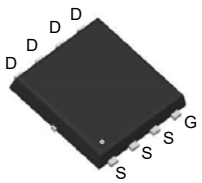
Features

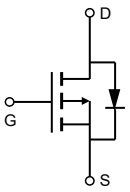
- *Low $R_{DS(on)}$ @V_{GS}=-5V*
- *-5V Logic Level Control*
- *DFN Package*
- *Pb−Free, RoHS Compliant*

Key Items	PMOS	Unit
BVDSS	-40	V
ID	-30	A
R_{DSON1}	30	mΩ
R_{DSON2}	55	mΩ

Applications

- DC Fan
- *Brushless motor*
- *Optimized for Power Management Applications for Portable Products, such as H-bridge, Inverters Car Charger and Others*





Order Information

Product	Package	Marking	Packing	Min Unit Quantity
SPS025P04D3	DFN3*3	25P04	5000PCS/Reel	5000PCS

Absolute Maximum Ratings

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Symbol	Parameter		Rating	Unit
Common Ratings (T_C=25°C Unless Otherwise Noted)				
V_{GS}	Gate-Source Voltage		±20	V
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		-40	V
T_J	Maximum Junction Temperature		175	℃
T_{STG}	Storage Temperature Range		-50 to 150	℃
I_S	Diode Continuous Forward Current①	T_C=25°C	-30	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested②	T_C=25°C	-80	A
I_D	Continuous Drain Current(V_{GS}=-10V)	T_C=25°C	-30	A
		T_C=70°C	-18	
P_D	Maximum Power Dissipation	T_C=25°C	45	W
$R_{\theta JC}$	Thermal Resistance Junction-Ambient		2.6	°C/W

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=-250μA	-40	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current (Tc=25℃)	V_{DS}=-40V,V_{GS}=0V	--	--	1	μA
	Zero Gate Voltage Drain Current (Tc=125℃)	V_{DS}=-32V,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	-1.0	-2.0	-3	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=-10V, I_D=-25A	--	30	45	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=-5V, I_D=-15A	--	55	65	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=-20V,V_{GS}=0V, f=1MHz	--	2250	--	pF
C_{oss}	Output Capacitance		--	350	--	pF
C_{rss}	Reverse Transfer Capacitance		--	240	--	pF
Q_g	Total Gate Charge	V_{DS}=-20V,I_D=-25A, V_{GS}=-10V	--	28	--	nC
Q_{gs}	GateSource Charge		--	6	--	nC
Q_{gd}	GateDrain Charge		--	5.2	--	nC
Switching Characteristics						
$t_{d(on)}$	Turnon Delay Time	V_{DD}=-20V, I_D=-10A, R_G=3.3Ω, V_{GS}=-10V	--	30	--	ns
t_r	Turnon Rise Time		--	12	--	ns
$t_{d(off)}$	TurnOff Delay Time		-	24	--	ns
t_f	TurnOff Fall Time		--	10	--	ns
Source Drain Diode Characteristics						
I_{SD}	Sourcedrain current(Body Diode) ①	T_c=25℃	-20	--	--	A
V_{SD}	Forward on voltage	T_j=25℃,I_{SD}=-15A, V_{GS}=0V	--	-0.82	-1.2	V

Notes:

① Pulse test ; Pulse width≤300μs, duty cycle≤2%.

