

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
20V	11mΩ@4.5V	9A
	20mΩ@2.5V	



合肥矽普半导体

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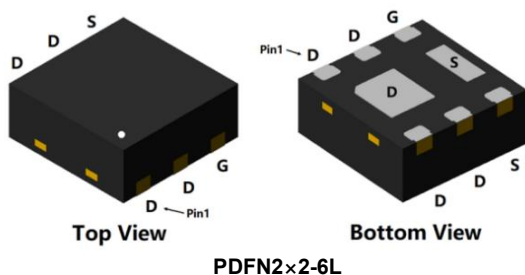
Feature

- Low On-Resistance
- Low Input Capacitance
- ESD protected 2KV

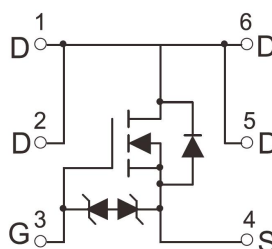
Application

- Power Management Functions
- DC-DC Converters

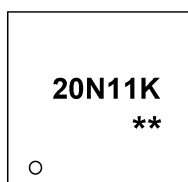
Package



Circuit diagram



Marking



20N11K :Device Code
** :Week Code

Order Information

Device	Package	Unit/Tape
SP20N11KNQ	PDFN2x2-6L	3000

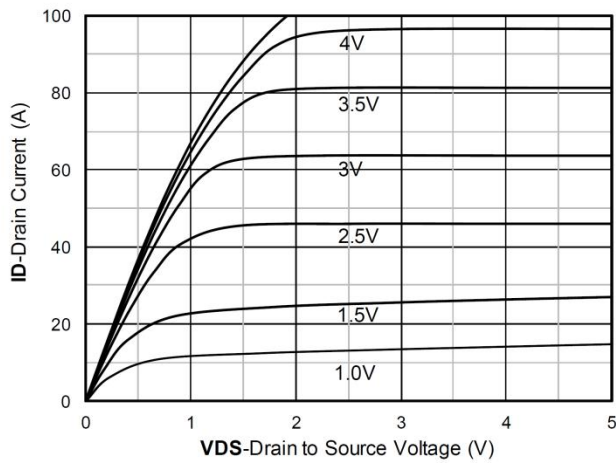
Absolute maximum ratings (Ta=25°C unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 10	V
Continuous Drain Current	I_D	9	A
Pulsed Drain Current	I_{DM}	36	A
Power Dissipation	P_D	2.1	W
Thermal Resistance from Junction-to-Ambient	$R_{\theta JA}$	59.5	$^{\circ}\text{C}/\text{W}$
Operating Junction Temperature Range	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$
Storage Temperature Range	T_J	-55 ~ +150	$^{\circ}\text{C}$

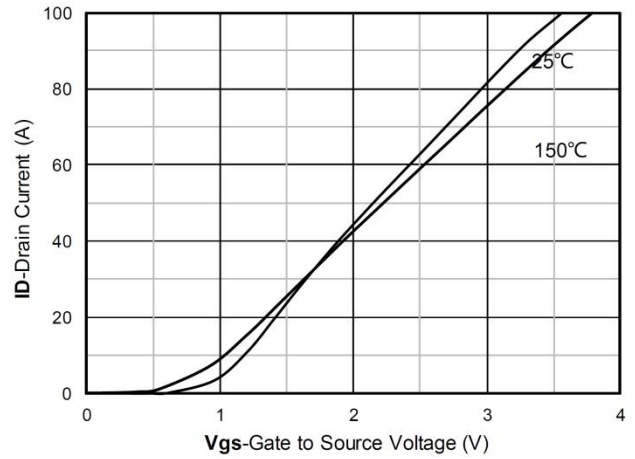
Electrical characteristics (Ta=25 °C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V , ID=250uA	20	-	-	V
Drain-Source Leakage Current	IDSS	VDS=16V , VGS=0V , TJ=25℃	-	-	1	uA
Gate-Source Leakage Current	IGSS	VGS=±10V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VGS=VDS , ID =250uA	0.4	0.65	1.0	V
Static Drain-Source On-Resistance	RDS(ON)	VGS =4.5V, ID =4A	-	11	23	mΩ
		VGS =2.5V, ID =3A	-	20	38	
Dynamic characteristics						
Input Capacitance	Ciss	VDS=10V , VGS=0V , f=1MHz	-	982	-	pF
Output Capacitance	Coss		-	228	-	
Reverse Transfer Capacitance	Crss		-	129	-	
Switching Characteristics						
Total Gate Charge	Qg	VDS =10V,VGS=4.5V,ID =7A	-	8.7	-	nC
Gate-Source Charge	Qgs		-	2.5	-	
Gate-Drain Charge	Qgd		-	3.1	-	
Turn-On Delay Time	Td(on)	VDD=10V, VGS=4.5V , RG=3Ω, ID=1A	-	1.3	-	nS
Rise Time	Tr		-	2.5	-	
Turn-Off Delay Time	Td(off)		-	28	-	
Fall Time	Tf		-	8	-	
Diode Characteristics						
Diode Forward Voltage	VSD	VGS=0V , IS=1A , TJ=25℃	-	-	1.2	V

