

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	8mΩ@10V	40A
	10mΩ@4.5V	



合肥矽普半导体

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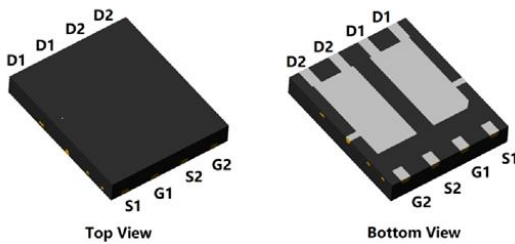
Feature

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

Applications

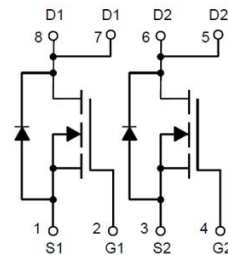
- DC-DC Converters.
- Motor Control.

Package

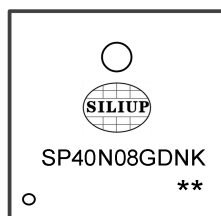


PDFN5X6-8L

Circuit diagram



Marking



SP40N08GDNK
**

:Device Code
:Week Code

Order Information

Device	Package	Unit/Tape
SP40N08GDNK	PDFN5X6-8L	5000

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current(Tc=25°C)	I_D	40	A
Continuous Drain Current(Tc=100°C)	I_D	27	A
Pulse Drain Current	I_{DM}	160	A
Power Dissipation(Tc=25°C)	P_D	40	W
Single pulsed avalanche energy ¹	E_{AS}	110	mJ
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	3.125	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

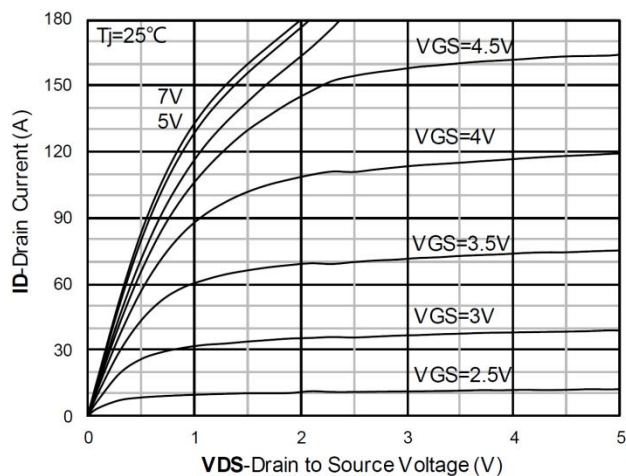
Electrical characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V , ID=250uA	40	-	-	V
Drain-Source Leakage Current	I _{DSS}	VDS=32V , VGS=0V , TJ=25℃	-	-	1	uA
Gate-Source Leakage Current	I _{GSS}	VGS=±20V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	VGS=VDS , ID =250uA	1	1.5	2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	VGS=10V , ID=30A	-	8	10	mΩ
		VGS=4.5V , ID=20A	-	10	13	
Dynamic characteristics						
Input Capacitance	C _{iss}	VDS=20V , VGS=0V , f=1MHz	-	625	-	pF
Output Capacitance	C _{oss}		-	311	-	
Reverse Transfer Capacitance	C _{rss}		-	21	-	
Total Gate Charge	Q _g	VDS=20V , VGS=10V , ID=20A	-	17	-	nC
Gate-Source Charge	Q _{gs}		-	4.9	-	
Gate-Drain Charge	Q _{gd}		-	8.6	-	
Switching Characteristics						
Turn-On Delay Time	T _{d(on)}	VDD=20V , VGS=10V , RG=1.6Ω, ID=20A	-	3.5	-	nS
Rise Time	T _r		-	58	-	
Turn-Off Delay Time	T _{d(off)}		-	22	-	
Fall Time	T _f		-	2.6	-	
Diode Characteristics						
Diode Forward Voltage	V _{SD}	VGS=0V , IS=1A , TJ=25℃	-	-	1.2	V
Maximum Body-Diode Continuous Current	I _S		-	-	45	A
Reverse Recovery Time	T _{rr}	Is=10A, di/dt=300A/us, TJ=25℃	-	10	-	nS
Reverse Recovery Charge	Q _{rr}		-	12	-	nC

