

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	1.2mΩ@10V	120A
	1.6mΩ@4.5V	



合肥矽普半导体

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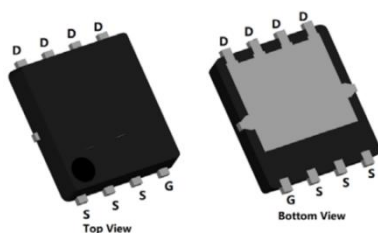
Feature

- Fast Switching
- Low Gate Charge and $R_{DS(on)}$
- Advanced Split Gate Trench Technology
- 100% Single Pulse avalanche energy Test

Applications

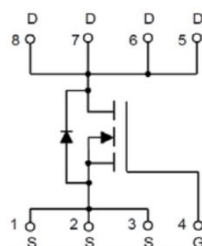
- Power switching application
- DC-DC Converters

Package

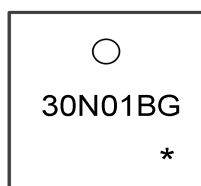


PDFN5X6-8L

Circuit diagram



Marking



30N01BG :Device Code
* :Month Code

Order Information

Device	Package	Unit/Tape
SP30N01BGNK	PDFN5X6-8L	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 (Tc=25°C)	Package Limit	I_D	120	A
Continuous Drain Current (Tc=25°C)	Silicon Limit	I_D	170	A
Continuous Drain Current (Tc=100°C)		I_D	80	A
Pulsed Drain Current		I_{DM}	480	A
Single Pulse Avalanche Energy ¹		E_{AS}	552	mJ
Power Dissipation (Tc=25°C)		P_D	105	W
Thermal Resistance Junction-to-Case		$R_{\theta JC}$	1.19	°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)

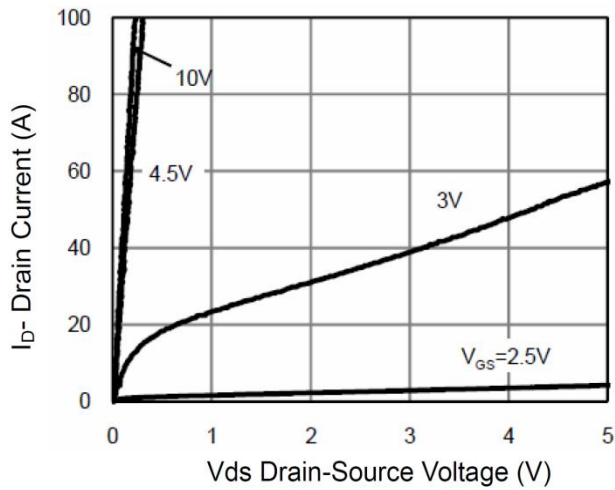
Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V , ID=250uA	30	-	-	V
Drain Cut-Off Current	I _{DSS}	VDS=24V , VGS=0V	-	-	1	uA
Gate Leakage Current	I _{GSS}	VGS= ± 20V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	VGS=VDS , ID =250uA	1.0	1.5	2.5	V
Drain-Source ON Resistance	R _{DS(ON)}	VGS=10V , ID=20A	-	1.2	1.5	mΩ
		VGS=4.5V , ID=15A	-	1.6	2.2	
Dynamic Characteristics						
Input Capacitance	C _{iss}	VDS=15V,VGS=0V,f=1MHZ	-	3997	-	pF
Output Capacitance	C _{oss}		-	1662	-	
Reverse Transfer Capacitance	C _{rss}		-	197	-	
Total Gate Charge	Q _g	VGS=10V,VDS=15V,ID=12A	-	95	-	nC
Gate-Source Charge	Q _{gs}		-	18	-	
Gate-Drain Charge	Q _{gd}		-	17.8	-	
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	VGS=10V,VDD=15V, ID=12A, RGEN=2Ω	-	13	-	nS
Rise Time	t _r		-	8	-	
Turn-Off Delay Time	t _{d(off)}		-	50	-	
Fall Time	t _f		-	9	-	
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		-	-	120	A
Reverse Recovery Time	T _{rr}	I _S =30A, di/dt=100A/us, T _J =25℃	-	65	-	nS
Reverse Recovery Charge	Q _{rr}		-	96	-	nC

Note :

