Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	6mΩ@10V	30A
	8.5mΩ@4.5V	

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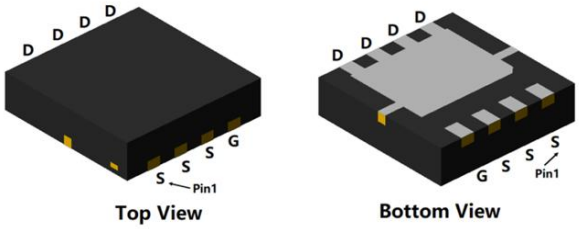
Feature

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

Applications

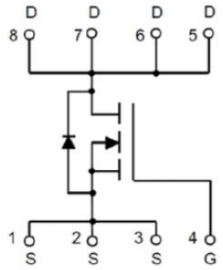
- Power switching application
- PWM Application
- DC-DC Converter

Package



PDFN3X3-8L

Circuit diagram



Marking

SP40N06GNJ :Device Code
** :Week Code

Order Information

Device	Package	Unit/Tape
SP40N06GNJ	PDFN3X3-8L	5000

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

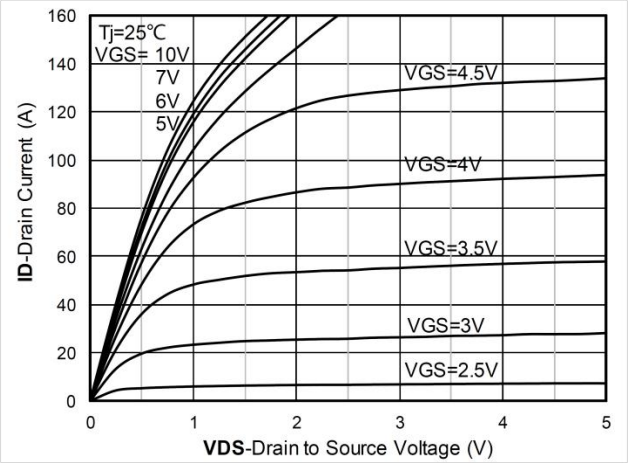
Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (Tc=25℃)	I_D	30	A
Continuous Drain Current (Tc=100℃)	I_D	20	A
Pulsed Drain Current	I_{DM}	120	A
Single Pulse Avalanche Energy[1]	E_{AS}	81	mJ
Power Dissipation (Tc=25℃)	P_D	26	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	4.8	℃/W
Storage Temperature Range	T_{STG}	-55 to 150	℃
Operating Junction Temperature Range	T_J	-55 to 150	℃

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

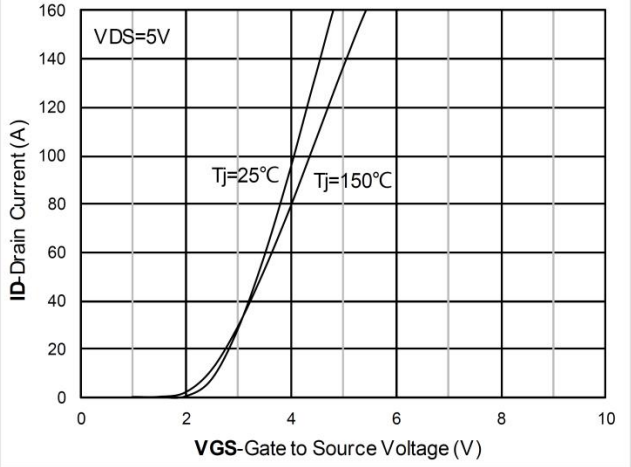
Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	VGS=0V , ID=250uA	40	-	-	V
Drain Cut-Off Current	I_{DSS}	VDS=32V , VGS=0V , TJ=25℃	-	-	1	uA
Gate Leakage Current	I_{GSS}	VGS=±20V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	VGS=VDS , ID =250uA	1.0	1.5	2.5	V
Drain-Source ON Resistance	$R_{DS(ON)}$	VGS=10V , ID=20A	-	6.0	7.5	mΩ
		VGS=4.5V , ID=10A	-	8.5	12	
Dynamic Characteristics						
Input Capacitance	C_{iss}	VDS=20V , VGS=0V , f=1MHz	-	623	-	pF
Output Capacitance	C_{oss}		-	311	-	
Reverse Transfer Capacitance	C_{rss}		-	21	-	
Total Gate Charge	Q_g	VDS=20V , VGS=10V , ID=85A	-	21	-	nC
Gate-Source Charge	Q_{gs}		-	4	-	
Gate-Drain Charge	Q_{gd}		-	5	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	VDD=20V, VGS=10V, RG=1.6Ω, ID=85A	-	7	-	nS
Rise Time	t_r		-	2.5	-	
Turn-Off Delay Time	$t_{d(off)}$		-	21	-	
Fall Time	t_f		-	3.5	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	I_S = 1A, VGS = 0V	-	-	1.2	V
Maximum Body-Diode Continuous Current	I_S		-	-	30	A
Reverse Recovery Time	Trr	I_S=20A, di/dt=100A/us, TJ=25℃	-	28	-	nS
Reverse Recovery Charge	Qrr		-	16	-	nC

