

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	8.5mΩ@10V	24A
	12mΩ@4.5V	



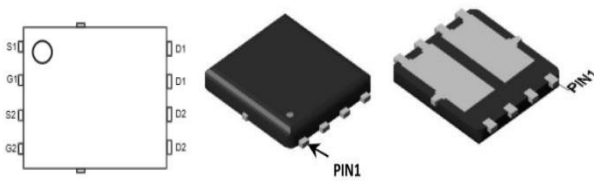
Feature

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

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

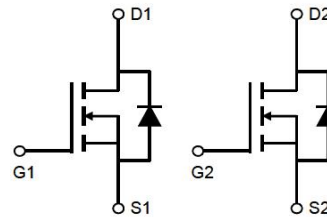
Applications

Package

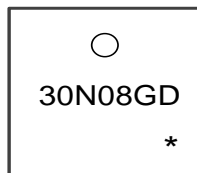


PDFN5X6-8L

Circuit diagram



Marking



30N08GD =Device Code
* =Month Code

Order Information

Device	Package	Unite/Tape
SP30N08GDNK	PDFN5 × 6-8L	5000

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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V _{DS}	30	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current (T _C =25°C)	I _D	24	A
Pulsed Drain Current ²	I _{DM}	96	A
Single Pulse Avalanche Energy ³	E _{AS}	39.2	mJ
Total Power Dissipation ⁴ (T _C =25°C)	P _D	28	W
Thermal Resistance Junction-Case ¹	R _{θJC}	4.5	°C/W
Storage Temperature Range	T _{STG}	-55 to 150	°C
Operating Junction Temperature Range	T _J	-55 to 150	°C

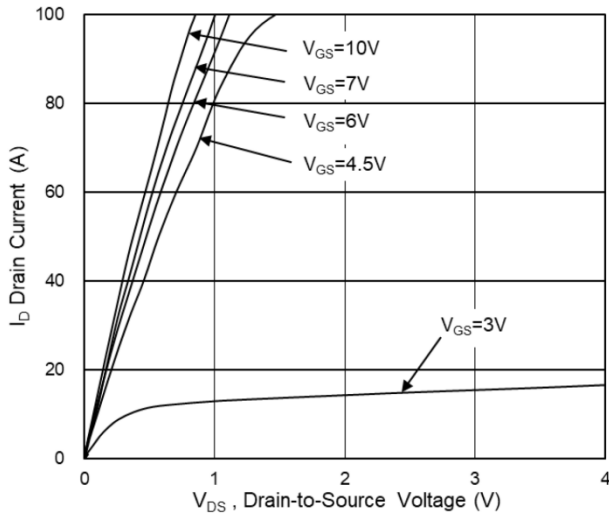
Electrical characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	30	---	---	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	---	---	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	1.0	1.7	2.5	V
Static Drain-Source On-Resistance ²	R _{DS(on)}	V _{GS} =10V, I _D =9A	---	8.5	11	mΩ
		V _{GS} =4.5V, I _D =9A	---	12	16	
Dynamic Characteristics						
Total Gate Charge (4.5V)	Q _g	V _{DS} =15V, V _{GS} =10V, I _D =9A	---	7.1	---	nC
Gate-Source Charge	Q _{gs}		---	2.2	---	
Gate-Drain Charge	Q _{gd}		---	3.1	---	
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =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)}	V _{DD} =15V, V _{GS} =10V, R _G =3Ω, I _D =9A	---	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	V _G =V _D =0V, Force Current	---	---	12	A
Diode Forward Voltage ²	V _{SD}	V _{GS} =0V, I _S =1A, T _J =25°C	---	---	1	V

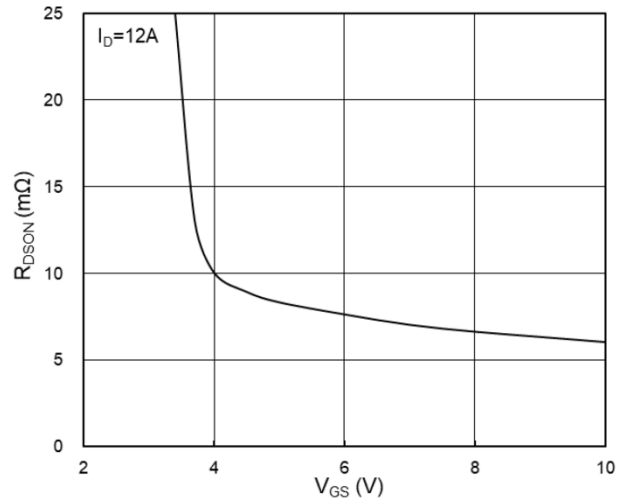
Note :