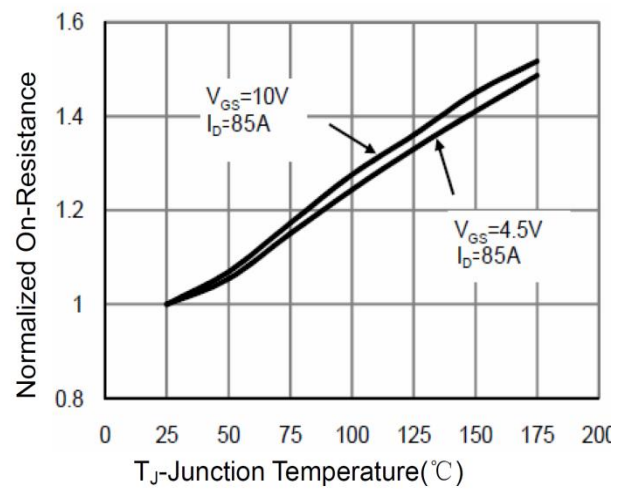
1. The test condition is $V_{DD}=15V, V_{GS}=10V, L=0.5mH, R_G=25\Omega$



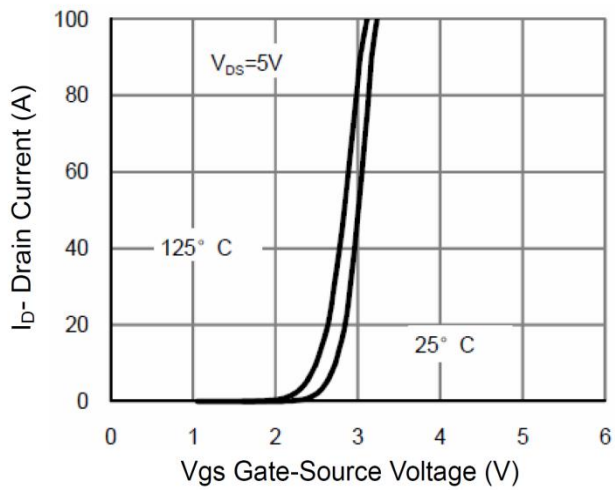
Typical Characteristics



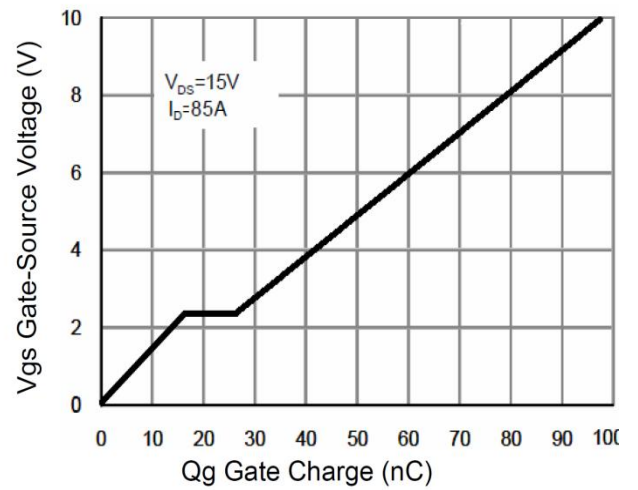
Output Characteristics



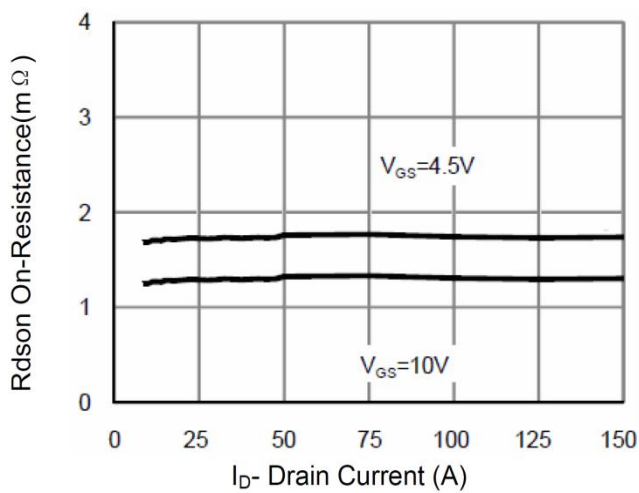
Rdson-Junction Temperature



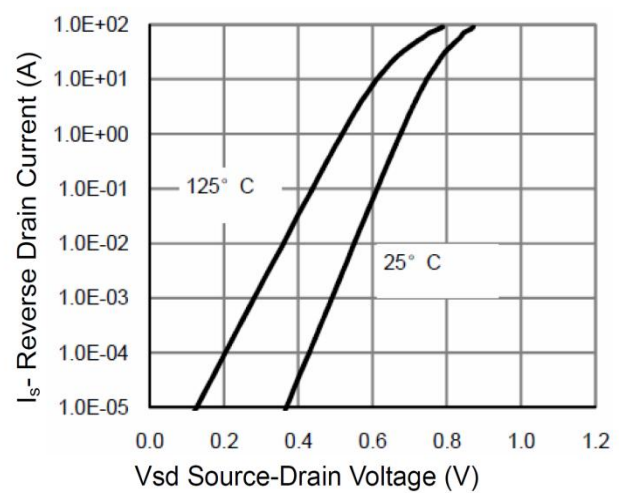
