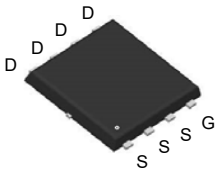
Features

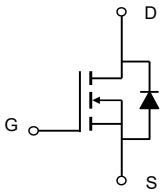
- *Low $R_{DS(on)}$ 3.6mΩ@VGS=10V (typ.)*
- *100% UIS Tested*
- *Enhanced Avalanche Ruggedness*
- *5V Logic Level Control*
- *Pb-Free, RoHS Compliant*



PDFN 3x3

Applications

- *Load Switch*
- *Power Tools*
- *Battery Protection*
- *Power Management Functions*



N-Channel

Order Information

Product	Package	Marking	Packing
SPS005N03D3	PDFN 3x3	005N03	5000pcs/Reel

Symbol	Parameter		Rating	Unit
Common Ratings (T_A=25°C Unless Otherwise Noted)				
V_{DS}	Drain-Source Breakdown Voltage		30	V
V_{GS}	Gate-Source Voltage		±20	V
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-50 to 150	°C
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested①	T_C=25°C	300	A
I_D	Continuous Drain Current	T_C=25°C	75	A
		T_C=70°C	55	
E_{AS}	Avalanche energy, single pulsed②		120	mJ
P_D	Maximum Power Dissipation	T_C=25°C	56	W
		T_C=70°C	35	
$R_{\theta JC}$	Thermal Resistance Junction-Case		2.2	°C/W

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	30	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current(T_A=25℃)	V_{DS}=30V, V_{GS}=0V	--	--	1	μA
	Zero Gate Voltage Drain Current(T_A=125℃)	V_{DS}=24V, V_{GS}=0V	--	--	100	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V, V_{DS}=0V	--	--	±100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1	1.6	3	V
$R_{DS(ON)1}$	Drain-Source On-State Resistance ③	V_{GS}=10V, I_D=30A	--	3.6	5	mΩ
$R_{DS(ON)2}$	Drain-Source On-State Resistance ③	V_{GS}=4.5V, I_D=10A	--	4.8	7	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz	--	2650	--	pF
C_{oss}	Output Capacitance		--	350	--	pF
C_{rss}	Reverse Transfer Capacitance		--	280	--	pF
R_g	Gate Resistance	f=1MHz		4		Ω
Q_g	Total Gate Charge	V_{DS}=15V I_D=20A, V_{GS}=5V	--	26.5	--	nC
Q_{gs}	Gate Source Charge		--	3.9	--	nC
Q_{gd}	Gate Drain Charge		--	7.6	--	nC
Switching Characteristics @ T_J = 25°C (unless otherwise stated)						
$t_{d(on)}$	Turn on Delay Time	V_{DD}=15V, I_D=20A, R_G=5Ω, V_{GS}=10V	--	10.2	--	nS
t_r	Turn on Rise Time		--	4.8	--	nS
$t_{d(off)}$	Turn Off Delay Time		-	39	--	nS
t_f	Turn Off Fall Time		--	8.8	--	nS
Source Drain Diode Characteristics @ T_J = 25°C (unless otherwise stated)						
V_{SD}	Forward on voltage③	Tj=25°C, ISD=30A,V_{GS}=0V	--	0.8	1.2	V

Notes: ①Pulse width limited by maximum allowable junction temperature

②Limited by TJmax, starting TJ =25°C, L = 0.5mH,RG = 25ohm, IAS = 22A, VGS =10V. Part not recommended for use above this value.

③ Pulse width<300μs; duty cycle<2%.