- The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%
- The EAS data shows Max. rating. The test condition is V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=28A
- The power dissipation is limited by 150°C junction temperature
- The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

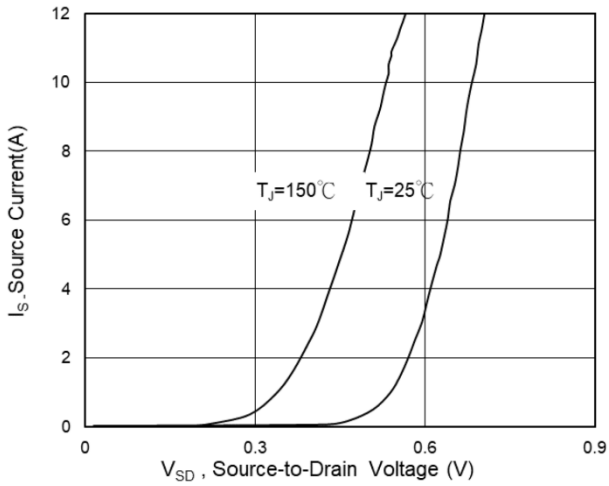
Typical Characteristics



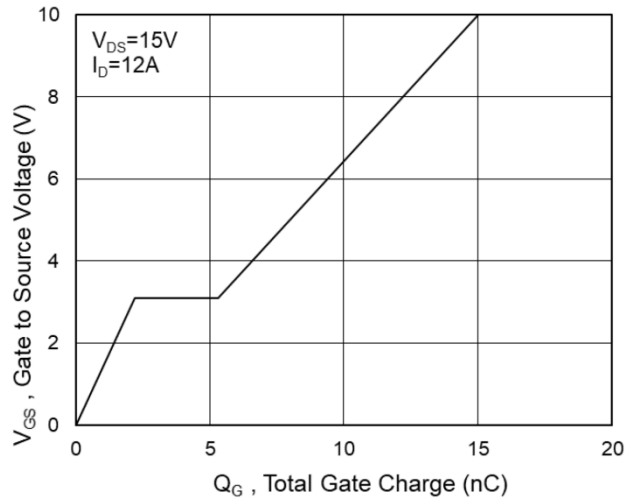
Typical Output Characteristics



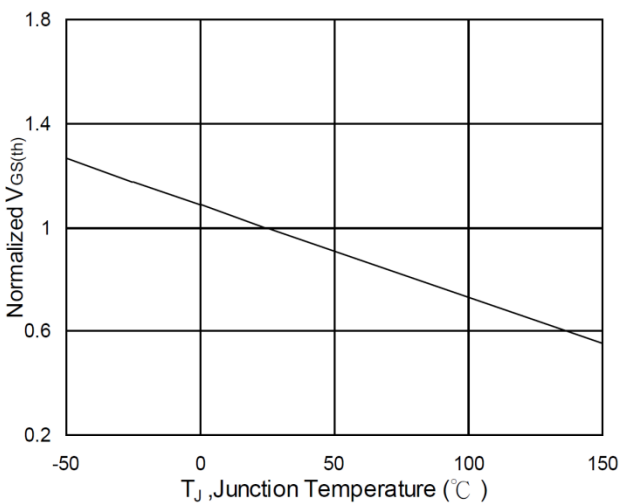