Transfer Characteristics



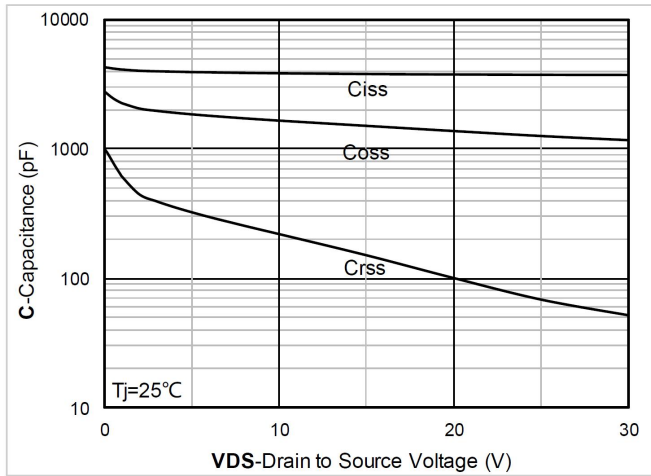
Gate Charge



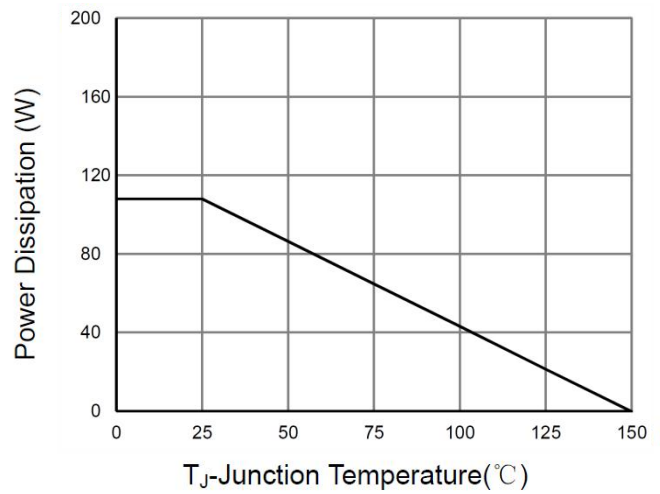
Rdson- Drain Current



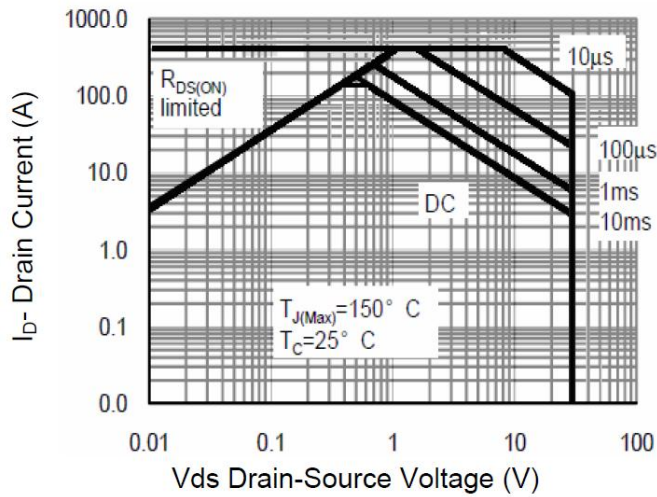
Source- Drain Diode Forward



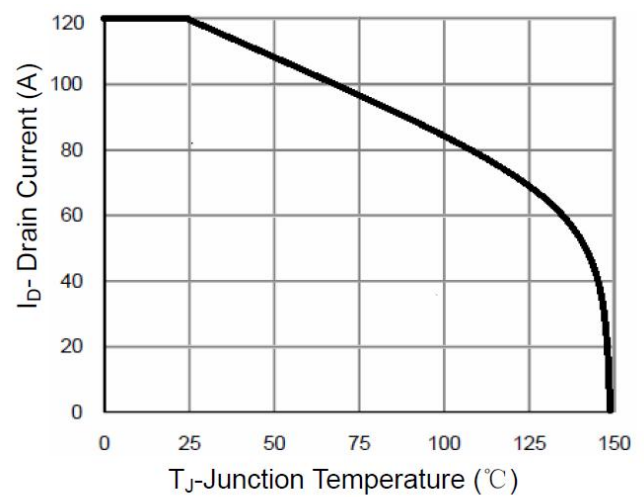
Capacitance vs Vds



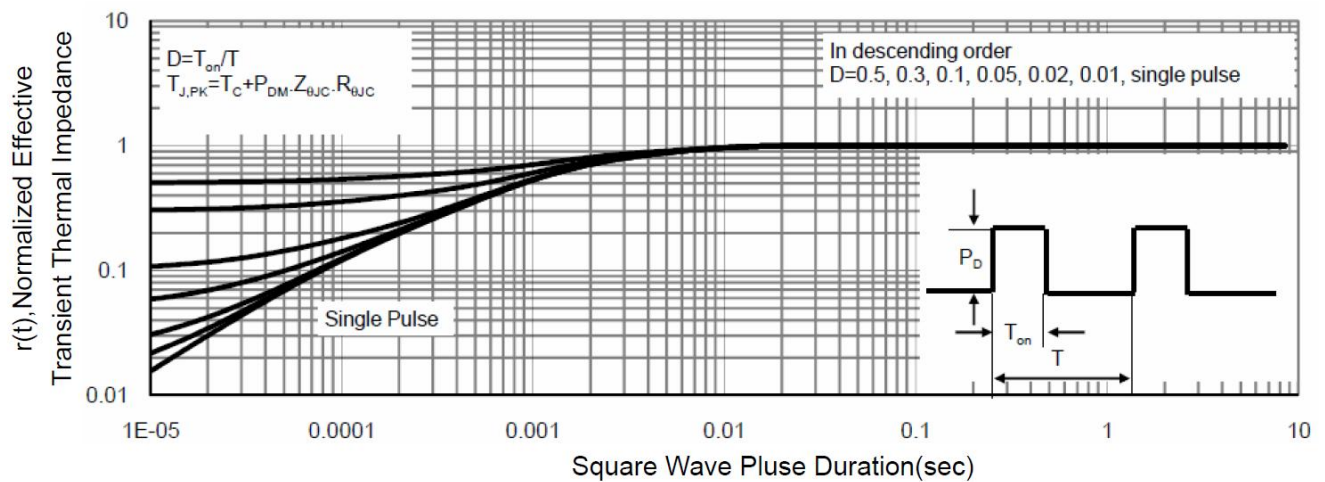
