Description

The SX30P10NF uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

V_{DS} = -100V I_D =-30A

$R_{DS(ON)}$ <95mΩ @ V_{GS}=10V

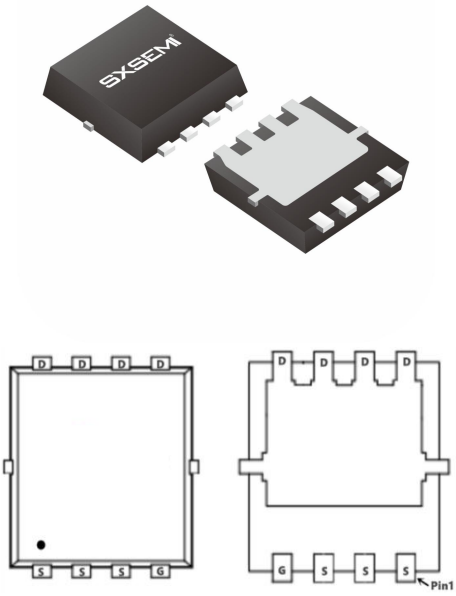
Application

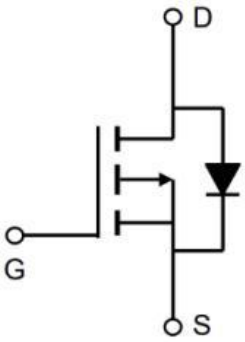
Brushless motor

Load switch

Uninterruptible power supply

PDFN5*6-8L





Absolute Maximum Ratings (T_C=25℃unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-100	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ -10V[1]	-30	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ -10V[1]	-18	A
I_{DM}	Pulsed Drain Current[2]	-90	A
EAS	Single Pulse Avalanche Energy[3]	157.2	mJ
I_{AS}	Avalanche Current	-19	A
P_D@T_C=25℃	Total Power Dissipation[4]	280	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1]	25	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	2.3	℃/W

P-Channel Electrical Characteristics (TJ =25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250uA	-100	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=-10V , I_D=-10A	---	68	95	mΩ
		V_{GS}=-4.5V , I_D=-8A	---	78	110	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-1.2	-1.7	-2.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-100V , V_{GS}=0V , T_J=25℃	---	---	-1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=-10V , I_D=-10A	---	24	---	S
Q_g	Total Gate Charge	V_{DS}=-50V , V_{GS}=-10V , I_D=-20A	---	44.5	---	nC
Q_{gs}	Gate-Source Charge		---	9.13	---	
Q_{gd}	Gate-Drain Charge		---	5.93	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=-50V , V_{GS}=-10V , R_G=3.3 , I_D=-10A	---	12	---	ns
T_r	Rise Time		---	27.4	---	
$T_{d(off)}$	Turn-Off Delay Time		---	79	---	
T_f	Fall Time		---	53.6	---	
C_{iss}	Input Capacitance	V_{DS}=-20V , V_{GS}=0V , f=1MHz	---	3029	---	pF
C_{oss}	Output Capacitance		---	129	---	
C_{rss}	Reverse Transfer Capacitance		---	76	---	
IS	Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	---	---	-30	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=-1A , T_J=25℃	---	---	-1.2	V
trr	Reverse Recovery Time	IF=-8A , di/dt=-100A/μs , T_J=25℃	---	38.7	---	nS
Q_{rr}	Reverse Recovery Charge		---	22.4	---	nC

Note :

1、The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.

2、The data tested by pulsed , pulse width ≦300us , duty cycle ≦2%

3、The EAS data shows Max. rating . The test condition is V DD =-72V,VGS =-10V,L=0.1mH,IAS =-19A

4、The power dissipation is limited by 150℃junction temperature

5、The data is theoretically the same as I D and I DM , in real applications , should be limited by total power dissipation.

