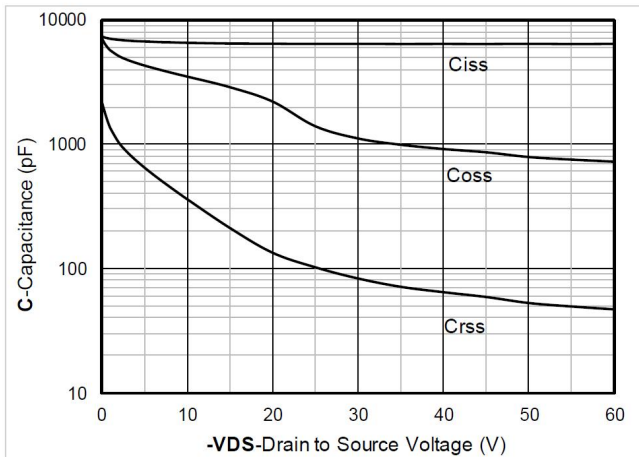
Typical Characteristics



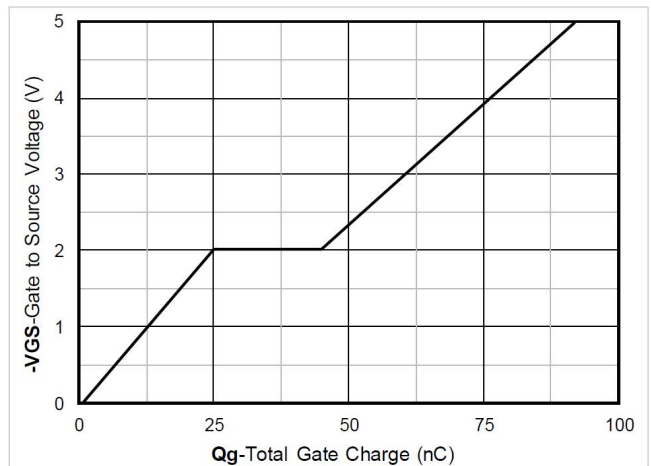
Output Characteristics



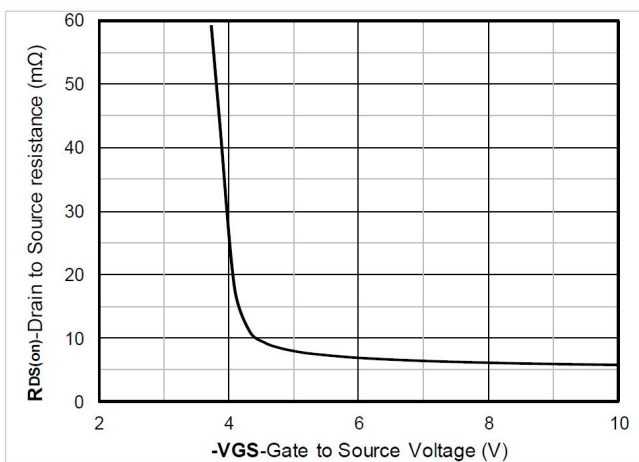
Transfer Characteristics



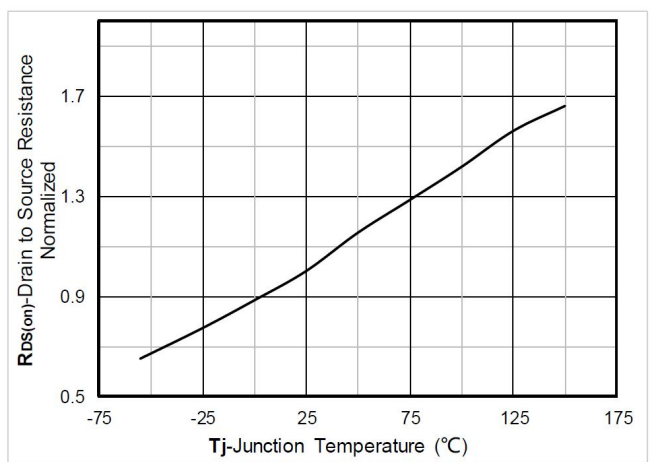
Capacitance Characteristics



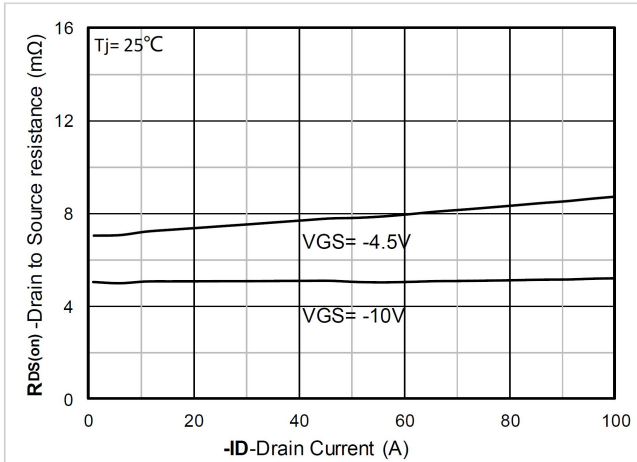