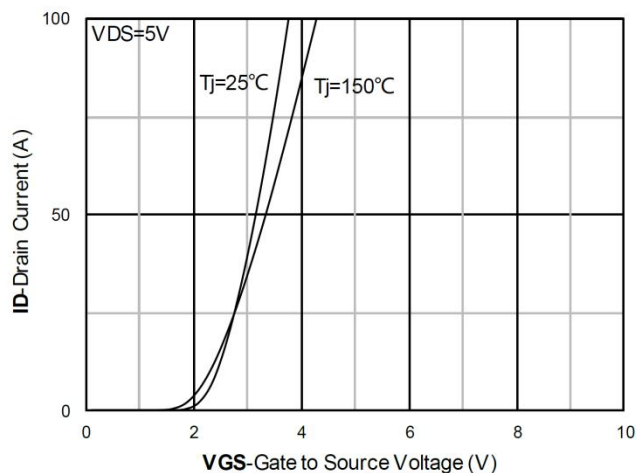
Note :

1. The test condition is $V_{DD}=20V$, $V_{GS}=10V$, $L=0.5mH$, $R_G=25\Omega$

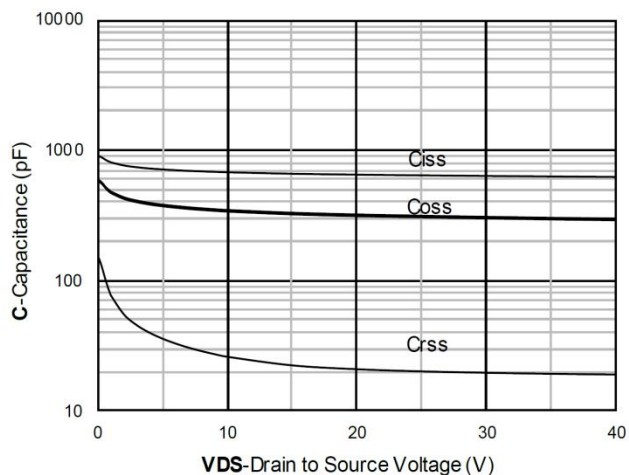
Typical Characteristics



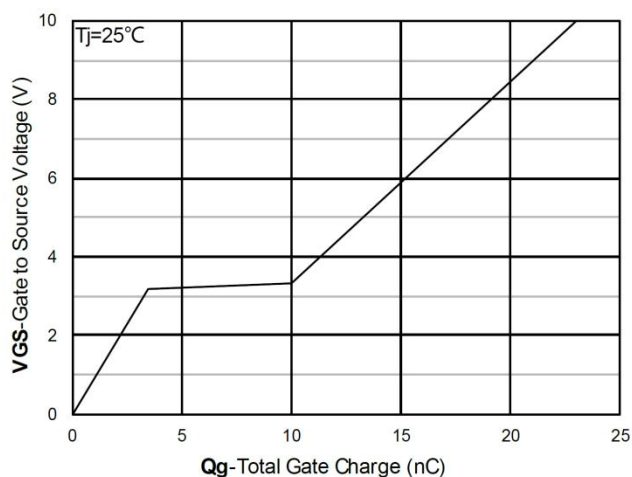
Output Characteristics



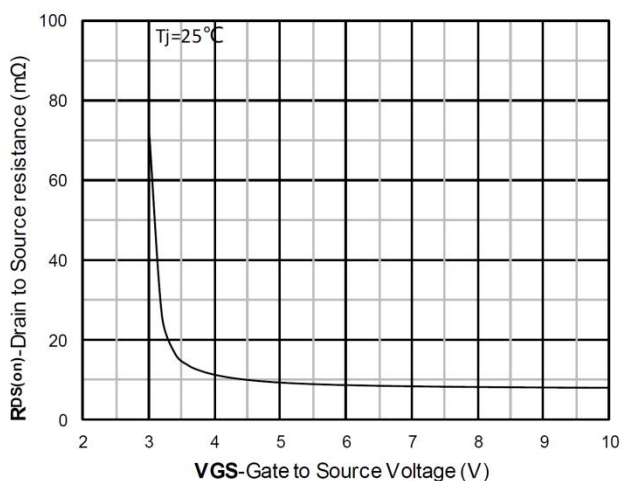
Transfer Characteristics



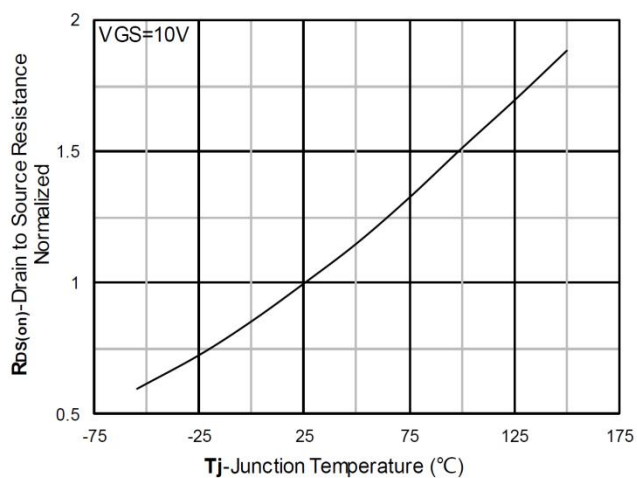