On-Resistance vs G-S Voltage



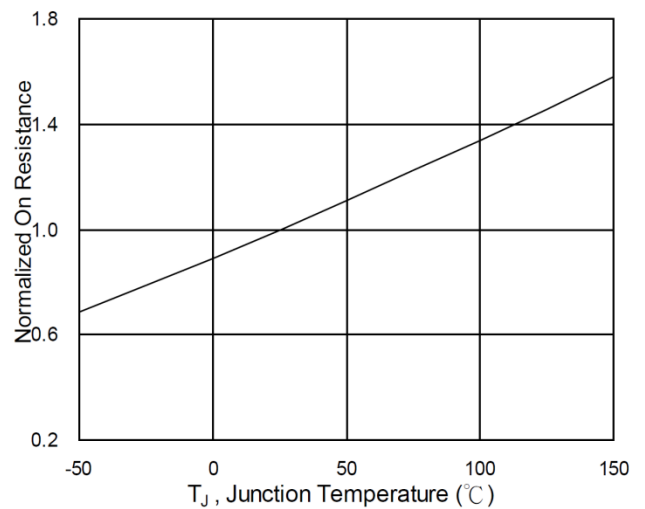
Source Drain Forward Characteristics



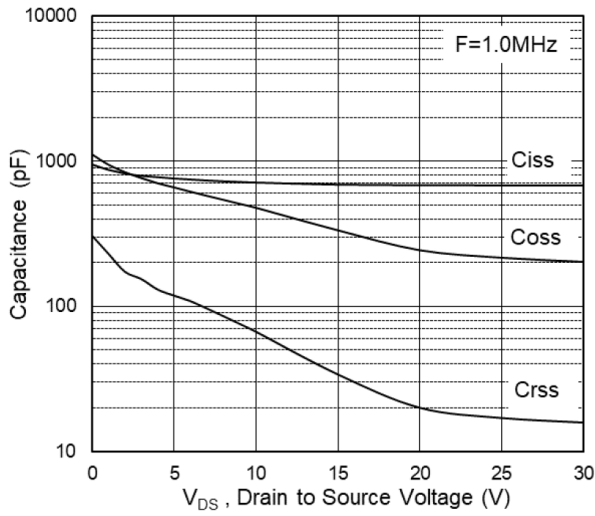
Gate-Charge Characteristics



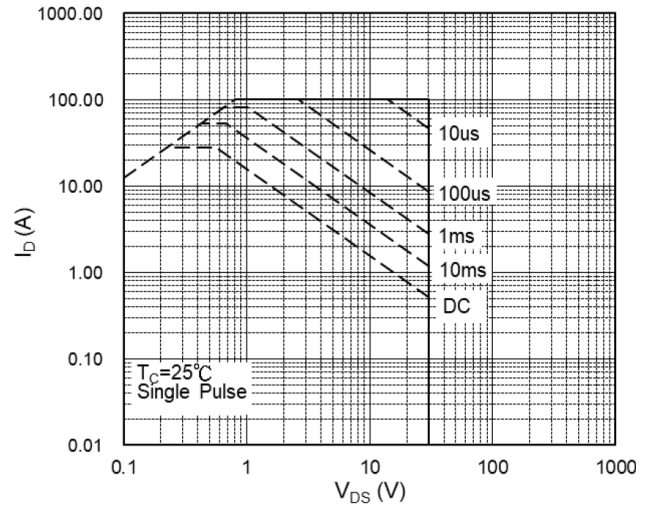
Normalized $V_{GS(th)}$ vs T_J



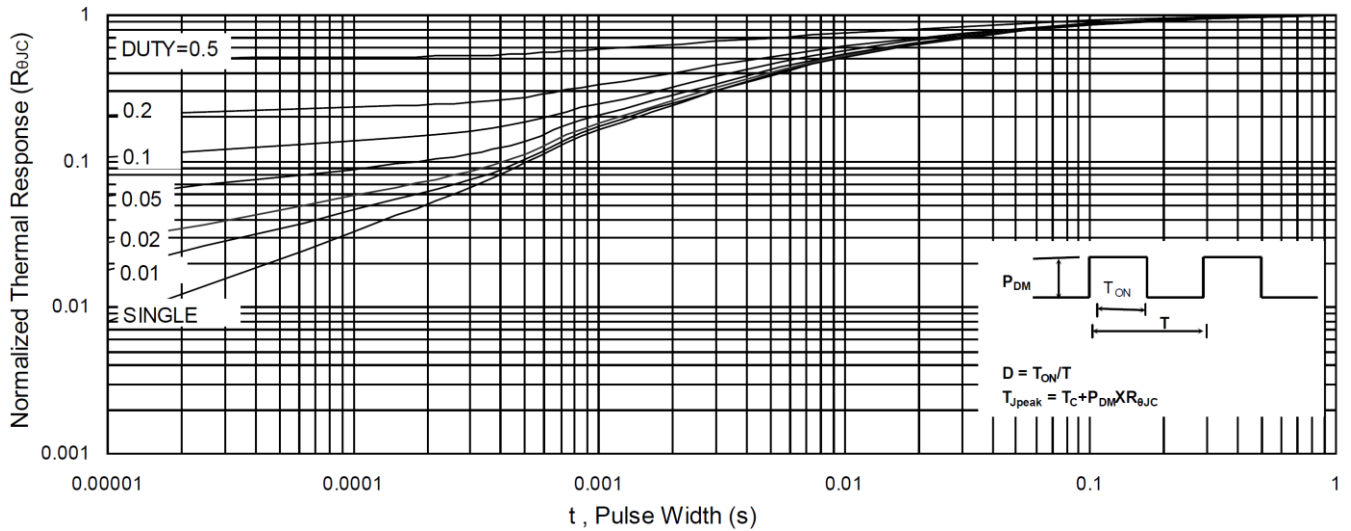
Normalized $R_{DS(on)}$ vs T_J



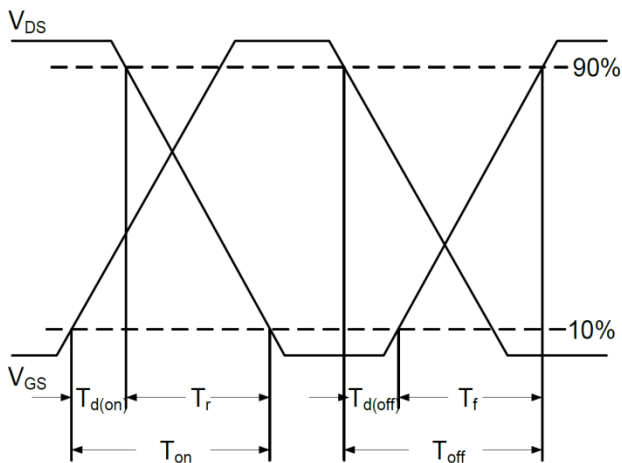
Capacitance



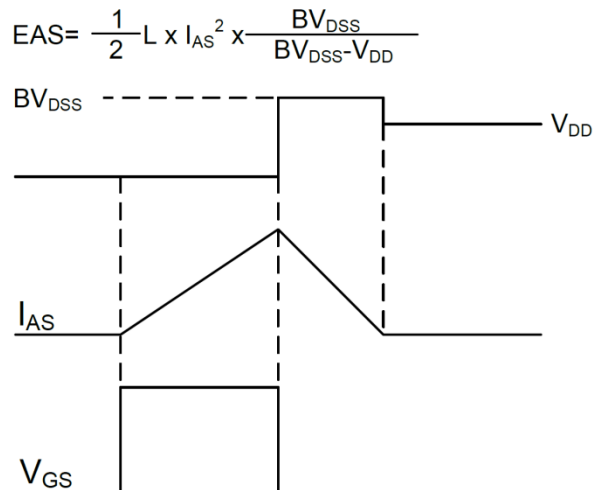
Safe Operating Area



Normalized Maximum Transient Thermal Impedance