Typical Characteristics

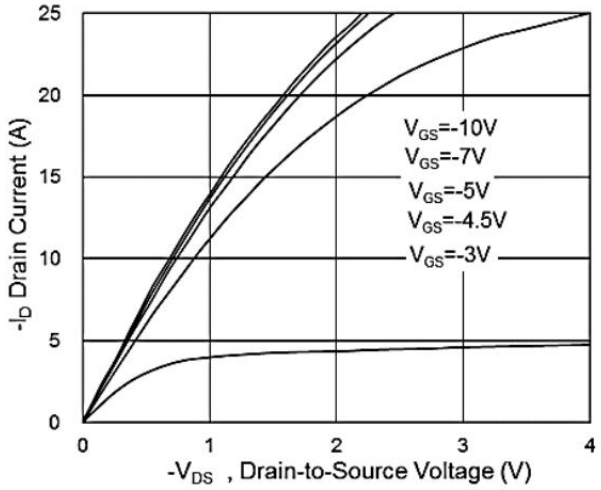


Fig.1 Typical Output Characteristics

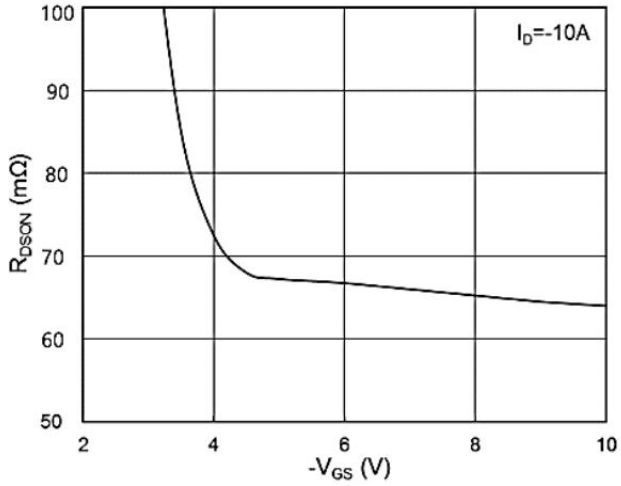


Fig.2 On-Resistance vs G-S Voltage

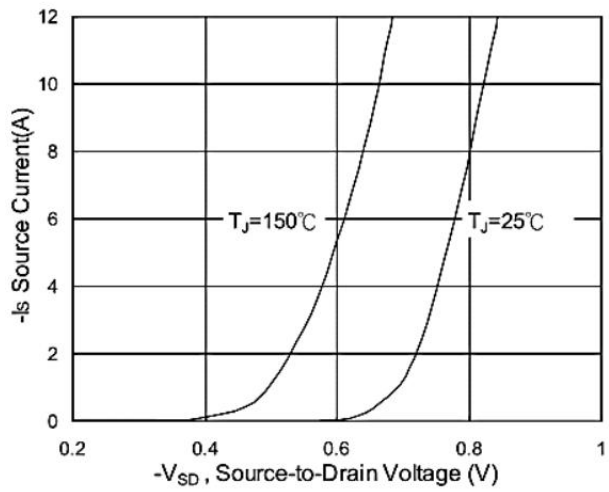


Fig.3 Typical S-D Diode Forward Voltage

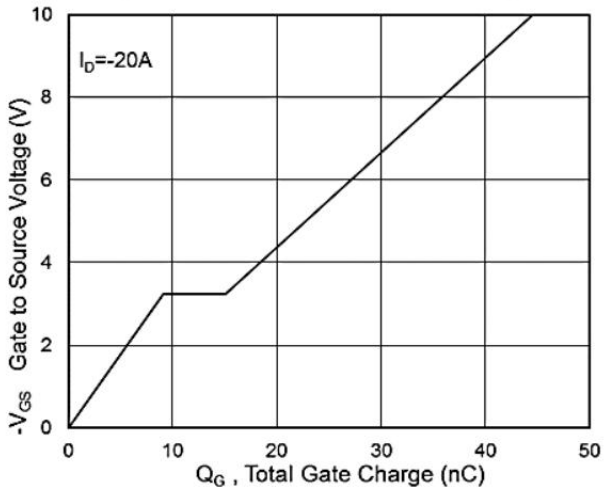


