Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
80V	9.5mΩ@10V	60A

合肥矽普半导体
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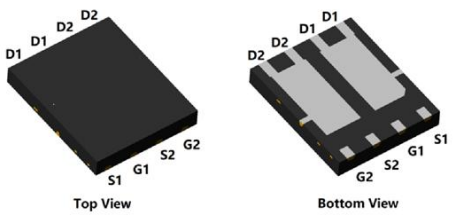
Feature

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

Applications

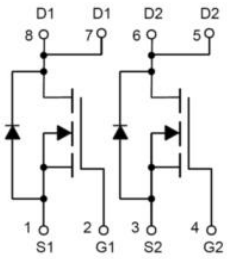
- Power switching application
- DC-DC Converter
- Uninterruptible power supply

Package



PDFN5X6-8L

Circuit diagram



Marking

SP80N09GDHNK :Device Code
** :Week Code

Order Information

Device	Package	Unit/Tape
SP80N09GDHNK	PDFN5X6-8L	5000

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	80	V
Gate-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current (Tc=25°C)	I_D	60	A
Continuous Drain Current (Tc=100°C)	I_D	40	A
Pulse Drain Current Tested	I_{DM}	240	A
Single Pulse Avalanche Energy[1]	E_{AS}	169	mJ
Power Dissipation (Tc=25°C)	P_D	71.4	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	1.75	°C/W
Maximum Junction Temperature	T_J	-55 to 150	°C
Storage Temperature Range	T_{STG}	-55 to 150	°C

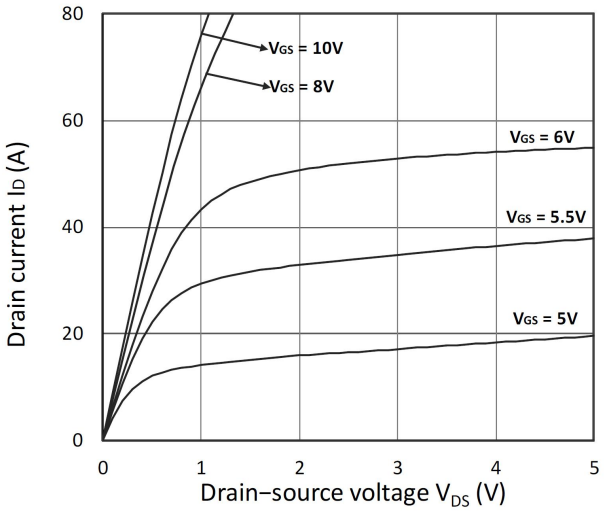
Electrical characteristics (Ta=25℃, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	ID = 250μA, VGS = 0V	80	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	VDS = 64V, VGS = 0V	-	-	1	uA
Gate Leakage Current	I_{GSS}	VGS = ±20V, VDS = 0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	VDS = VGS, ID = 250μA	2.0	3.0	4.0	V
Drain-Source On-state Resistance	$R_{DS(ON)}$	VGS = 10V, ID = 20A	-	9.5	13	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	VGS = 0V, VDS = 40V, F = 1MHz	-	936	-	pF
Output Capacitance	C_{oss}		-	332	-	
Reverse Transfer Capacitance	C_{rss}		-	20	-	
Total Gate Charge	Q_g	VDS = 40V, VGS = 10V, ID = 20A	-	16	-	nC
Gate-Source Charge	Q_{gs}		-	4.8	-	
Gate-Drain Charge	Q_{gd}		-	4.4	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	VDD = 40V, ID = 20A, VGS = 10V, R_G = 3Ω	-	8.0	-	nS
Rise Time	t_r		-	5.6	-	
Turn-Off Delay Time	$t_{d(off)}$		-	14	-	
Fall Time	t_f		-	4.8	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	VGS = 0V, I_S = 1A, TJ = 25℃	-	-	1.2	V
Maximum Body-Diode Continuous Current	I_S		-	-	60	A
Reverse Recovery Time	Trr	I_S = 20A, di/dt = 100A/μs, TJ = 25℃	-	35	-	nS
Reverse Recovery Charge	Qrr		-	27.8	-	nC