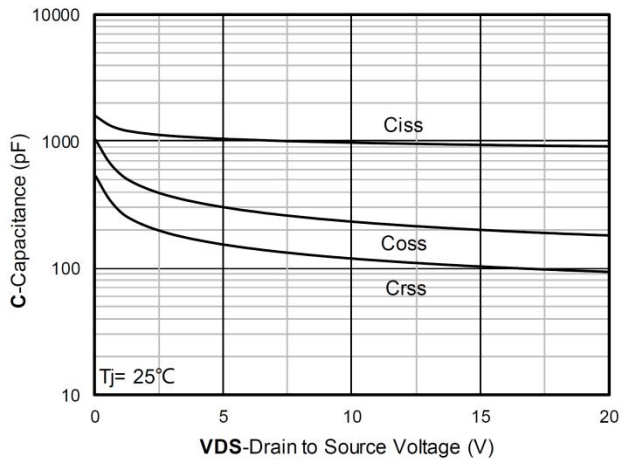
Typical Characteristics



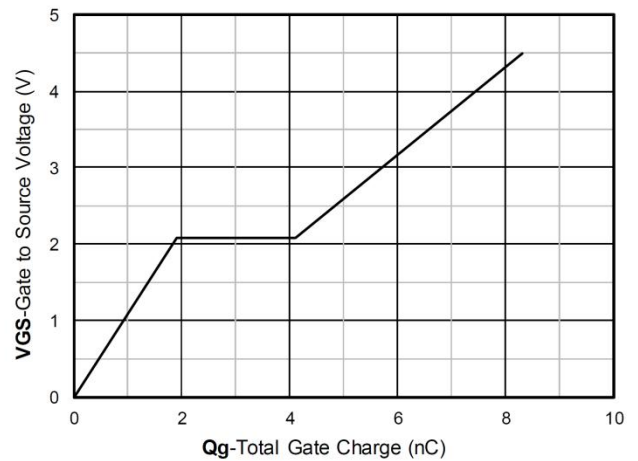
Output Characteristics



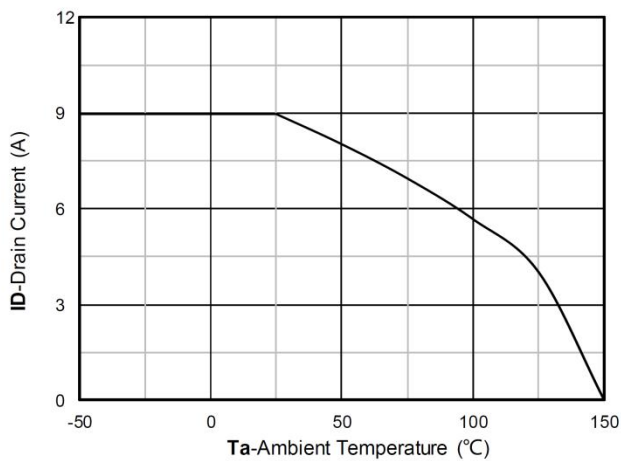
Transfer Characteristics



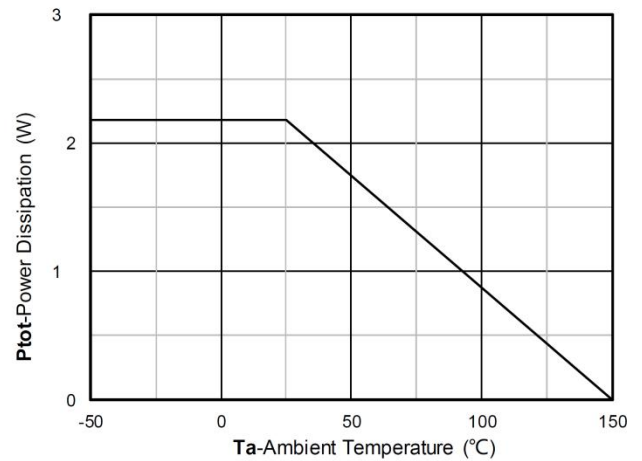
Capacitance Characteristics



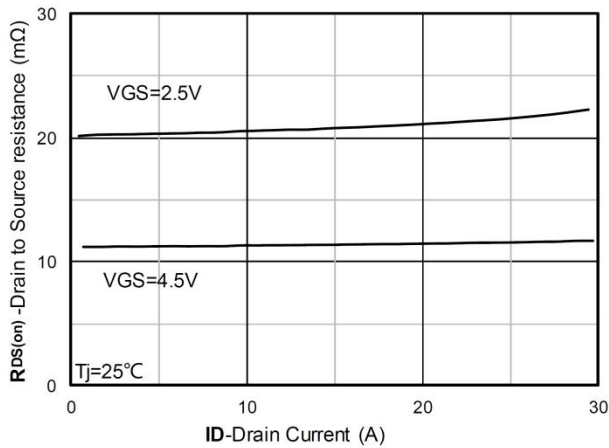