Fig.4 Gate-Charge Characteristics

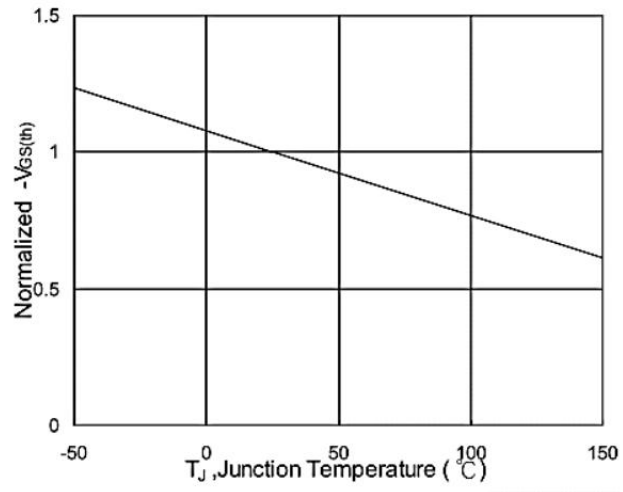


Fig.5 Normalized $V_{GS(th)}$ vs T_J

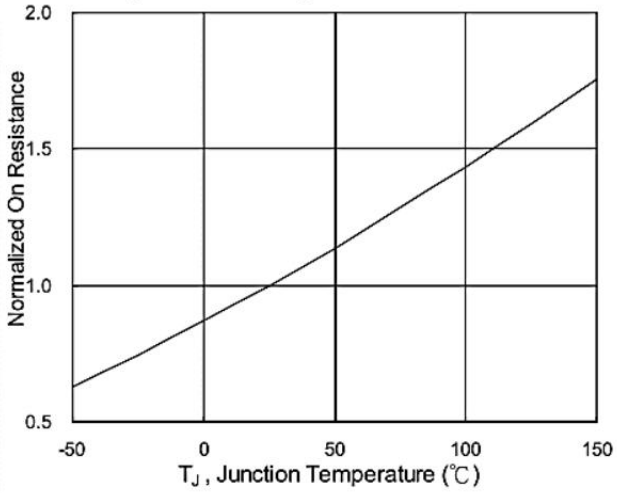


Fig.6 Normalized R_{DSON} vs T_J

Typical Characteristics

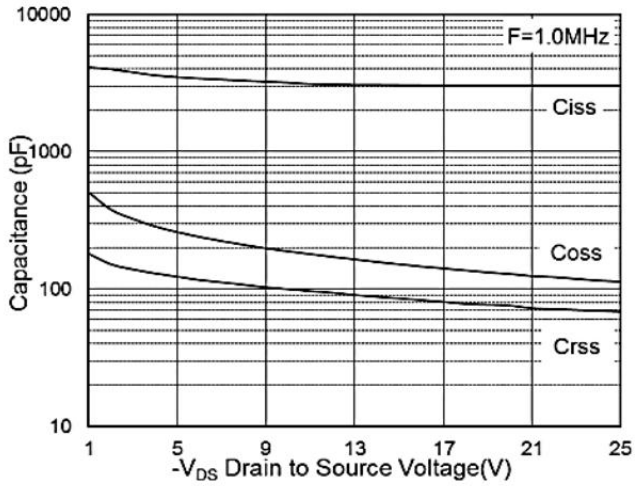


Fig.7 Capacitance

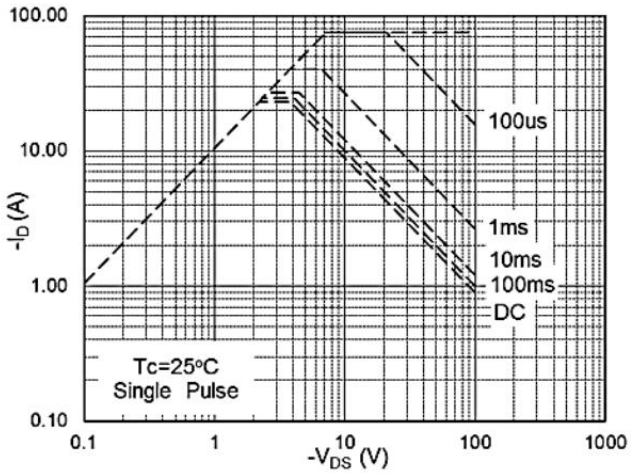


Fig.8 Safe Operating Area