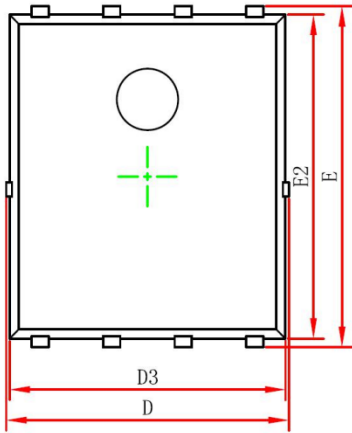


Switching Time Waveform

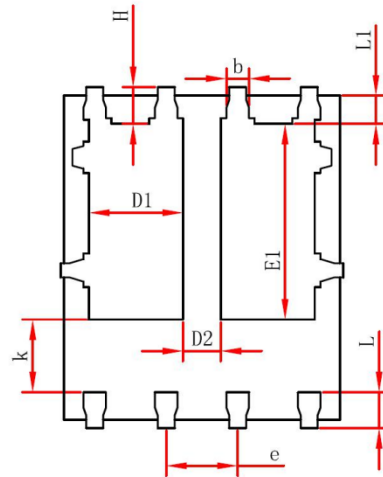


Unclamped Inductive Switching Waveform

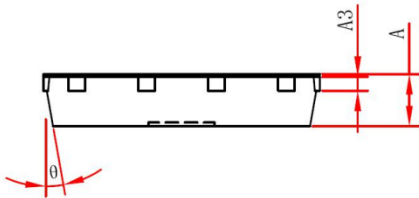
PDFN5X6-8L Package Information



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.		0.010 REF.	
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	1.270 TYP.		0.050 TYP.	
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°

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