Gate Charge



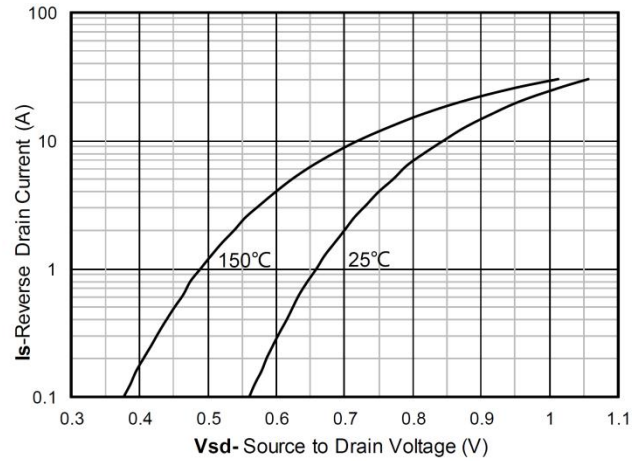
Current dissipation



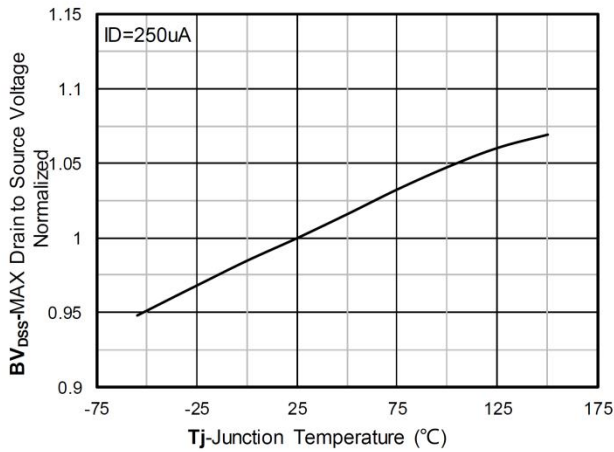
Power dissipation



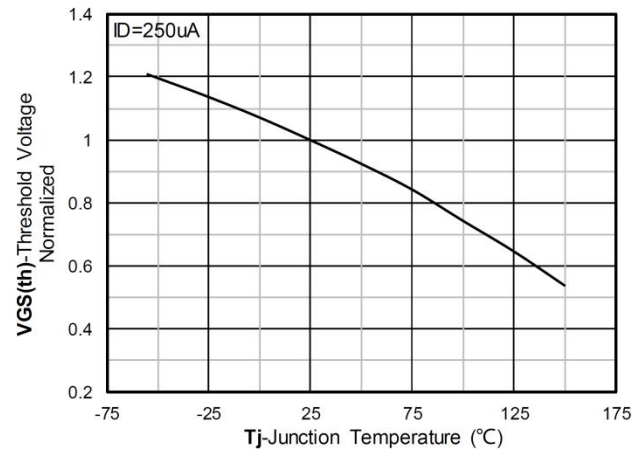
RDS(on) VS Drain Current



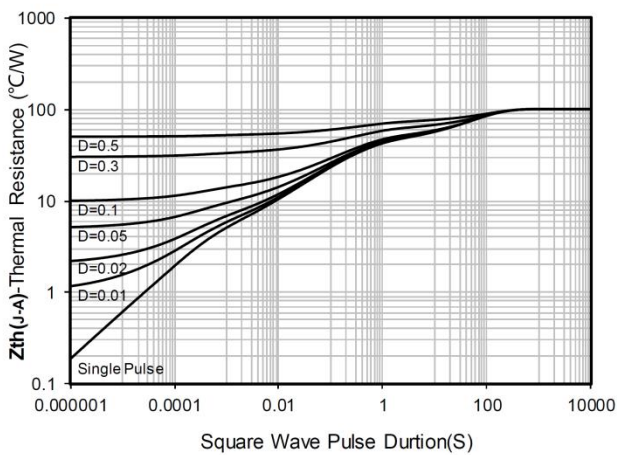
Forward characteristics of reverse diode



