Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	6mΩ@10V	28A
	9.4mΩ@4.5V	

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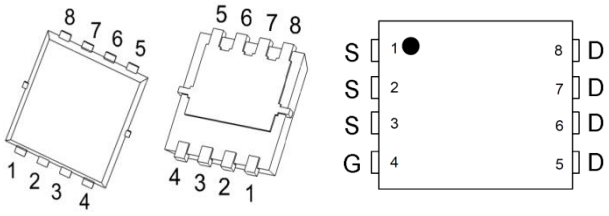
Feature

- Fast Switching
- Low Gate Charge and Rdson
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

Applications

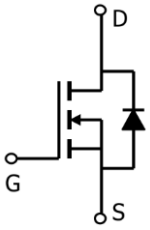
- Power switching application
- Isolated DC/DC Converters in Telecom and Industrial

Package

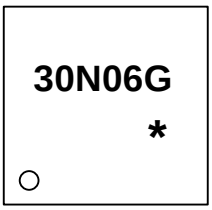


PDFN3×3-8L

Circuit diagram



Marking



30N06G =Device Code
***** =Month Code

Order Information

Device	Package	Unite/Tape
SP30N06GNJ	PDFN3×3-8L	5000

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

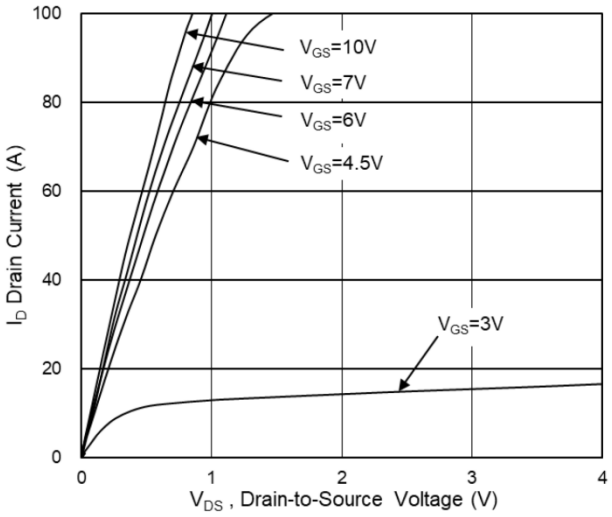
Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current, VGS @ 10V [1]	I_D@TC=25℃	28	A
Continuous Drain Current, VGS @ 10V [1]	I_D@TC=100℃	20	A
Pulsed Drain Current[2]	I_{DM}	100	A
Single Pulse Avalanche Energy [3]	E_{AS}	39.2	mJ
Avalanche Current	I_{AS}	28	A
Total Power Dissipation [4]	P_D@TC=25℃	21	W
Thermal Resistance Junction-Ambient [1]	$R_{\theta JA}$	65	℃/W
Thermal Resistance Junction-Case [1]	$R_{\theta JC}$	6	℃/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)