Capacitance Characteristics



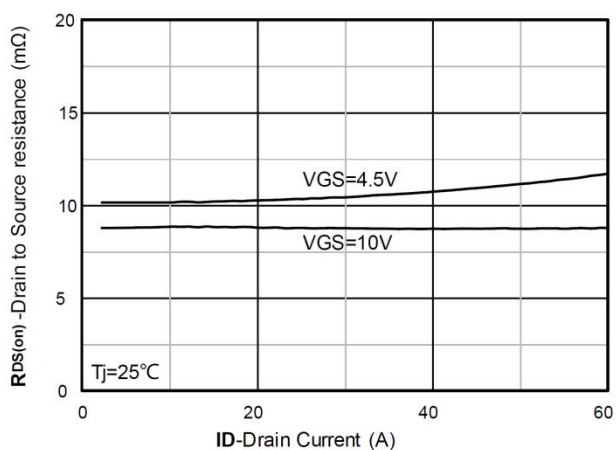
Gate Charge



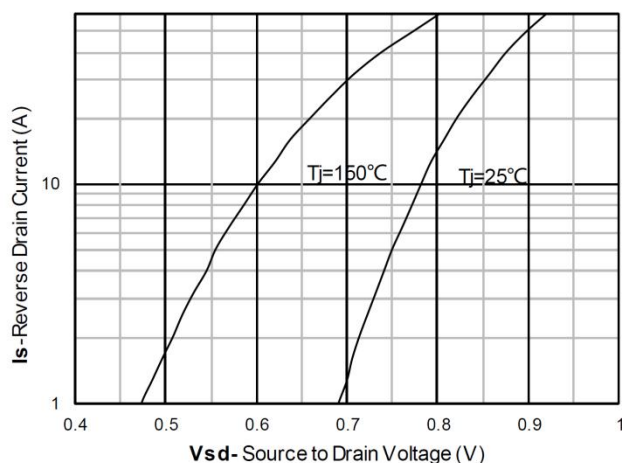
On-Resistance vs Gate to Source Voltage



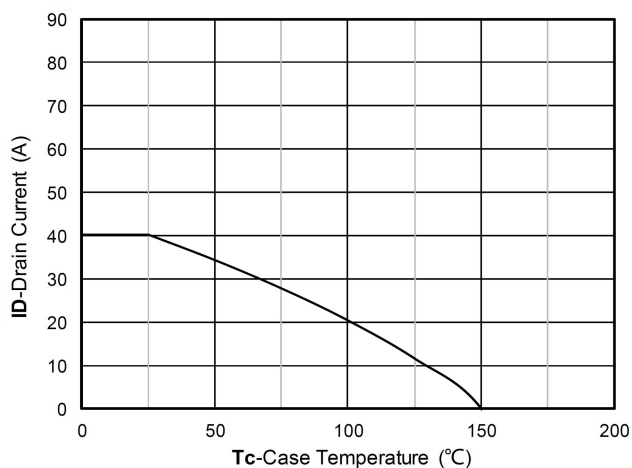
Normalized On-Resistance



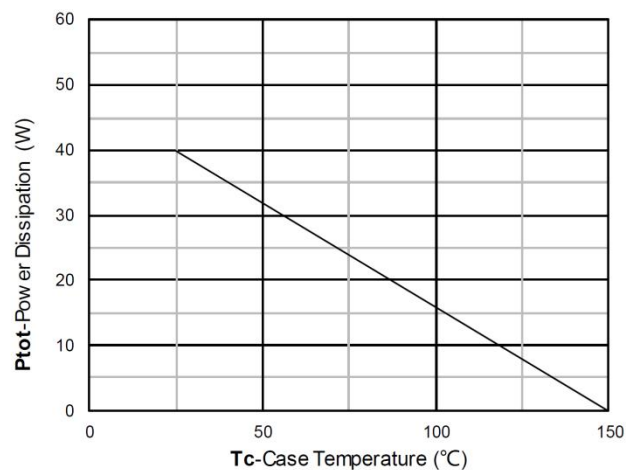
RDS(on) VS Drain Current



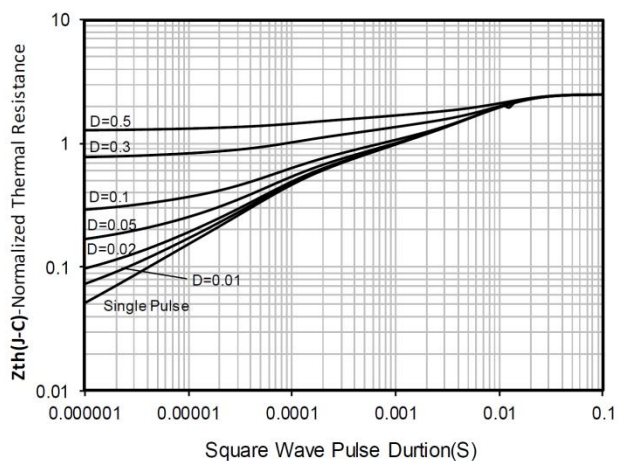
Forward characteristics of reverse diode