Gate Charge



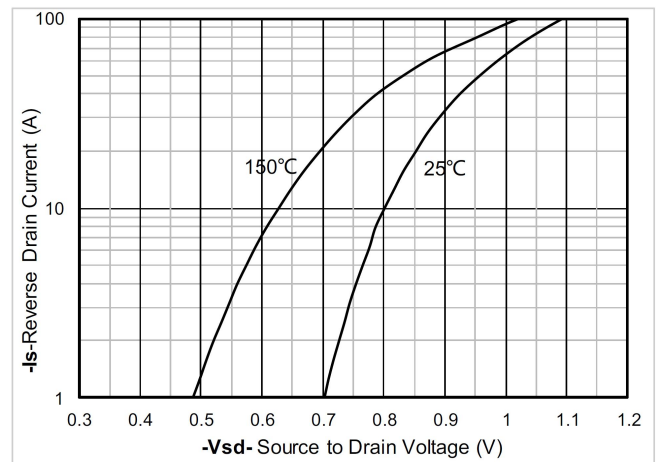
On-Resistance vs Gate to Source Voltage



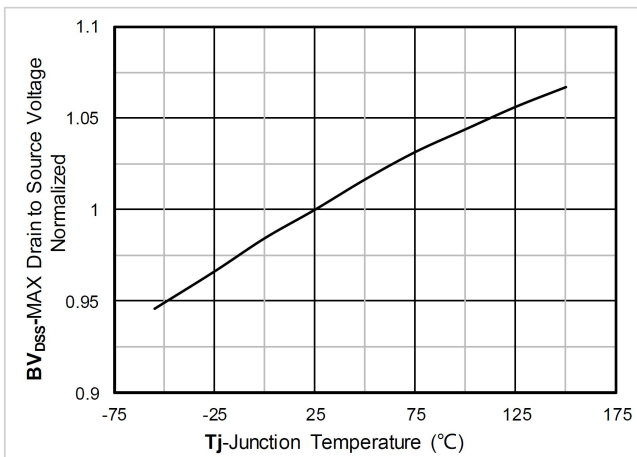
Normalized On-Resistance



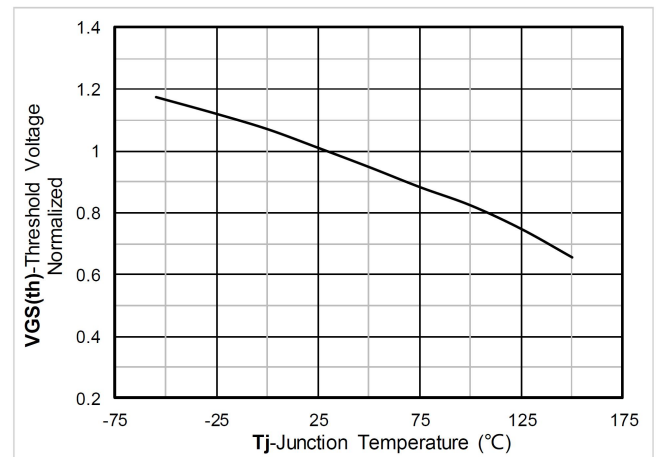
RDS(on) VS Drain Current



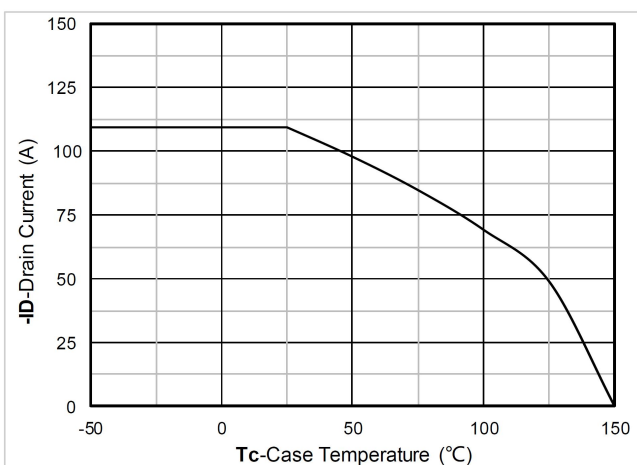
Forward characteristics of reverse diode