Power De-rating



Safe Operation Area



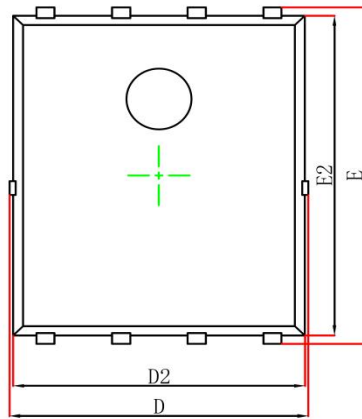
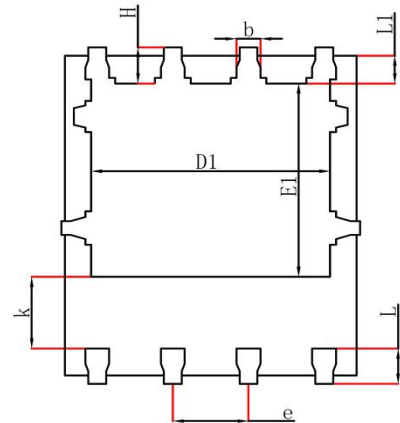
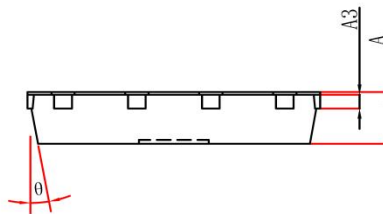
Current De-rating



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	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	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°