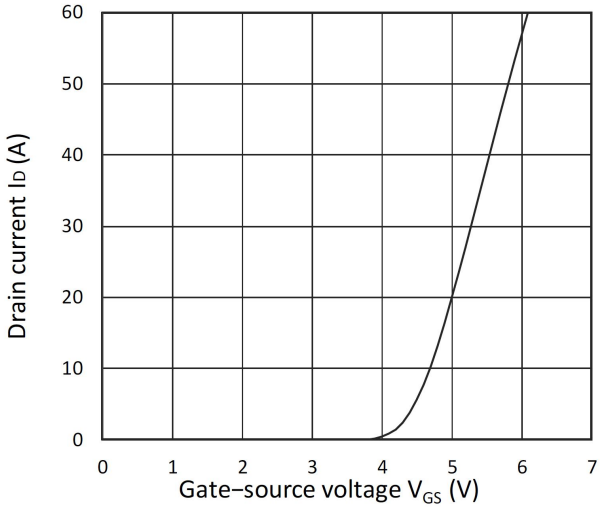
Note :

1. The test condition is VDD=40V,VGS=10V,L=0.5mH,RG=25Ω

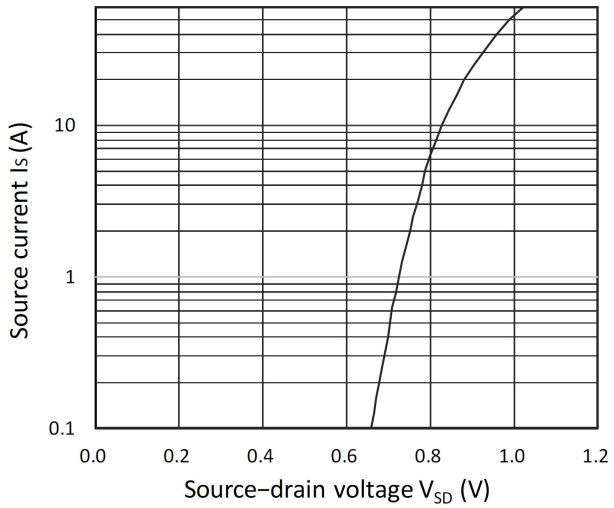
Typical Characteristics



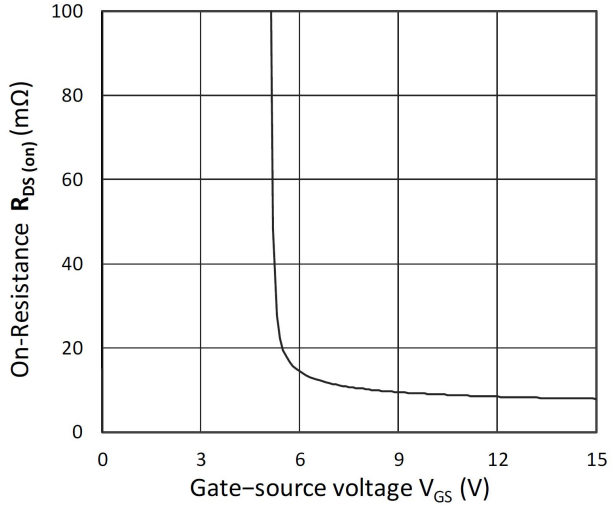
Output Characteristics



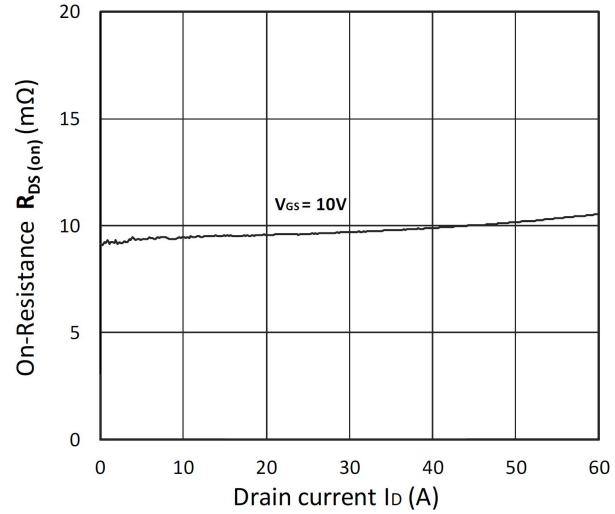
Transfer Characteristics



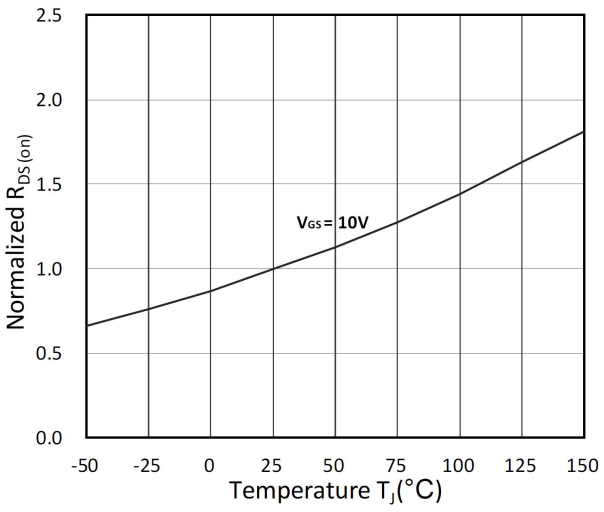
Forward Characteristics of Reverse



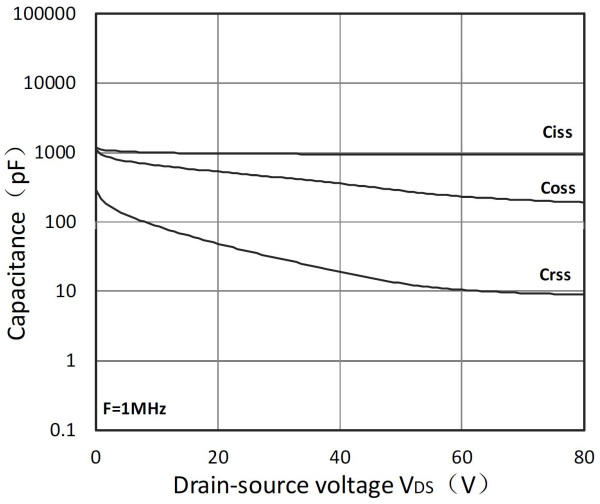
