

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
20V	14mΩ@4.5V	6A
	25mΩ@2.5V	



合肥矽普半导体

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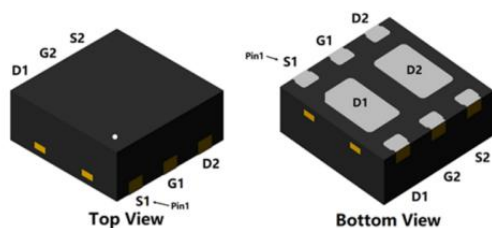
Feature

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

Application

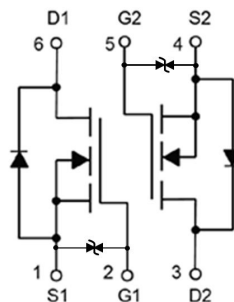
- Power Management Functions
- DC-DC Converters

Package

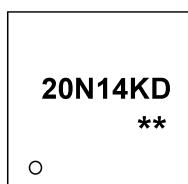


PDFN2X2-6L

Circuit diagram



Marking



20N14KD :Device Code
** :Week Code

Order Information

Device	Package	Unit/Tape
SP20N14KDNQ	PDFN2X2-6L	3000

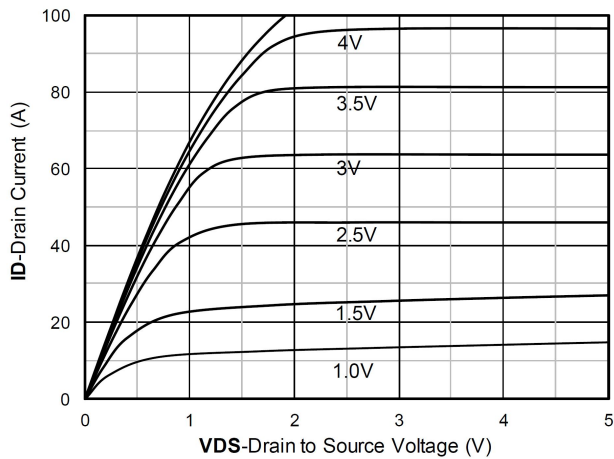
Absolute maximum ratings (Ta=25°C unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 10	V
Continuous Drain Current	I_D	6	A
Pulsed Drain Current	I_{DM}	24	A
Power Dissipation	P_D	2.5	W
Thermal Resistance from Junction-to-Ambient	$R_{\theta JA}$	50	$^{\circ}C/W$
Operating Junction Temperature Range	T_{STG}	-55 ~ +150	$^{\circ}C$
Storage Temperature Range	T_J	-55 ~ +150	$^{\circ}C$

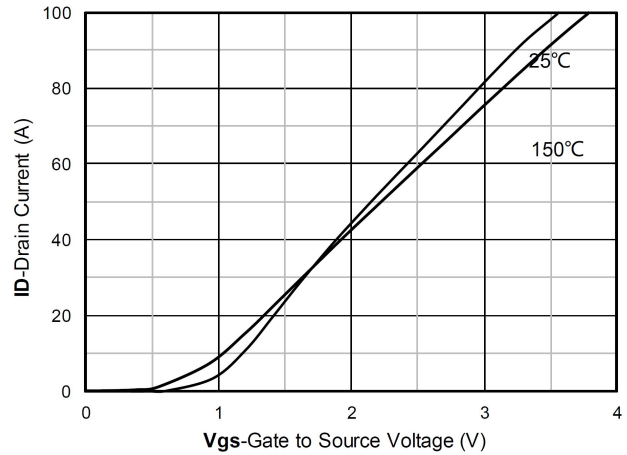
Electrical characteristics (T_A=25 °C, unless otherwise noted)

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 =3A	-	14	18	mΩ
		VGS =2.5V, ID =2A	-	25	33	
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 =4A	-	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