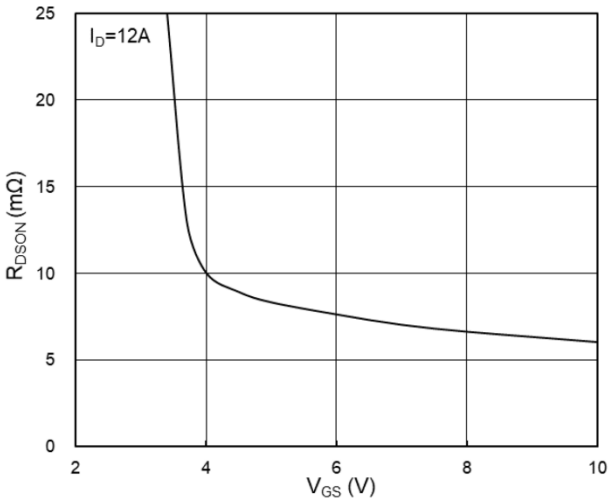
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	VGS=0V , ID=250uA	30	---	---	V
Drain-Source Leakage Current	I_{DSS}	VDS=30V , VGS=0V , TJ=25℃	---	---	1	uA
Drain-Source Leakage Current	I_{DSS}	VDS=30V , VGS=0V , TJ=55℃	---	---	5	uA
Gate-Source Leakage Current	I_{GSS}	VGS=±20V , VDS=0V	---	---	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	VGS=VDS , ID =250uA	1.2	1.7	2.2	V
Static Drain-Source On-Resistance[2]	$R_{DS(ON)}$	VGS=10V , ID=12A	---	6	8	mΩ
		VGS=4.5V , ID=12A	---	9.4	11	
Gate Resistance	R_g	VDS=0V , VGS=0V , f=1MHz	0.8	1.7	2.6	Ω
Dynamic Characteristics						
Forward Transconductance	g_{fs}	VDS=5V , ID=12A	---	55	---	S
Total Gate Charge (4.5V)	Q_g	VDS=15V , VGS=10V , ID=12A	---	7.1	---	nC
Gate-Source Charge	Q_{gs}		---	2.2	---	
Gate-Drain Charge	Q_{gd}		---	3.1	---	
Input Capacitance	C_{iss}	VDS=15V , VGS=0V , f=1MHz	---	1109	---	pF
Output Capacitance	C_{oss}		---	240	---	
Reverse Transfer Capacitance	C_{rss}		---	220	---	
Switching Characteristics						
Turn-On Delay Time	$T_{d(on)}$	VDD=15V , VGS=10V , RG=3Ω , ID=12A	---	7	---	ns
Rise Time	T_r		---	18.8	---	
Turn-Off Delay Time	$T_{d(off)}$		---	19.5	---	
Fall Time	T_f		---	3.4	---	
Source-Drain Diode Characteristics						
Continuous Source Current[1,5]	I_S	VG=VD=0V , Force Current	---	---	12	A
Diode Forward Voltage[2]	V_{SD}	VGS=0V , IS=1A , TJ=25℃	---	---	1	V

Note :
1. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3. The EAS data shows Max. rating . The test condition is VDD=25V,VGS=10V,L=0.1mH,IAS=28A
4. The power dissipation is limited by 150℃ junction temperature
5. The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