$R_{DS(ON)}$ vs. V_{GS}



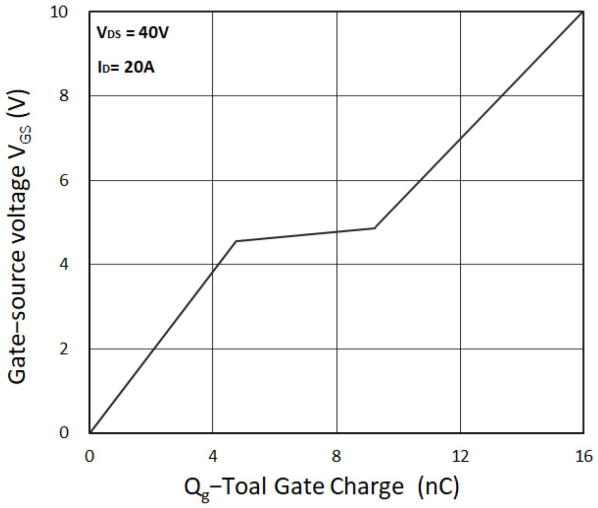
$R_{DS(ON)}$ vs. I_D



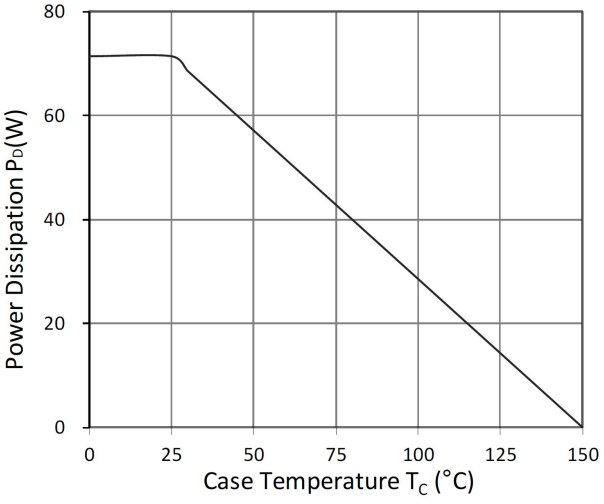
Normalized $R_{DS(on)}$ vs. Temperature



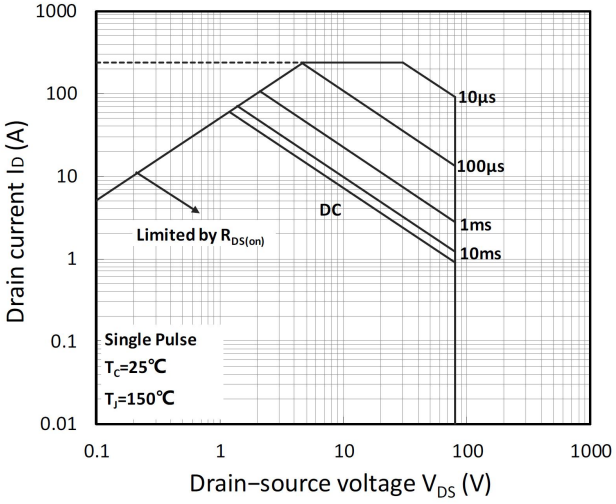
Capacitance Characteristics



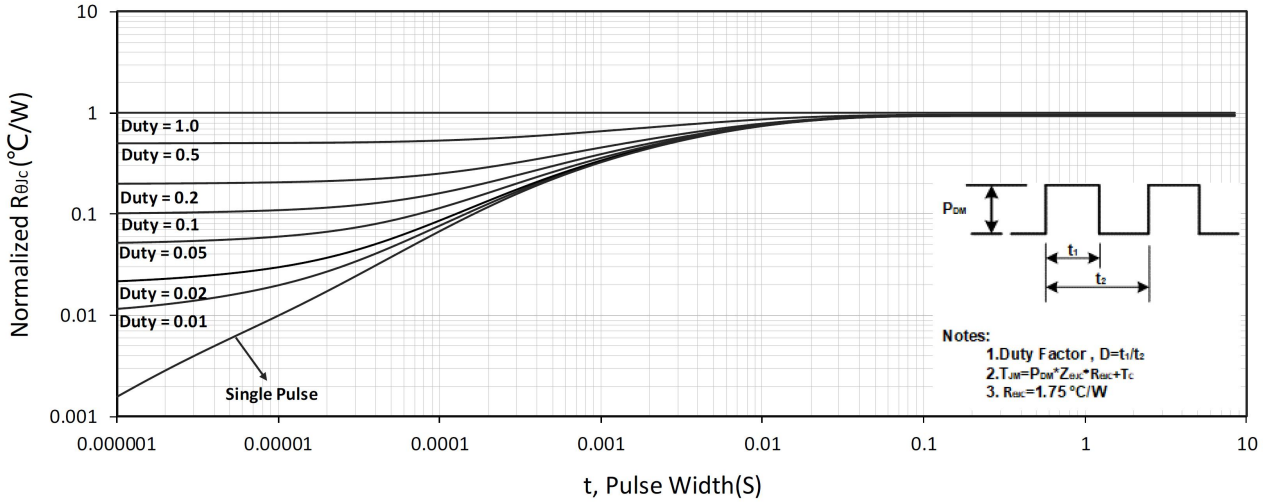
Gate Charge Characteristics



Power Dissipation

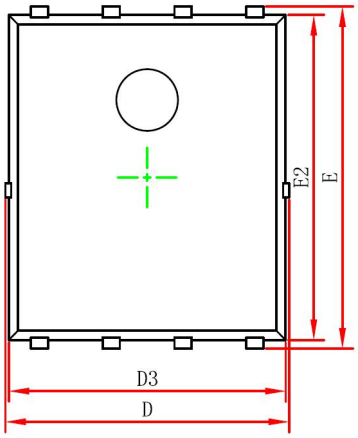


Safe Operating Area

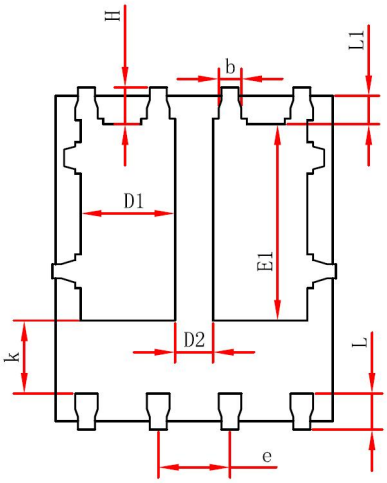


Normalized Maximum Transient Thermal Impedance

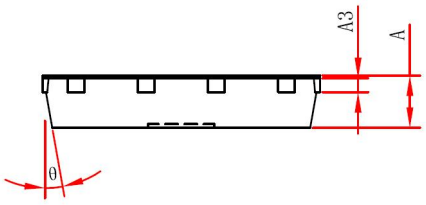
PDFN5x6-8L Package Information



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	0.254 REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	1.470	1.870	0.058	0.074
D2	0.470	0.870	0.019	0.034
E1	3.375	3.575	0.133	0.141
D3	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°