Note :
The test condition is VDD=20V,VGS=10V,L=0.5mH,RG=25Ω

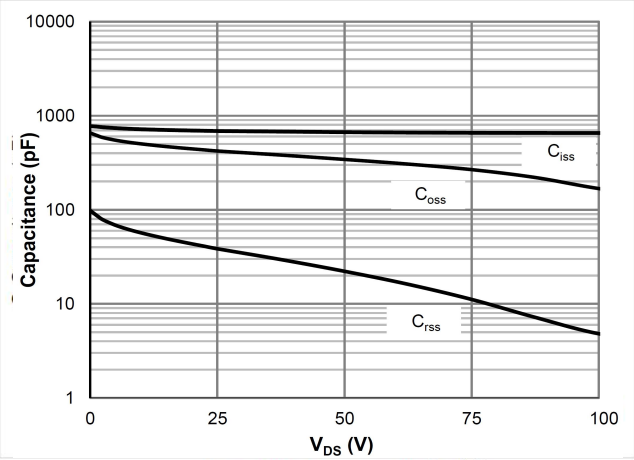
Typical Characteristics



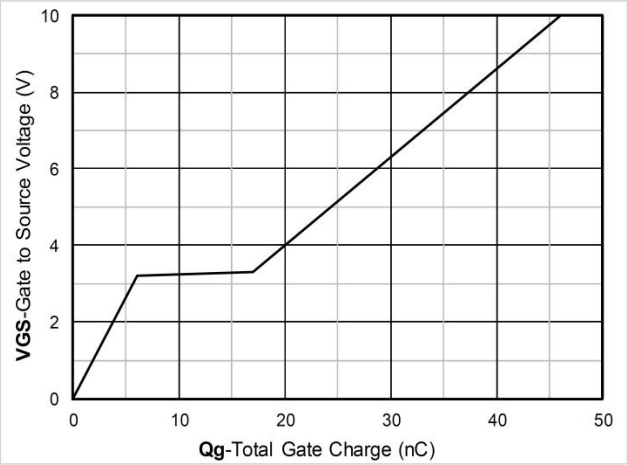
Output Characteristics



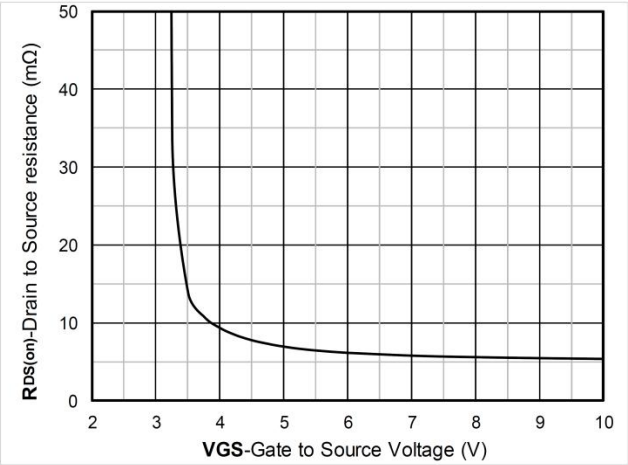
Transfer Characteristics



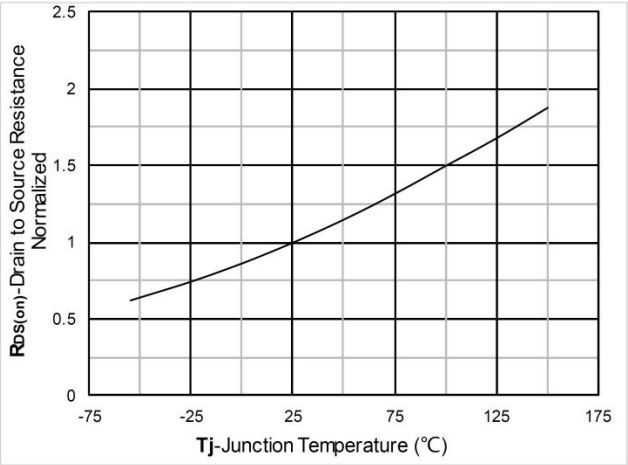
Capacitance Characteristics