Typical Characteristics

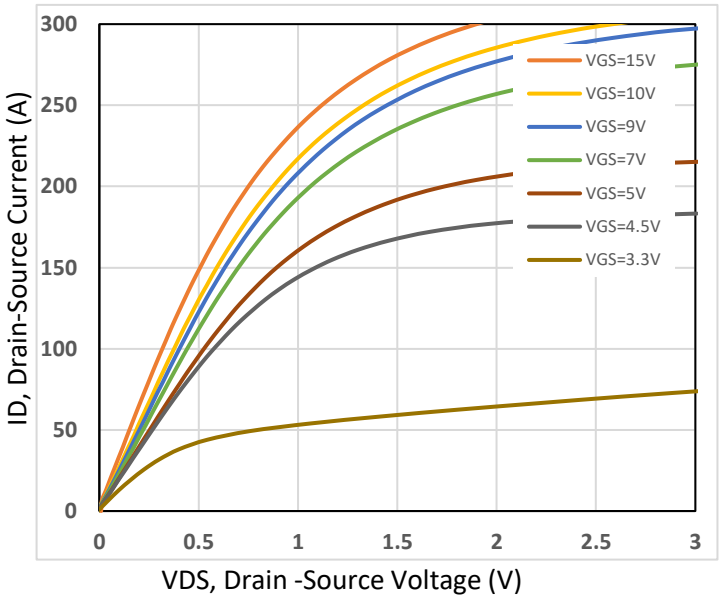


Fig1. Typical Output Characteristics

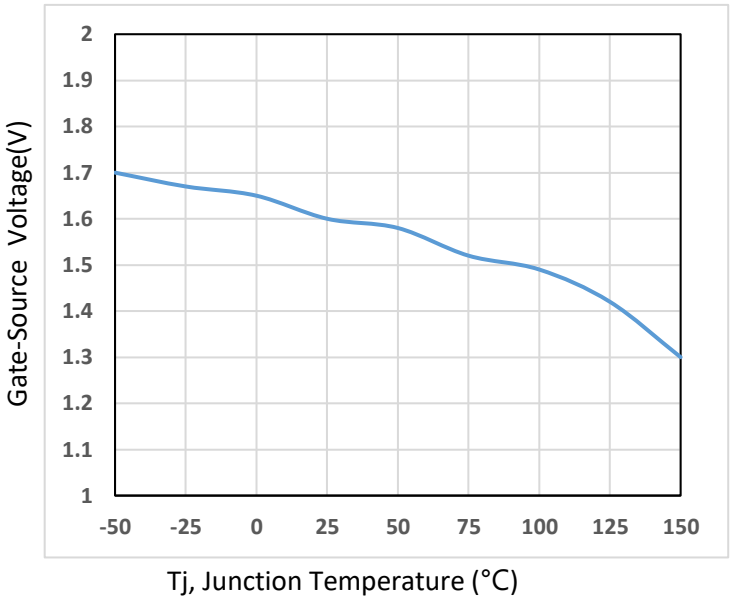


Fig2. $V_{GS(TH)}$ Voltage Vs. Temperature

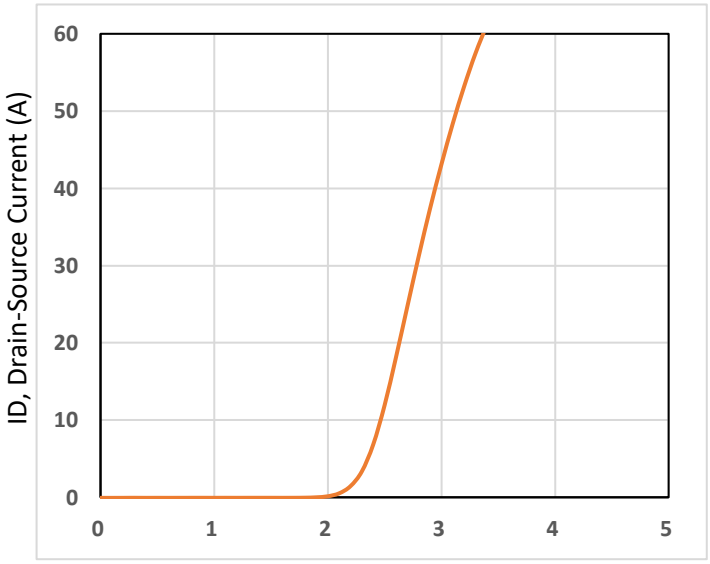


Fig3. Typical Transfer Characteristics