② Pulse width limited by maximum allowable junction temperature

Electrical Characteristic Curves

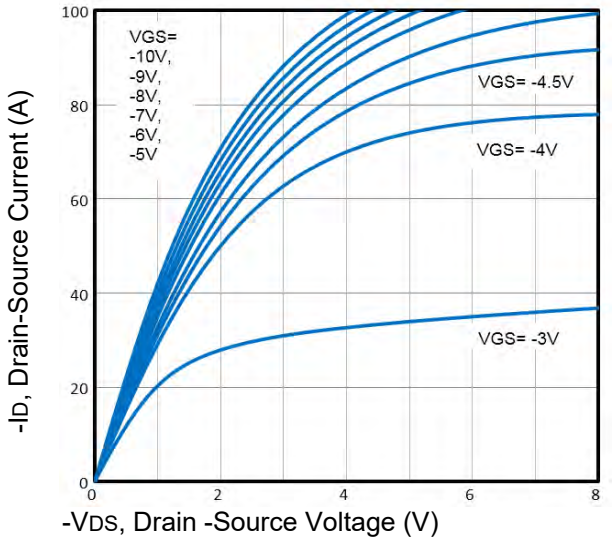


Fig1. Typical Output Characteristics

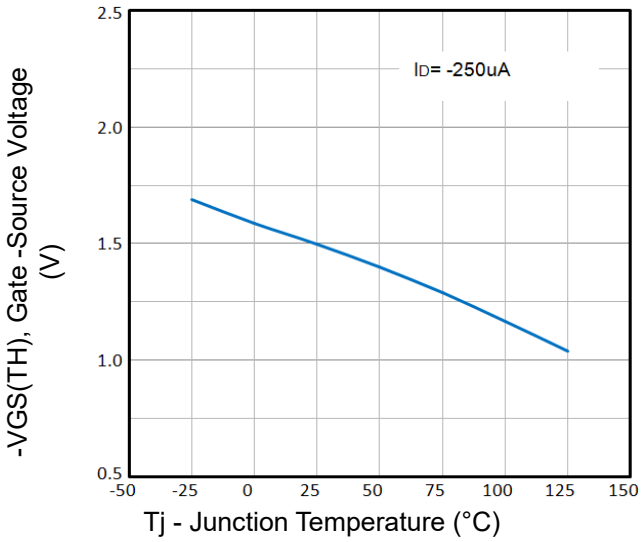


Fig2. Normalized Threshold Voltage Vs. Temperature

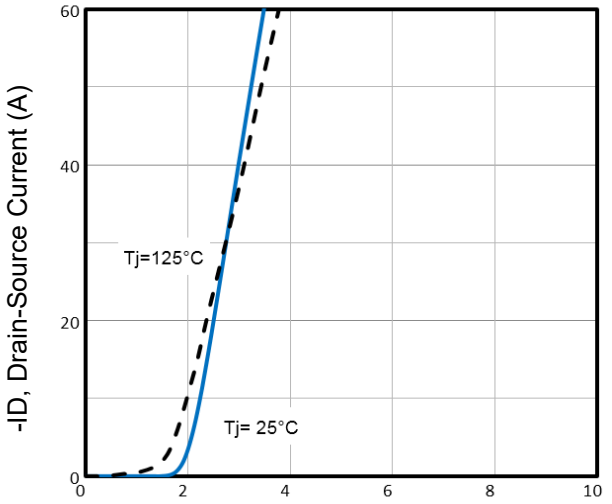