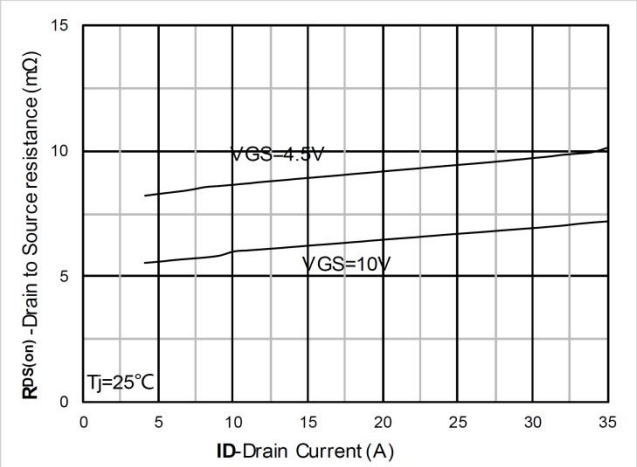
Gate Charge



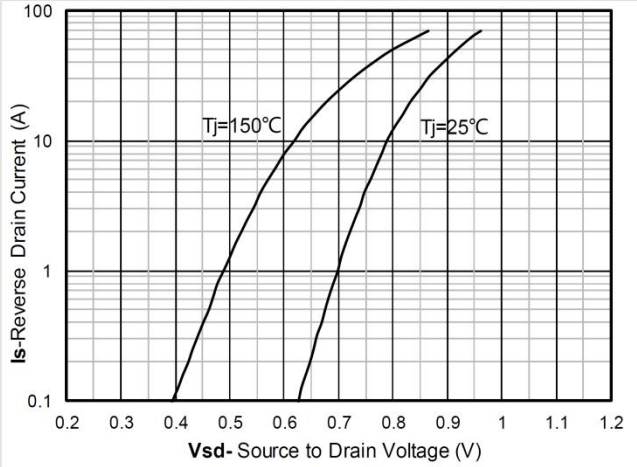
On-Resistance vs Gate to Source Voltage



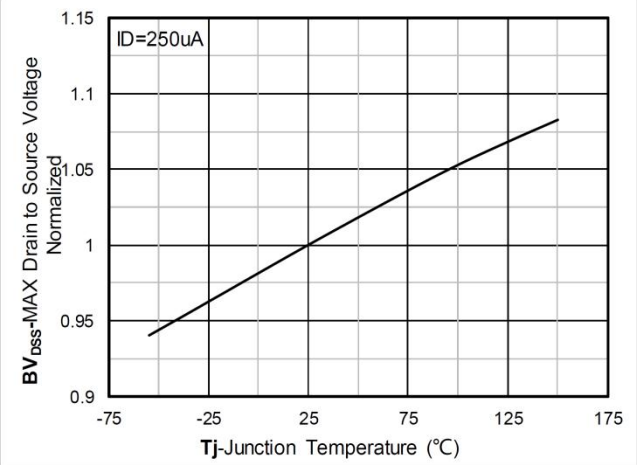
Normalized On-Resistance



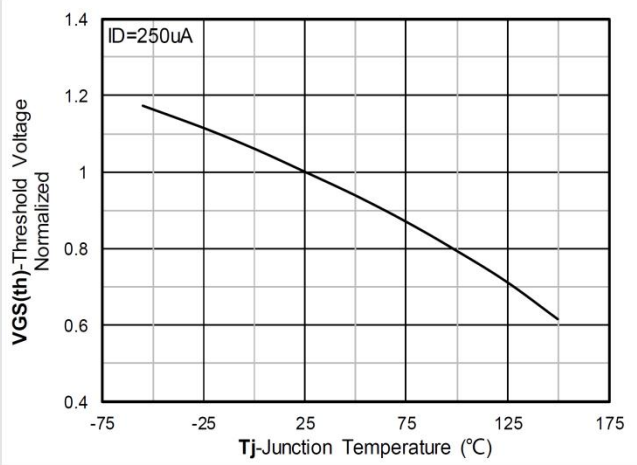
RDS(on) VS Drain Current



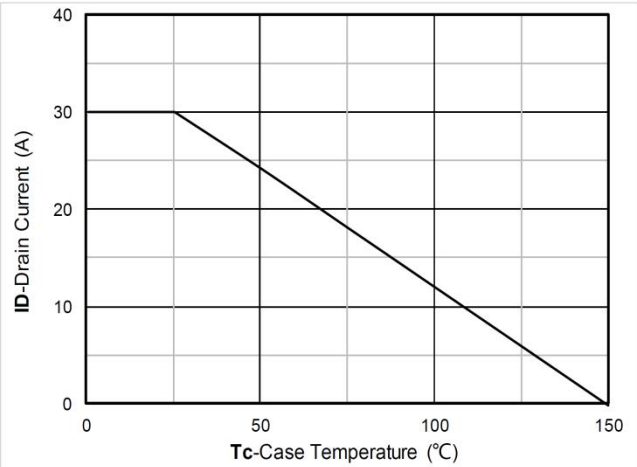
Forward characteristics of reverse diode