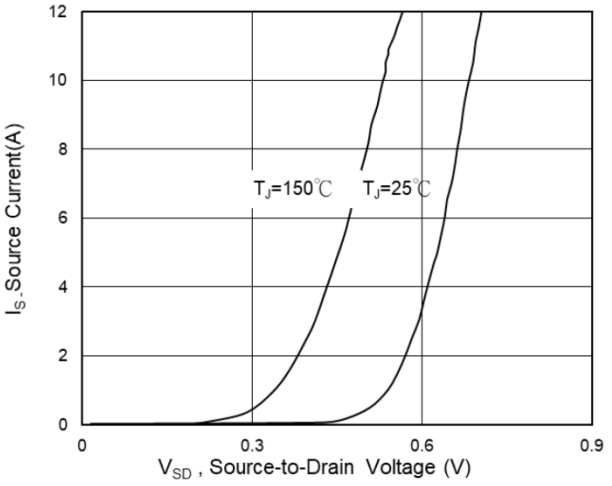
Typical Characteristics



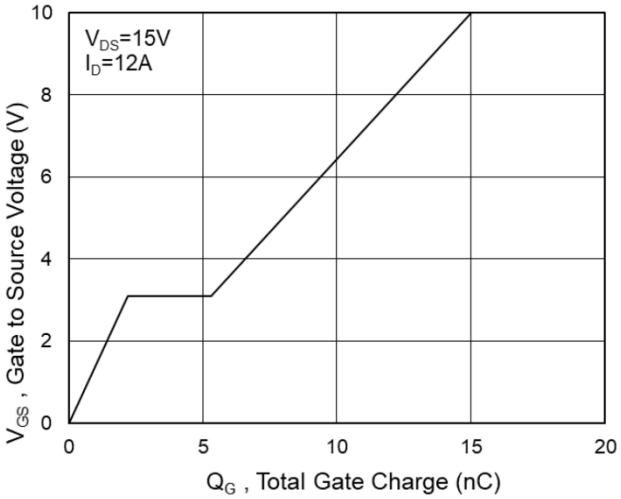
Typical Output Characteristics



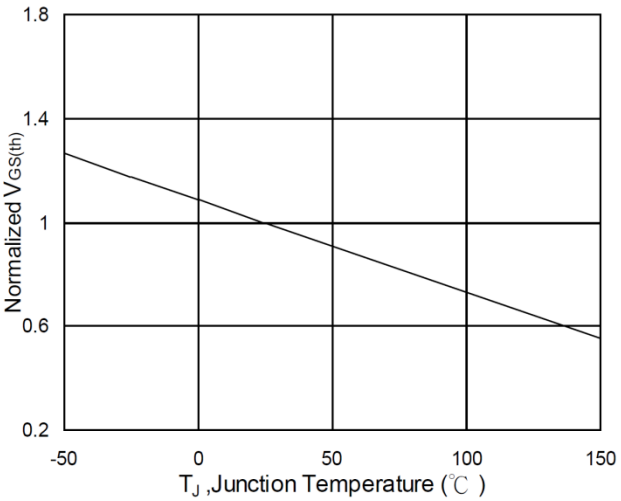
On-Resistance vs G-S Voltage



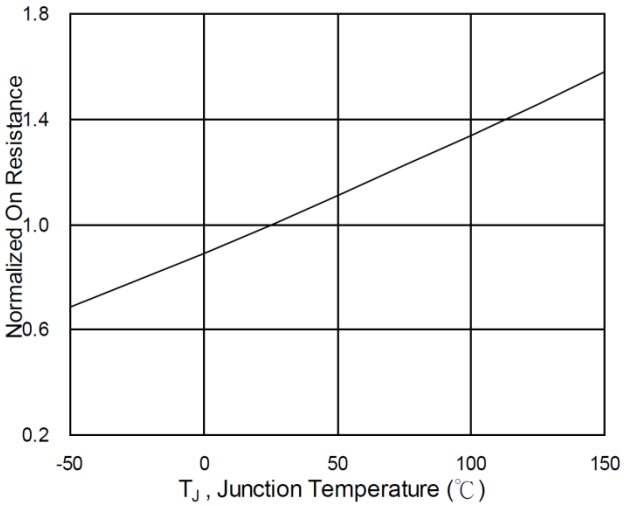
Source Drain Forward Characteristics



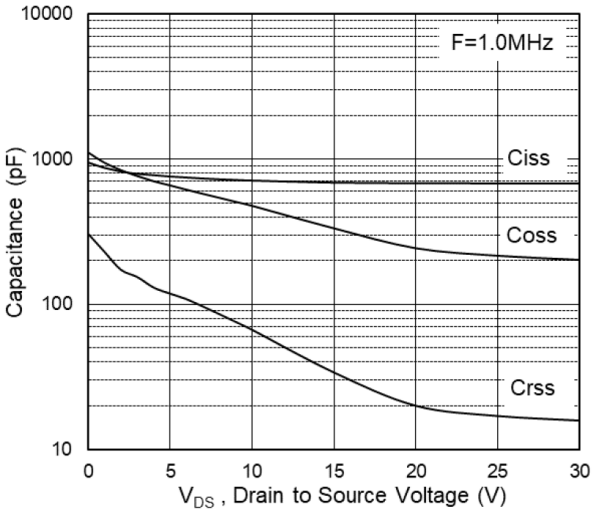