Fig3. Typical Transfer Characteristics

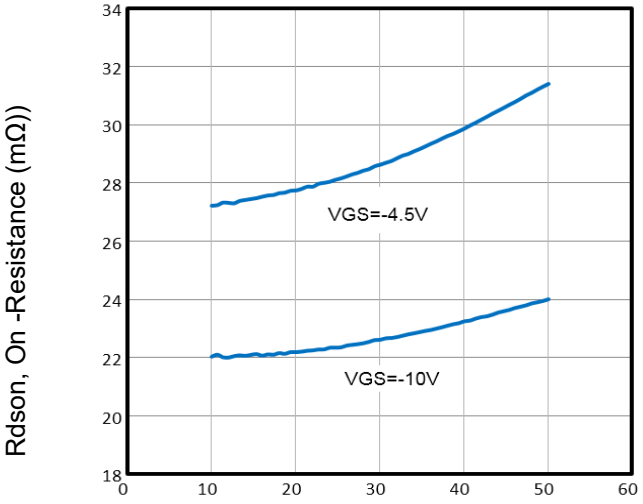


Fig4. On-Resistance vs. Drain Current and Gate

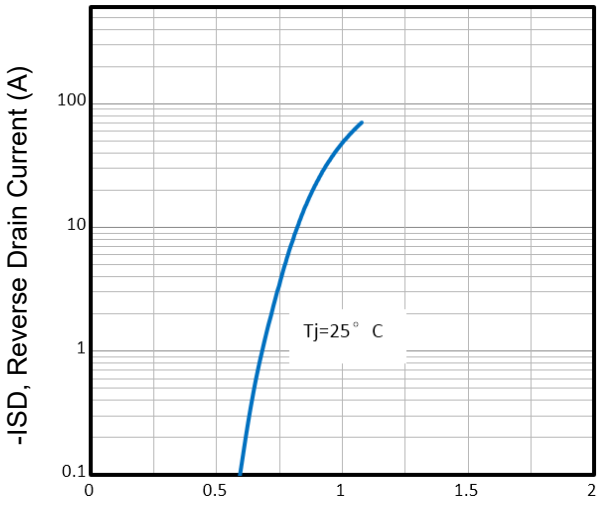


Fig5. Typical Source-Drain Diode Forward Voltage

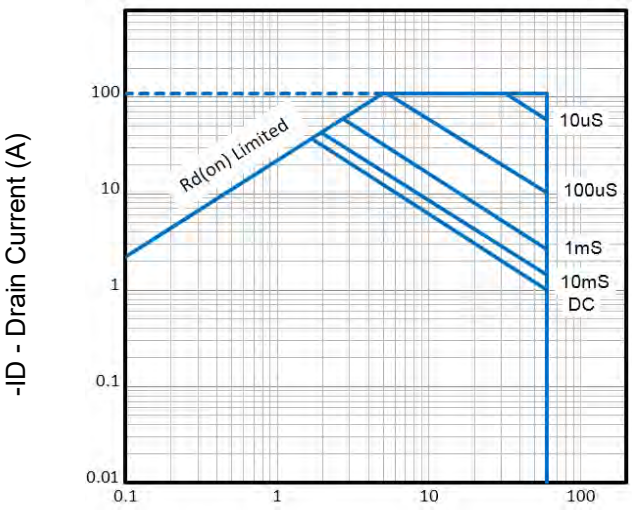


Fig6. Maximum Safe Operating Area