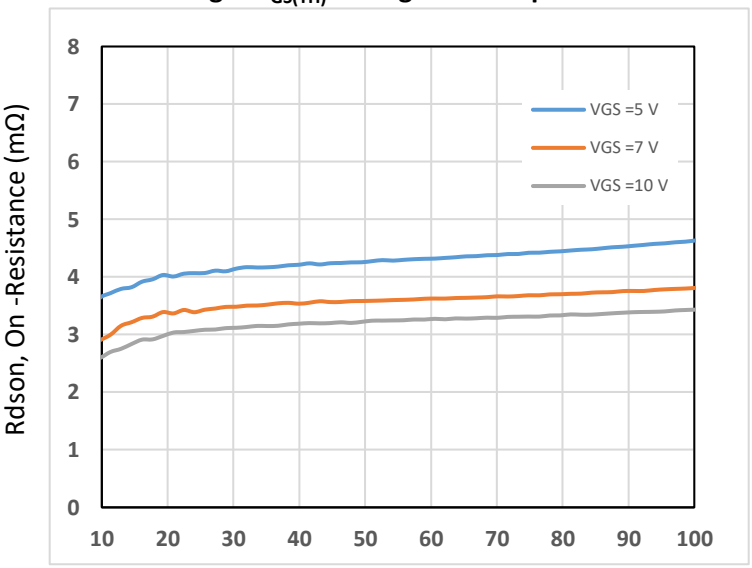


Fig4. Rdson vs Drain Current and Gate Volatage

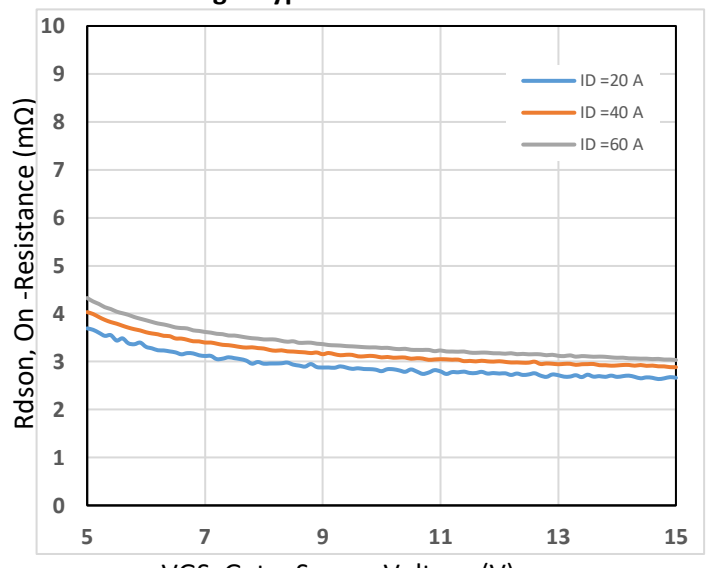


Fig5. Gate Volatage vs On-Resistance and Drain Current

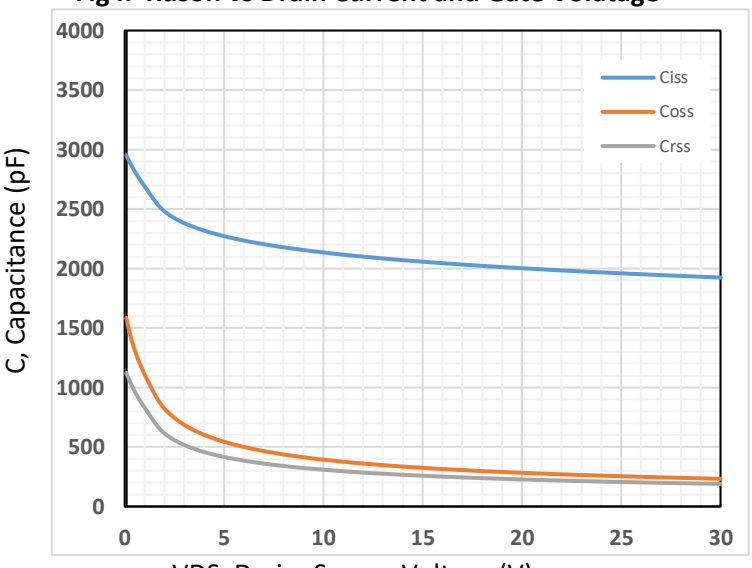


Fig6. Typical Capacitance Vs. Drain-Source Voltage

Typical Characteristics