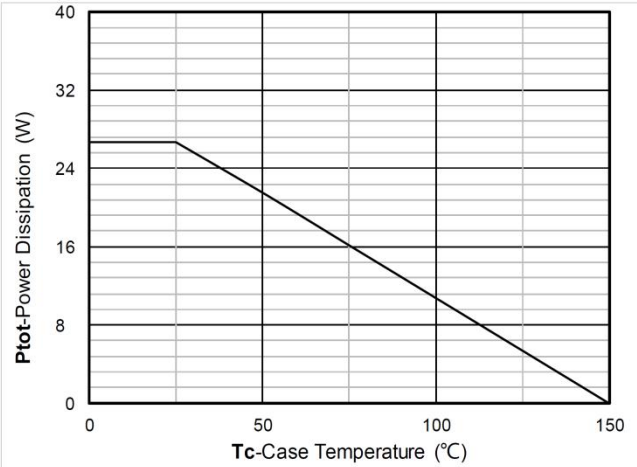
Normalized breakdown voltage



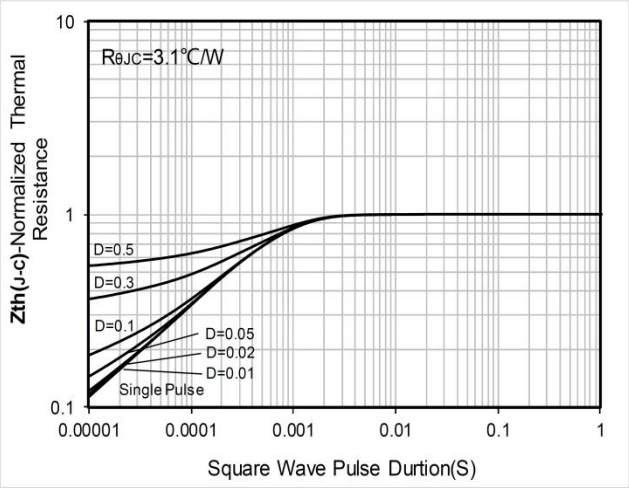
Normalized Threshold voltage



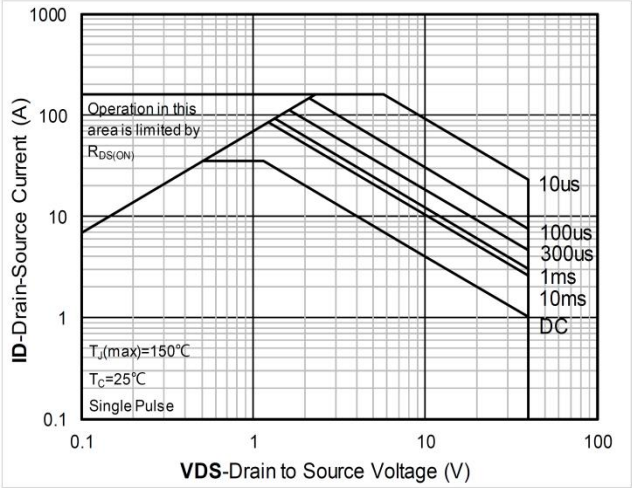
Current dissipation



Power dissipation

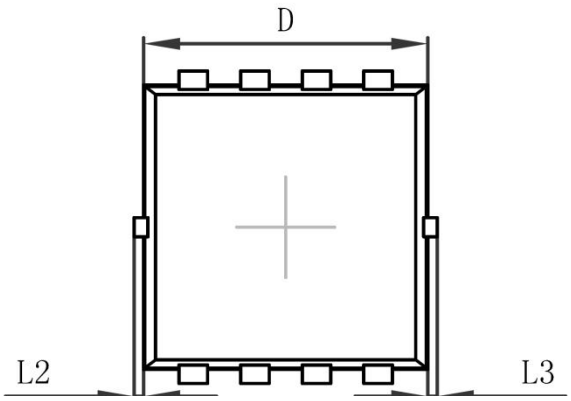


Maximum Transient Thermal Impedance

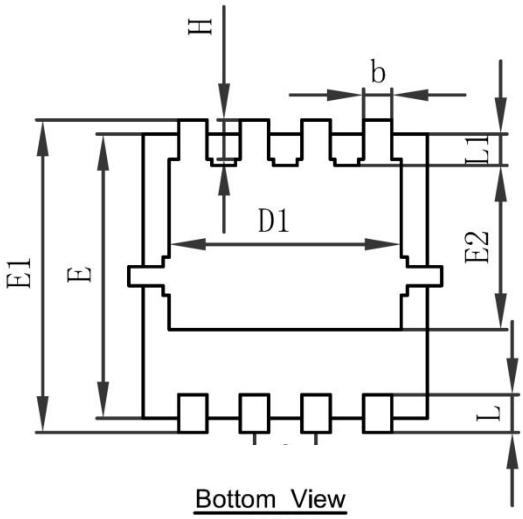


Safe Operation Area

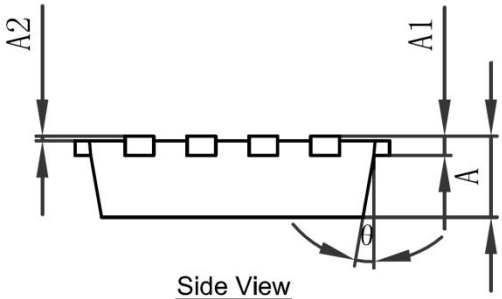
DFN3X3-8L Package Information



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	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	0~0.05		0~0.002	
D	2.900	3.100	0.114	0.122
D1	2.300	2.600	0.091	0.102
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°