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

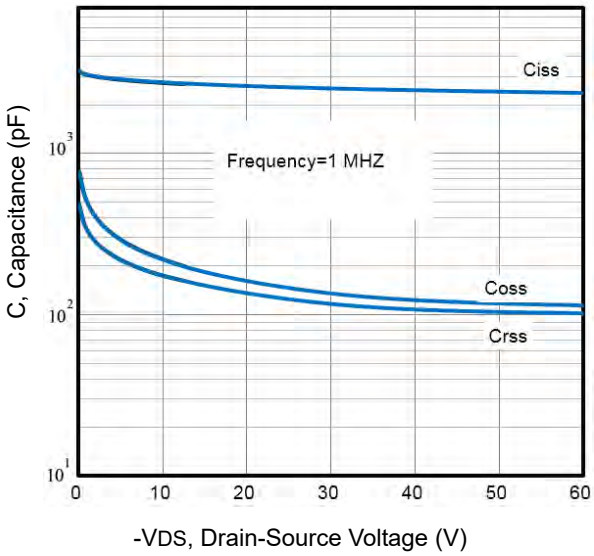


Fig7. Typical Capacitance Vs. Drain-Source Voltage

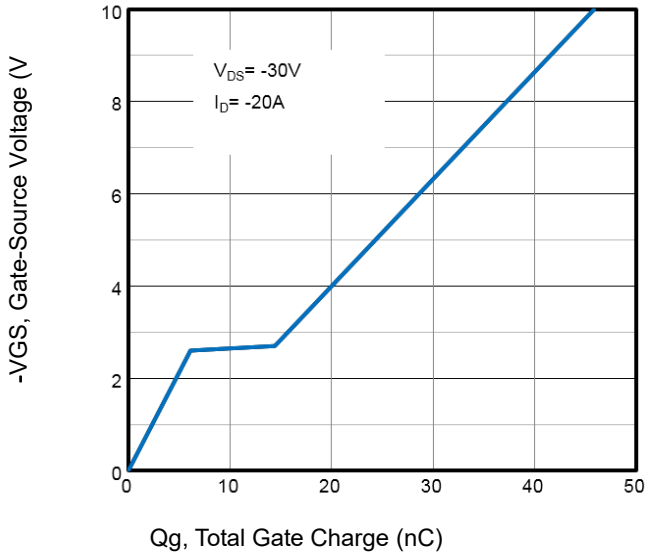


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

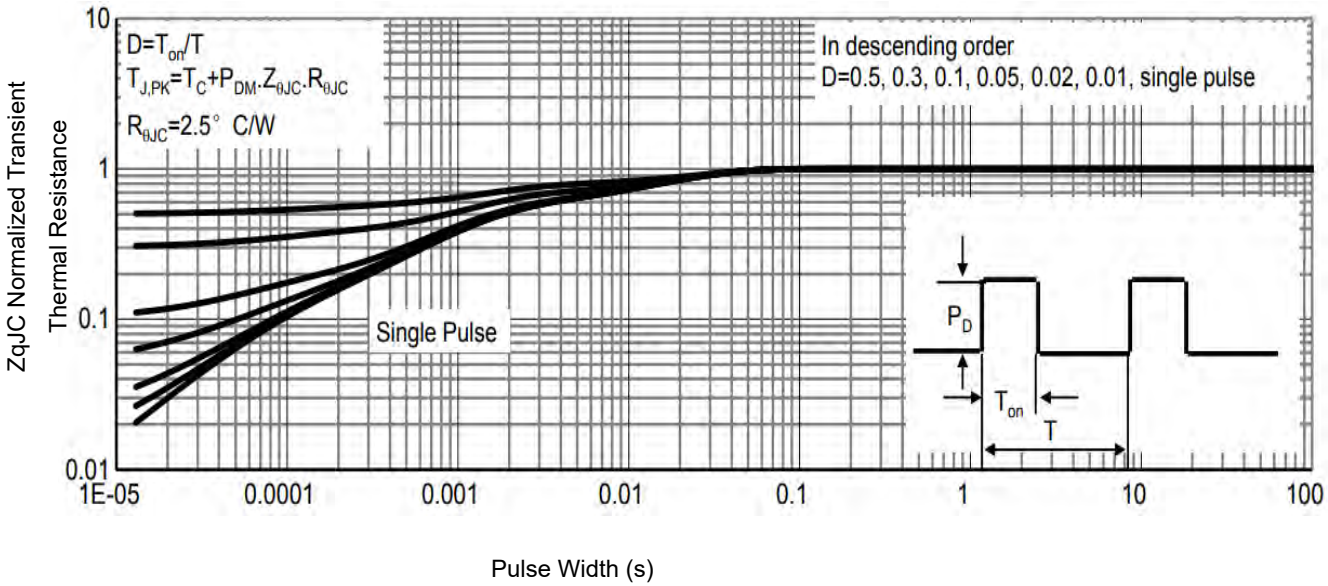


Fig9. Normalized Maximum Transient Thermal Impedance