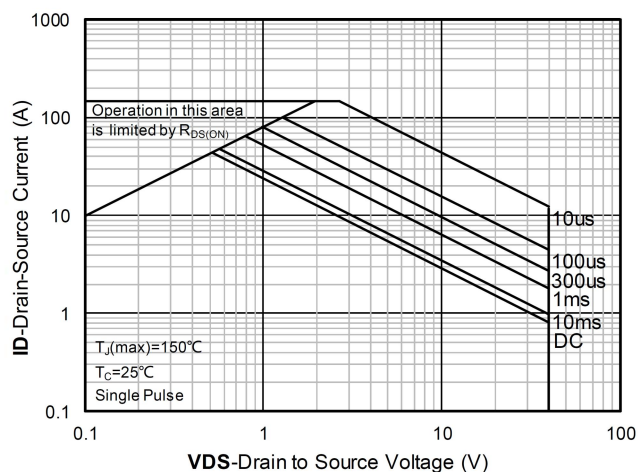
Current dissipation



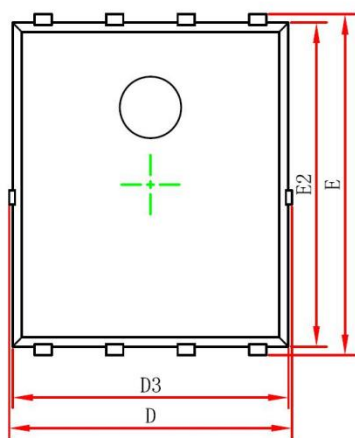
Power dissipation



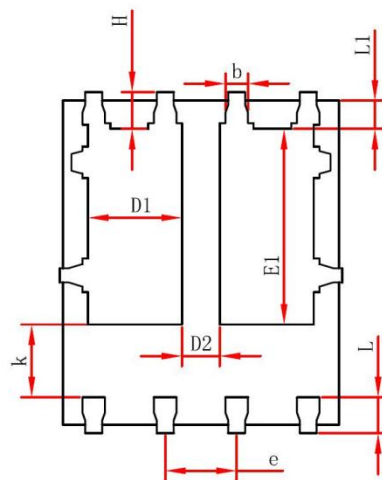
Maximum Transient Thermal Impedance



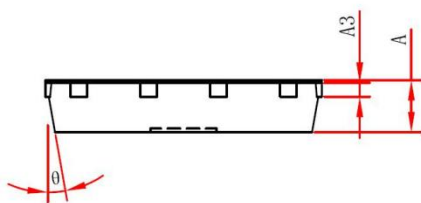
Safe Operation Area

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	0.254 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°