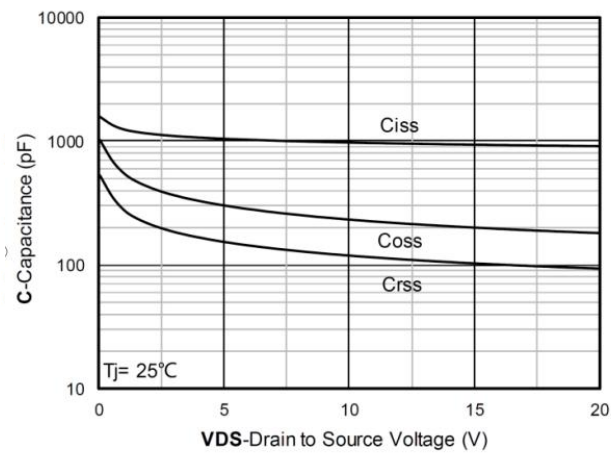
Typical Characteristics



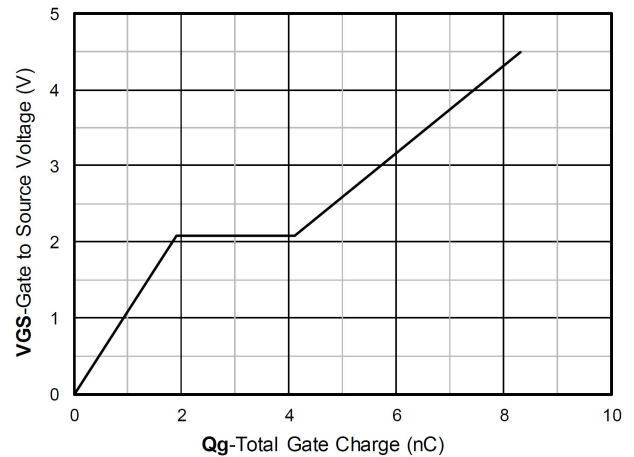
Output Characteristics



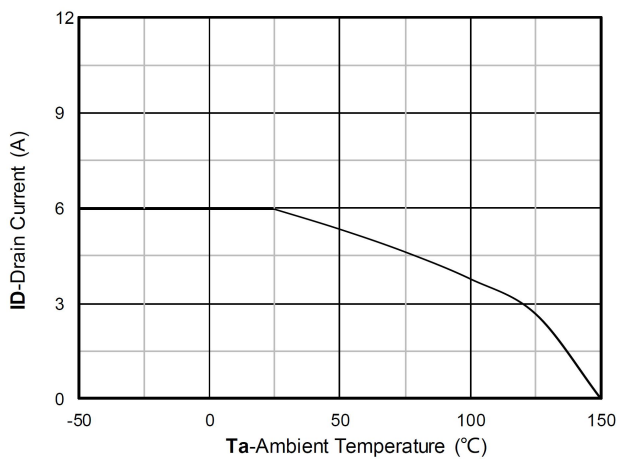
Transfer Characteristics



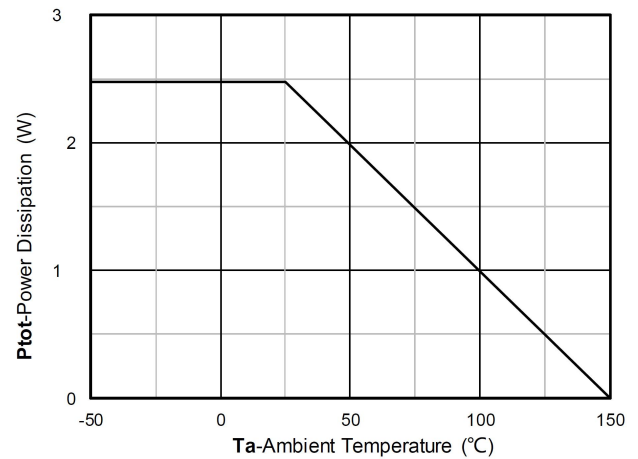
Capacitance Characteristics



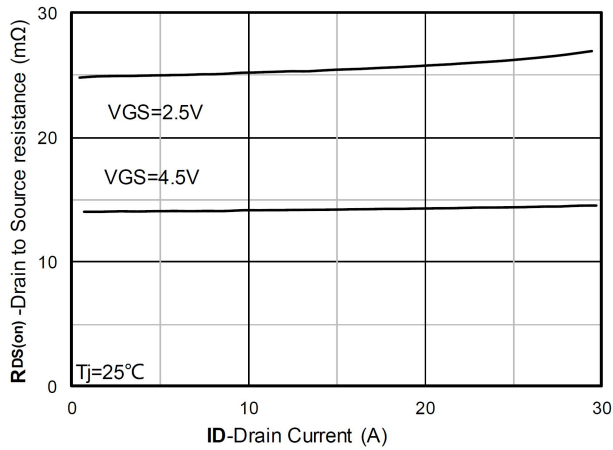