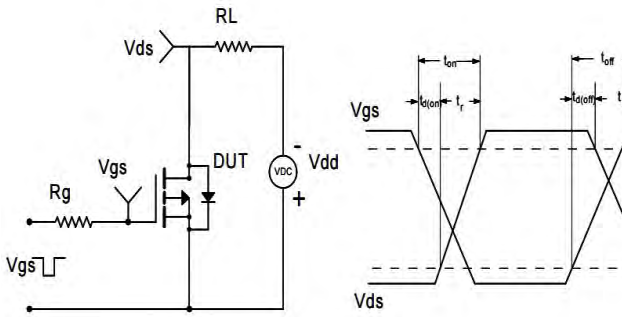


Fig10. Switching Time Test Circuit and waveforms

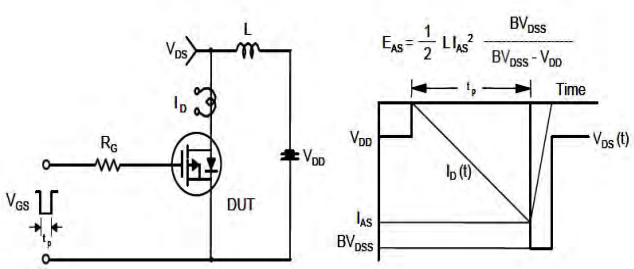
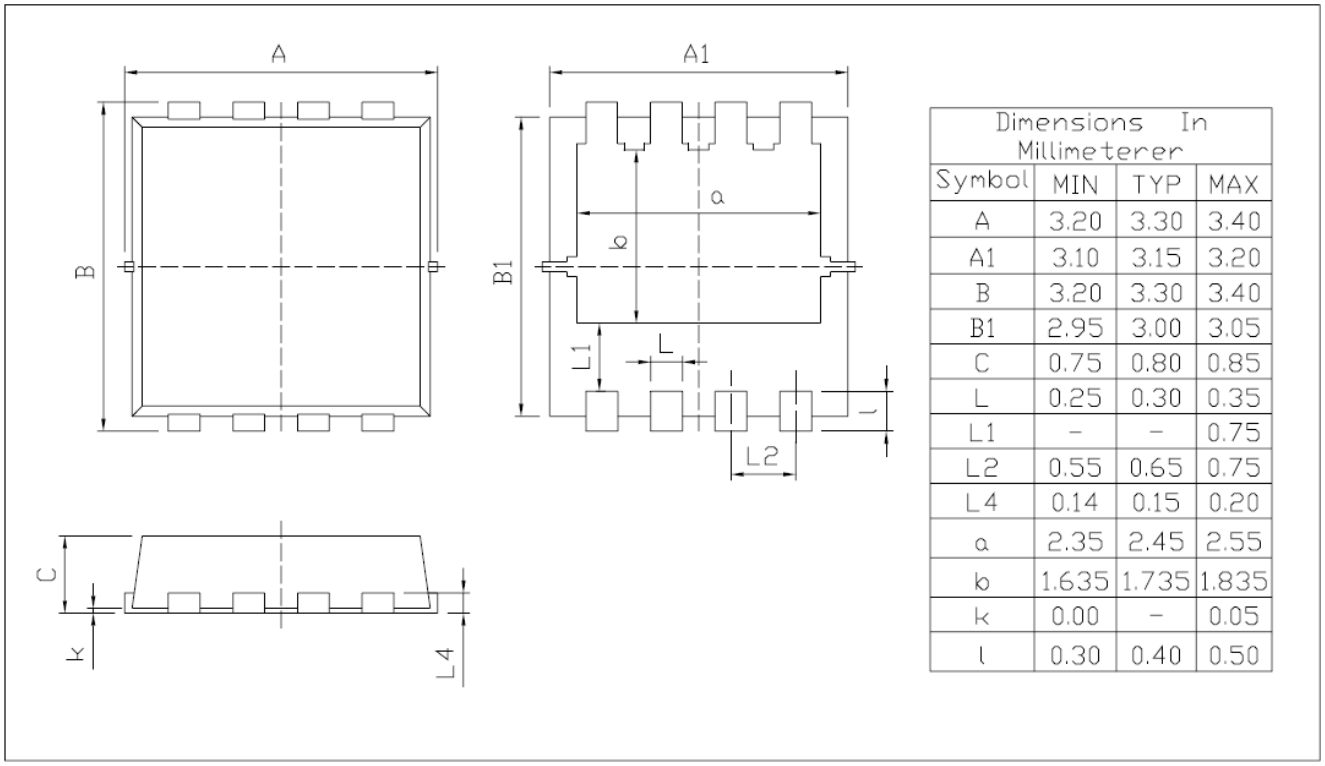


Fig11. Unclamped Inductive Test Circuit and waveforms

PDFN3X3 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