Gate-Charge Characteristics



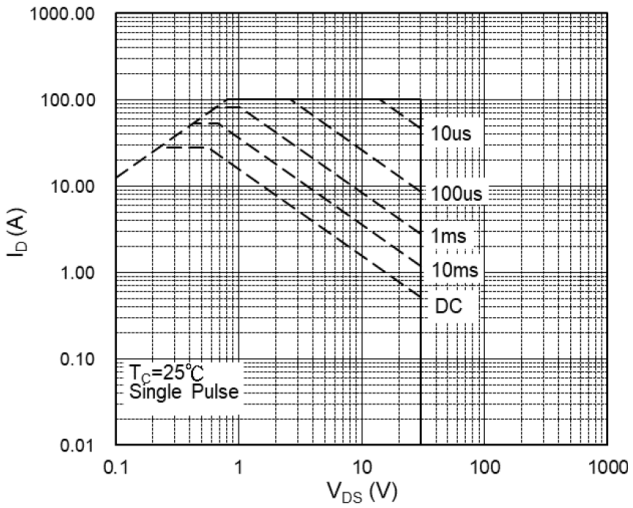
Normalized $V_{GS(th)}$ vs T_J



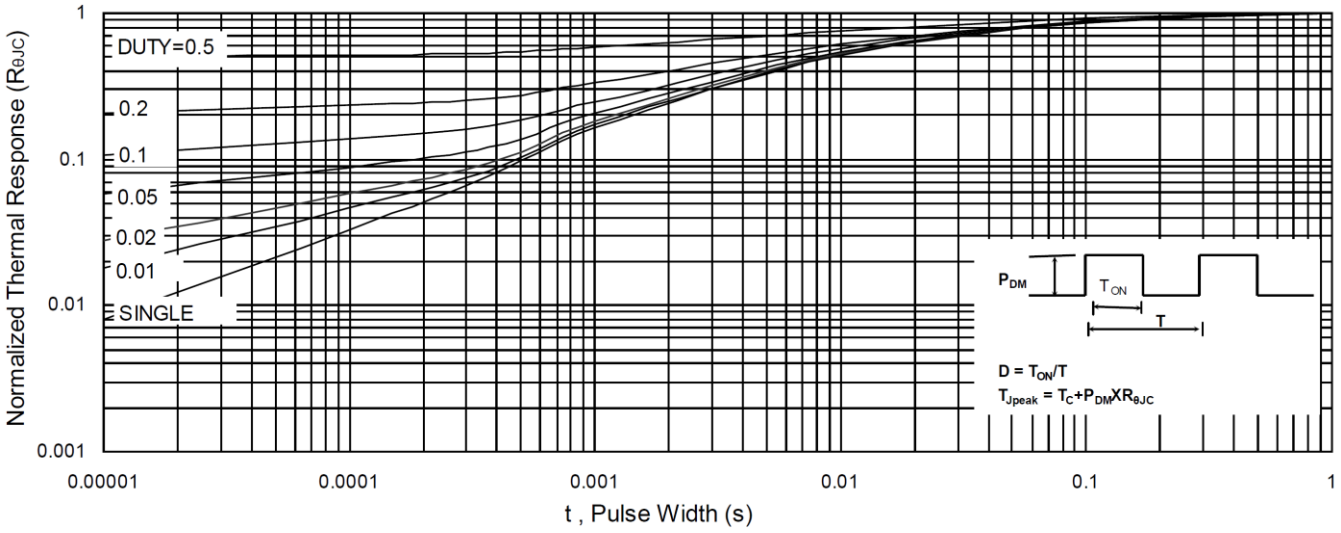
Normalized R_{DSON} vs T_J



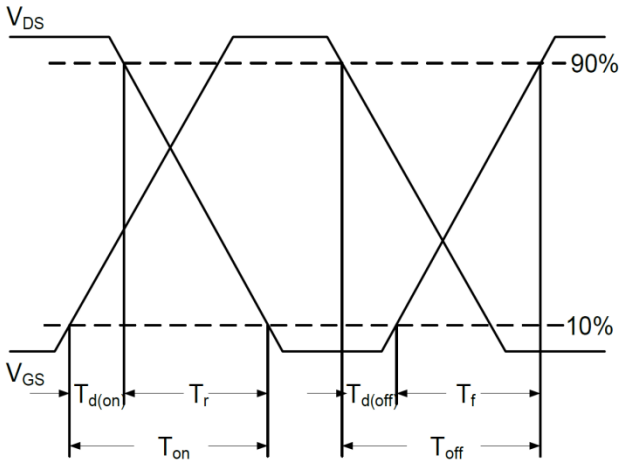
Capacitance



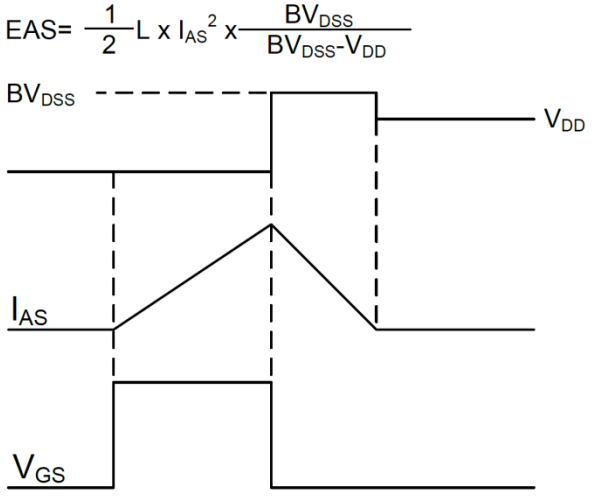
Safe Operating Area



Normalized Maximum Transient Thermal Impedance