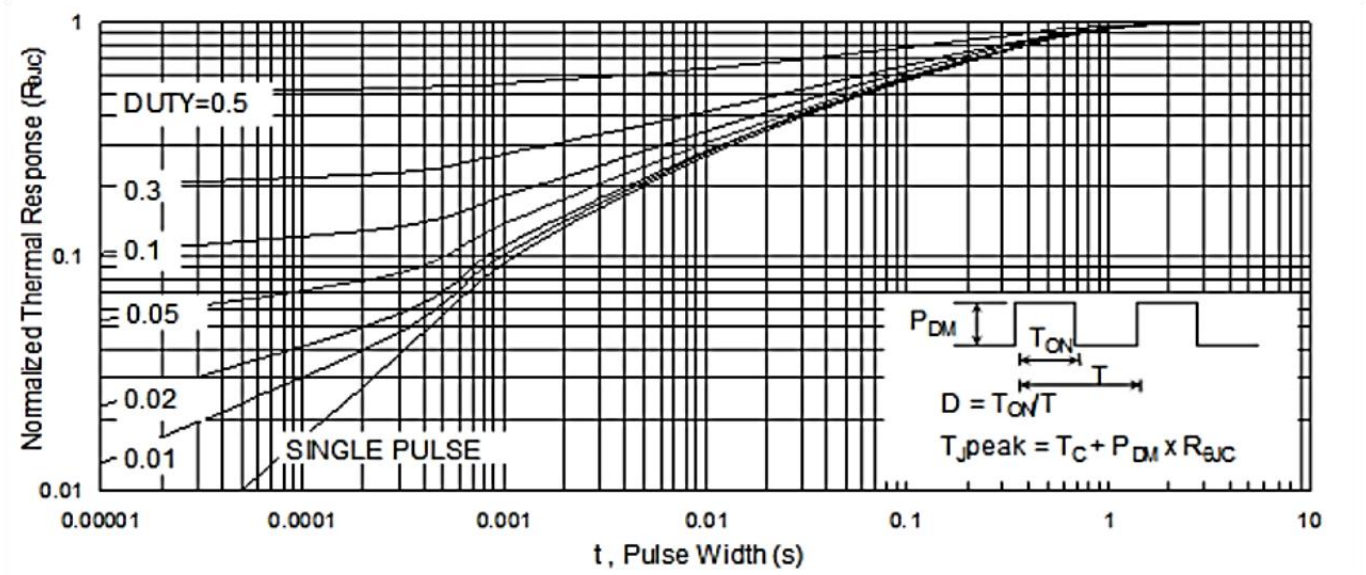


Fig.9 Normalized Maximum Transient Thermal Impedance

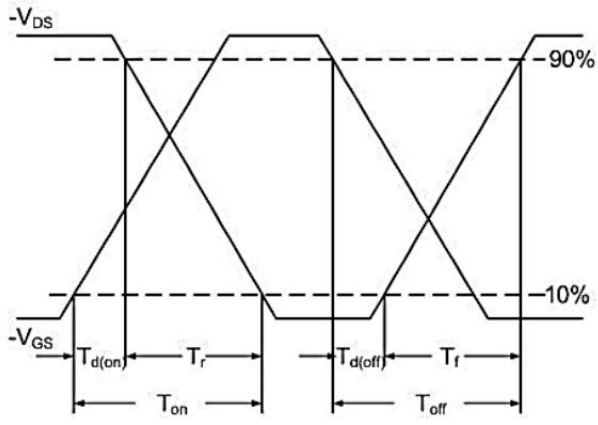


Fig.10 Switching Time Waveform

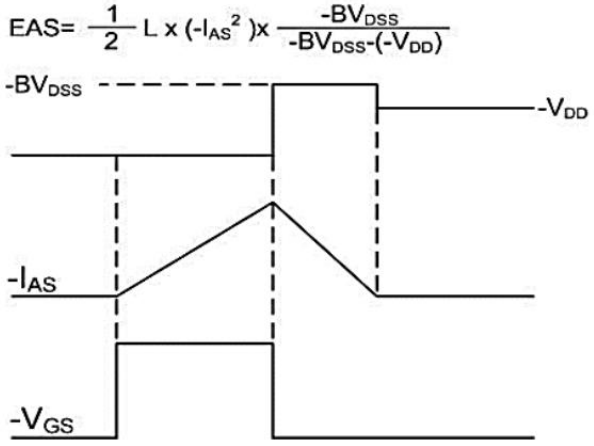
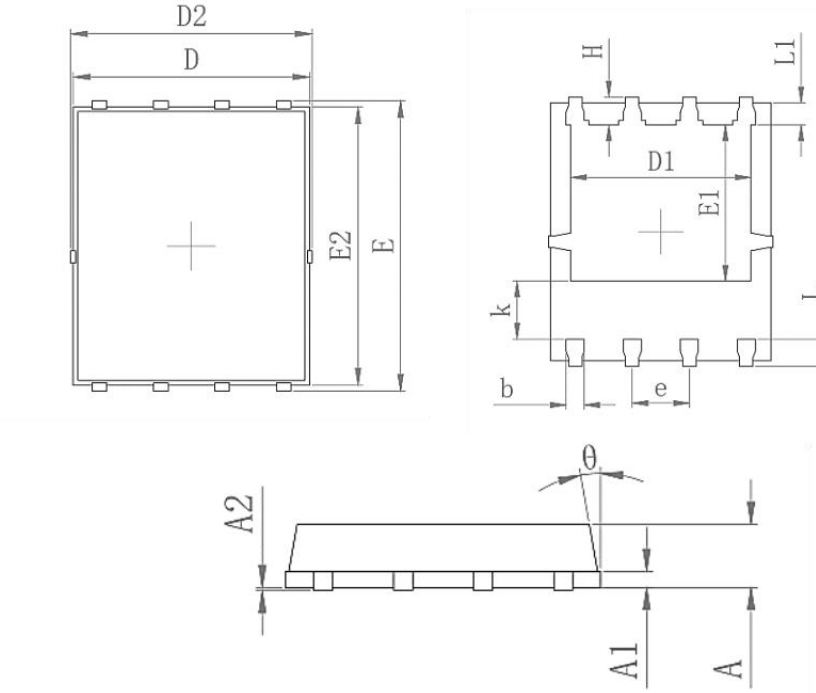


Fig.11 Unclamped Inductive Waveform

Package Mechanical Data-PDFN5X6-8L-XZT Single



Symbol	Common	
	mm	
	Mim	Max
A	0.90	1.10
A1	0.254 REF	
A2	0-0.05	
D	4.824	4.976
D1	3.910	4.110
D2	4.944	5.076
E	5.924	6.076
E1	3.375	3.575
E2	5.674	5.826
b	0.350	0.450
e	1.270	
L	0.534	0.686
L1	0.424	0.576
K	1.190	1.390
H	0.549	0.701
Φ	8°	12°

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	PDFN5*6-8L		5000