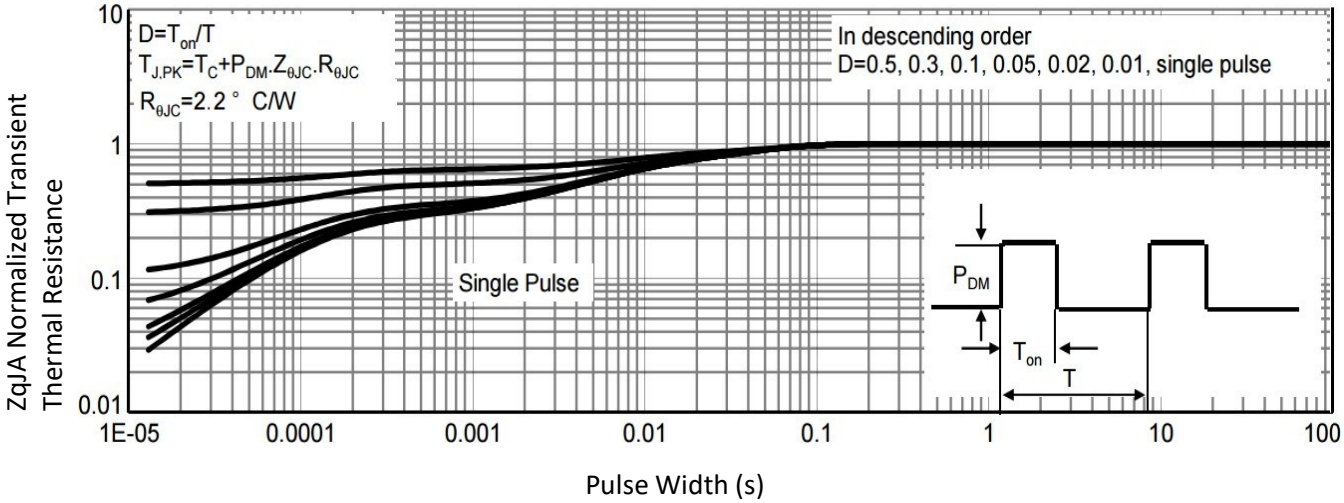


Fig7. Typical Capacitance Vs. Drain-Source Voltage

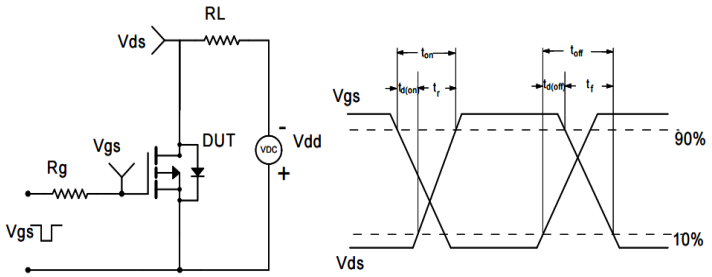
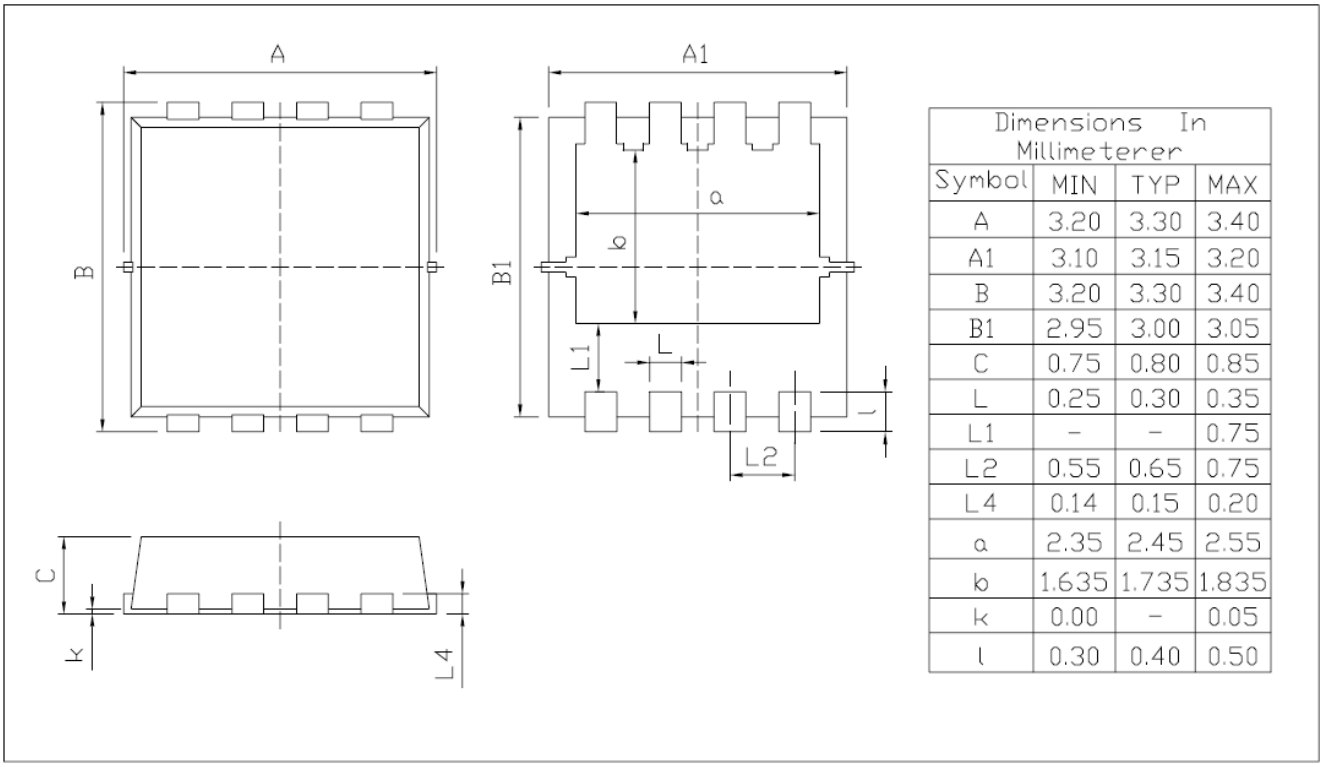


Fig8. Switching Time Test Circuit and waveforms

PDFN 3X3 Mechanical Data

PDFN3X3A-8L Unit:mm



Dimensions In Millimeterer			
Symbol	MIN	TYP	MAX
A	3.20	3.30	3.40
A1	3.10	3.15	3.20
B	3.20	3.30	3.40
B1	2.95	3.00	3.05
C	0.75	0.80	0.85
L	0.25	0.30	0.35
L1	-	-	0.75
L2	0.55	0.65	0.75
L4	0.14	0.15	0.20
a	2.35	2.45	2.55
b	1.635	1.735	1.835
k	0.00	-	0.05
l	0.30	0.40	0.50

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