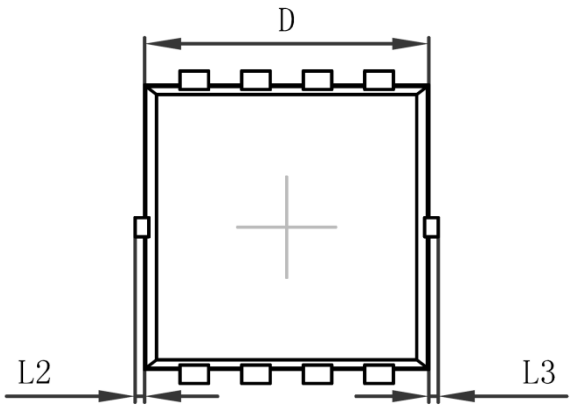


Switching Time Waveform

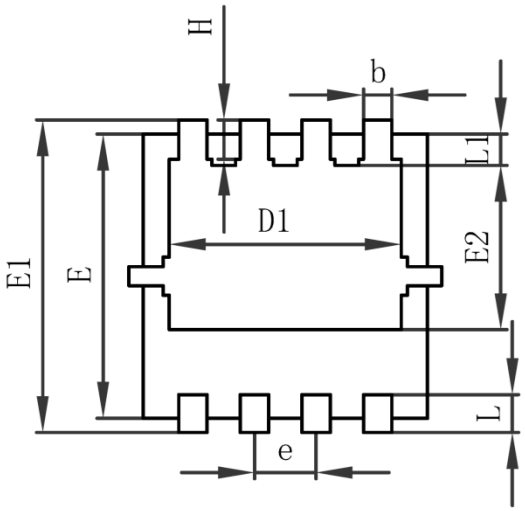


Unclamped Inductive Switching Waveform

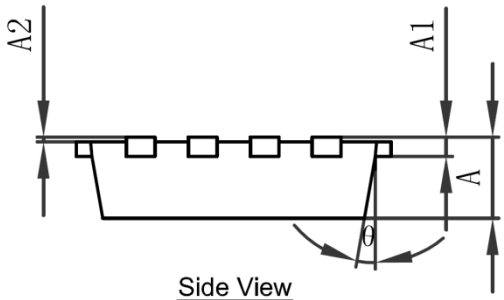
PDFNWB3.3×3.3-8L Package Information



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°

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