Gate Charge



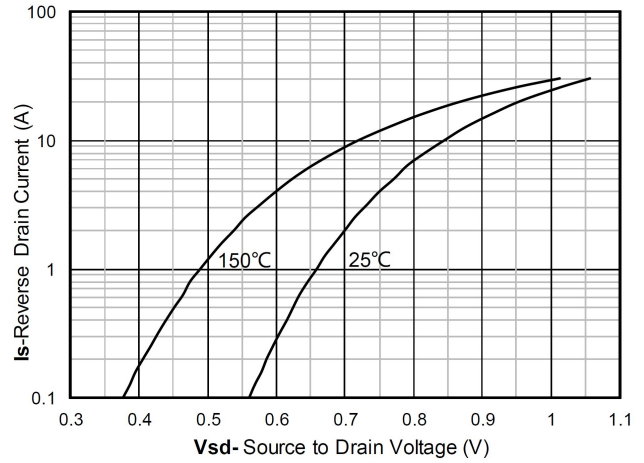
Current dissipation



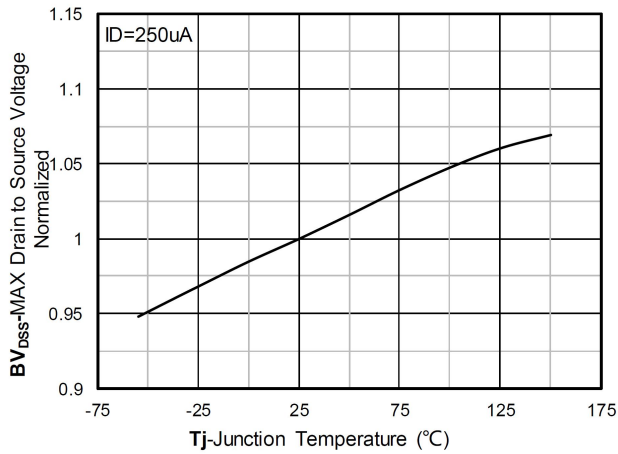
Power dissipation



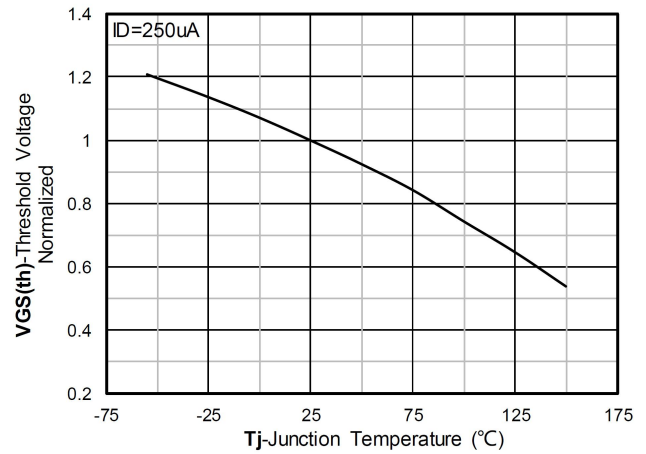
$R_{DS(on)}$ VS Drain Current



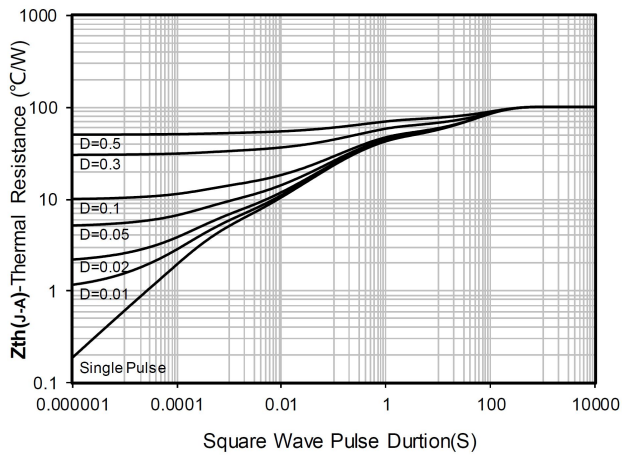
Forward characteristics of reverse diode