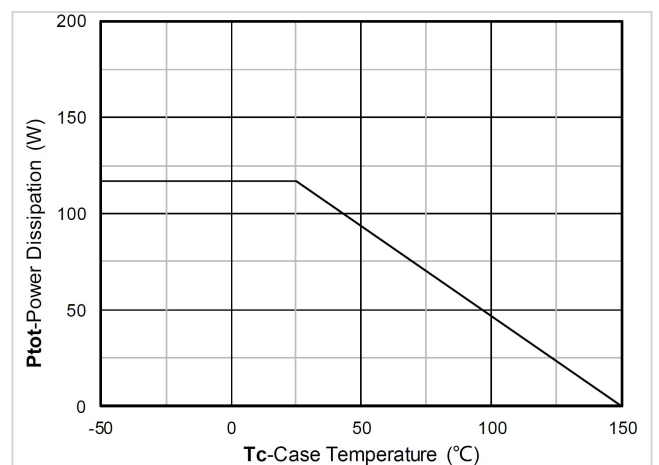
Normalized breakdown voltage



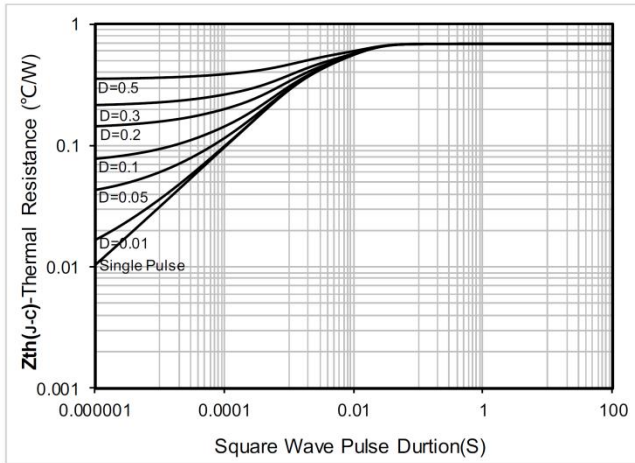
Normalized Threshold voltage



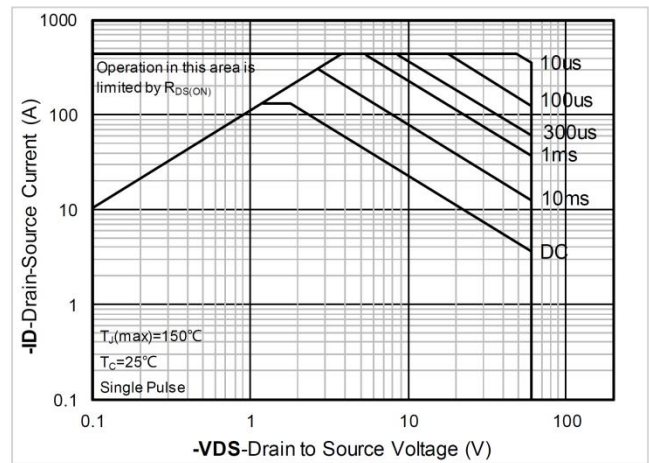
Current dissipation



Power dissipation

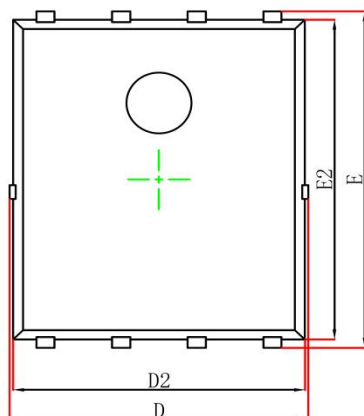


Maximum Transient Thermal Impedance

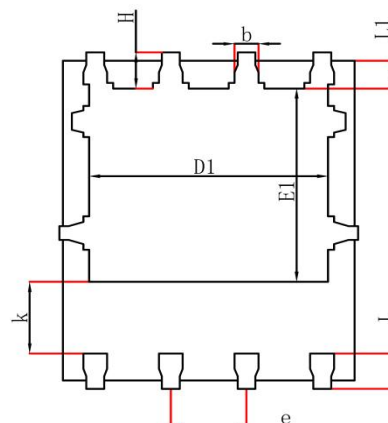


Safe Operation Area

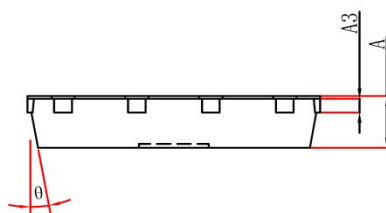
PDFN5X6-8L Package Information



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°