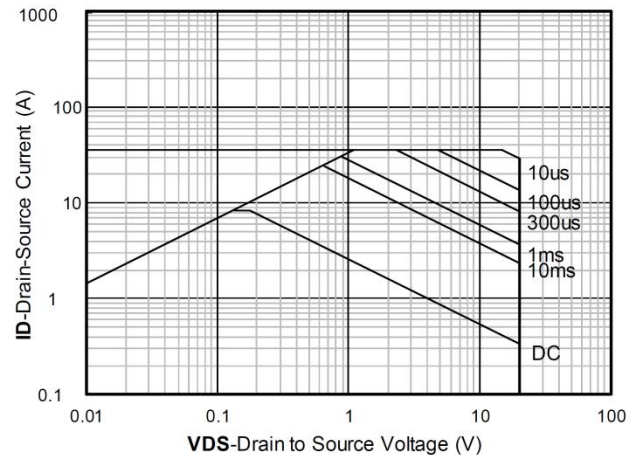
Normalized breakdown voltage



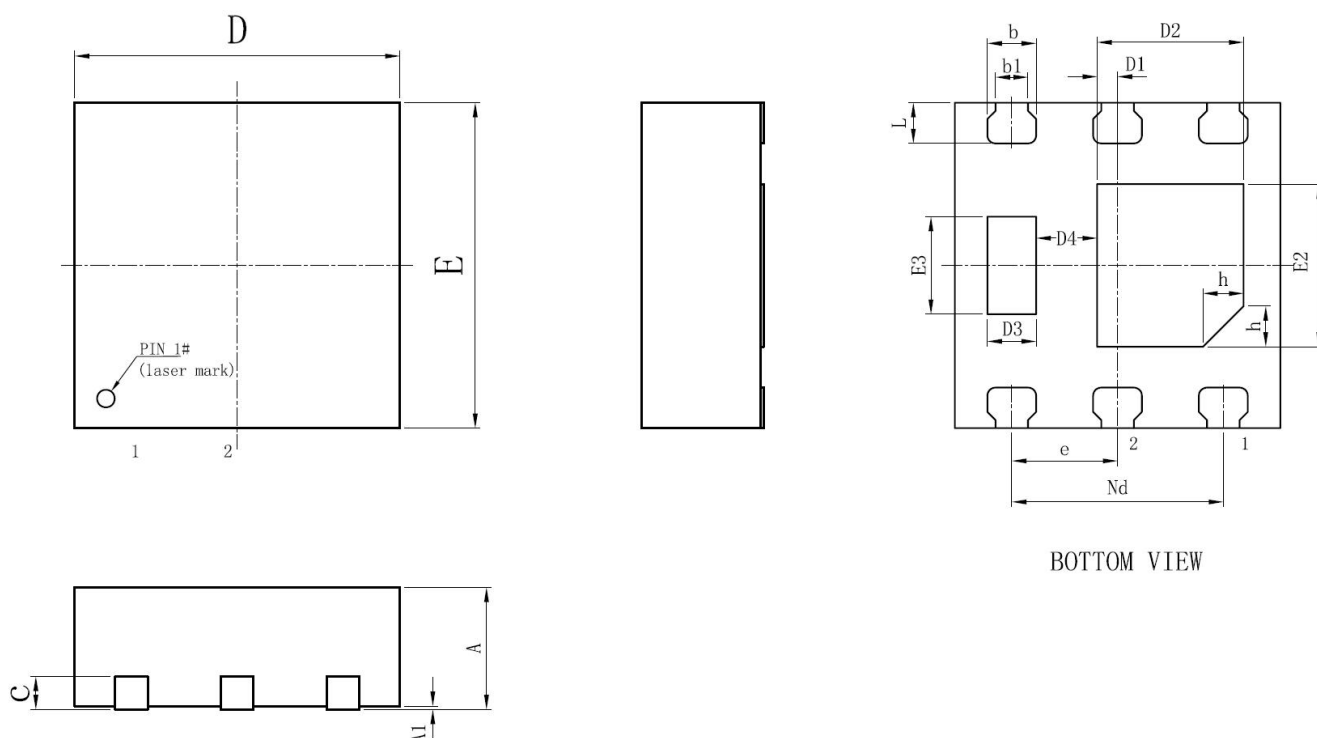
Normalized Threshold voltage



Maximum Transient Thermal Impedance



Safe Operation Area

PDFN2X2-6L Package Information


BOTTOM VIEW

Symbol	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	0.70	0.75	0.80
A1		0.02	0.05
b	0.25	0.30	0.35
b1		0.20REF	
c		0.203REF	
D	1.90	2.00	2.10
D1	0.08	0.125	0.18
D2	0.85	0.90	0.95
D3	0.25	0.30	0.35
D4	0.33	0.375	0.43
e		0.65BSC	
Nd		1.30BSC	
E	1.90	2.00	2.10
E2	0.95	1.00	1.05
E3	0.55	0.60	0.65
L	0.20	0.25	0.30
h		0.25REF	