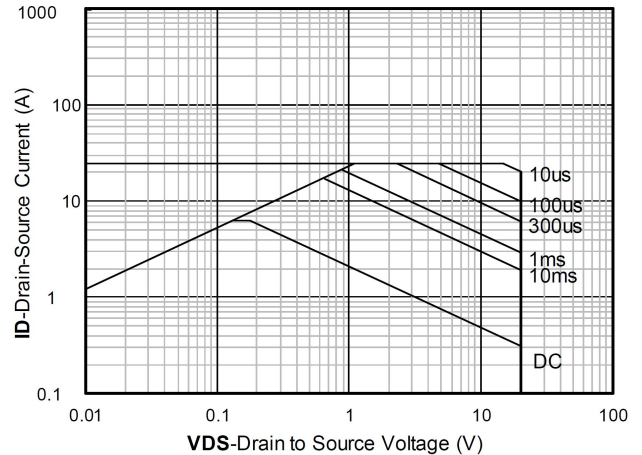
Normalized breakdown voltage



Normalized Threshold voltage

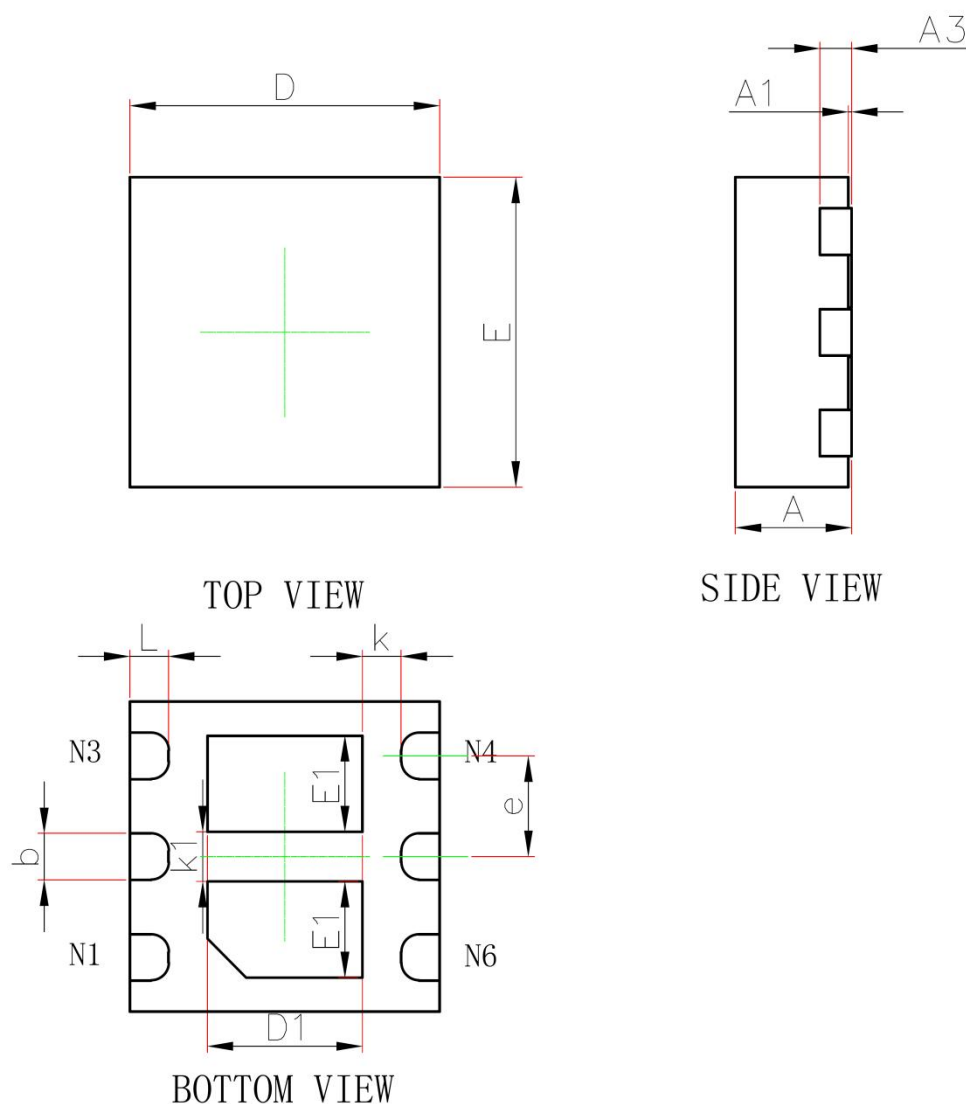


Maximum Transient Thermal Impedance



Safe Operation Area

DFN2X2-6L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.203REF.		0.008REF.	
D	1.900	2.100	0.075	0.083
E	1.900	2.100	0.075	0.083
D1	0.900	1.100	0.035	0.043
E1	0.520	0.720	0.020	0.028
b	0.250	0.350	0.010	0.014
e	0.650 TYP.		0.026 TYP.	
k	0.200MIN.		0.008MIN.	
L	0.200	0.300	0.008	0.012